

BOARD MEETING

DATE: WEDNESDAY 6 DECEMBER 2017

TIME: 9:30 A.M. - 12:30 P.M.

VENUE: **CARRINGTON SUITE, SCOTTISH HEALTH SERVICE CENTRE
CREWE ROAD SOUTH, EDINBURGH EH4 2LF**



Members are reminded that they should declare any financial and non-financial interests they have in the items of business for consideration, identifying the relevant agenda item and the nature of their interest. It is also a member's duty under the Code of Conduct to ensure that any changes in circumstances are reported to the Corporate Services Manager within one month of them changing.

AGENDA

<u>Item</u>	<u>Lead</u>
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Welcome to Members of the Public and the Press

Apologies for Absence

1. Items for Approval

1.1.	Minutes of the Previous Board Meeting held on 4 October 2017	BH	*
1.2.	Running Action Note	BH	*
1.3.	Corporate Risk Register	TG	*
1.4.	Ingress of Carbon Dioxide into Houses at Gorebridge Midlothian April 2014	AKM	*
1.5.	Finance & Resources Committee Minutes 20 Sept 2017 & 15 November 2017	MH	*
1.6.	Staff Governance Committee Minutes of 25 October 2017	AM	*
1.7.	Healthcare Governance Committee Minutes 12 September	RW	*
1.8.	Strategic Planning Committee Minutes of 12 October 2017	BH	*
1.9.	Edinburgh Integration Joint Board Minutes 22 September & 13 October 2017	AJ	*
1.10.	West Lothian Integration Joint Board Minutes 26 September & 31 October	MH	*
1.11.	Midlothian Integration Joint Board Minutes 24 August & 14 September 2017	JO	*
1.12.	East Lothian Integration Joint Board Minutes 24 August & 28 September 2017	PM	*
1.13.	Appointment of Members to Committees	BH	*

2. Items for Discussion (subject to review of the items for approval)

2.1.	Emergency Access Standard: Review of Performance Reporting Compliance	TD	*
2.2.	Quality and Performance Improvement	SW	*
2.3.	Financial Position to October 2017, Year End Forecast and Financial Outlook 2018/19	SG	*
2.4.	Lothian / Regional Catering Strategy Approval	JC	*
2.5.	Fragile Services – The Lothian Box	AMcM	*
2.6.	Paediatric Programme Board Update	JCam	*

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| 3. Resolution To Take Items in Closed Session | BH | v |
| 4. Minutes of the Previous Private Meeting held on 4 October 2017 | BH | ®* |
| 5. Matters Arising | BH | v |
| 6. Any Other Competent Business | BH | v |
| 7. Next Development Session: | | |
| Wednesday 10 January 2018 at 9:30 a.m. at the Scottish Health Service Centre,
Crewe Road South, Edinburgh EH4 2LF | | |
| 8. Next Board Meeting: | | |
| Wednesday 7 February 2018 at 9:30 a.m. at the Scottish Health Service Centre,
Crewe Road South, Edinburgh EH4 2LF | | |

Board Meetings in 2018

7 February 2018	Scottish Health Service Centre
4 April 2018	Scottish Health Service Centre
27 June 2018*	Scottish Health Service Centre
1 August 2018	Scottish Health Service Centre
3 October 2018	Scottish Health Service Centre
5 December 2018	Chancellor's Building RIE

Development Sessions in 2018

10 January 2018	Scottish Health Service Centre
7 March 2018	Scottish Health Service Centre
16 May 2018	Scottish Health Service Centre
18 July 2018	Scottish Health Service Centre
12 September 2018	Scottish Health Service Centre
7 November 2018	Scottish Health Service Centre

* *Annual Accounts Meeting*

LOTHIAN NHS BOARD

Minutes of the Meeting of Lothian NHS Board held at 9.30am on Wednesday 4 October 2017 in the Carrington Suite, Scottish Health Service Centre, Crewe Road South, Edinburgh, EH4 2LF.

Present:

Non-Executive Board Members: Mr B Houston (Chair); Mrs S Allan (Vice Chair); Mr M Ash; Cllr R Henderson; Mr M Hill; Ms C Hirst; Ms F Ireland; Cllr J McGinty; Cllr D Milligan; Mrs A Mitchell; Mr P Murray; Mr J Oates Professor M Whyte; Mr A Joyce; Dr R Williams; Mr M Connor and Mr A McCann.

Executive and Corporate Directors: Mrs J Butler (Interim Director of Human Resources and Organisational Development); Mrs J Campbell (Chief Operating Officer - Acute Services); Mr J Crombie (Deputy Chief Executive); Mr T Davison (Chief Executive); Miss T Gillies (Medical Director); Mrs S Goldsmith (Director of Finance); Professor A K McCallum (Director of Public Health & Health Policy); Professor A McMahon (Executive Director, Nursing, Midwifery & AHPS – Executive Lead REAS & Prison Healthcare) and Dr S Watson (Chief Quality Officer).

In Attendance: Mrs G Costello (Executive Nurse Director – NHS Tayside) and Mr D Weir (Business Manager).

Apologies for absence were received from Mrs K Blair, Mrs L Williams, Professor T Humphrey and Cllr O'Donnell.

Welcome and Introduction

The Chairman welcomed members of the public and press to the Board meeting. The Chairman also introduced Mrs Gillian Costello, Executive Nurse Director – NHS Tayside who was shadowing Professor McMahon.

Declaration of Financial and Non-Financial Interest

The Chairman reminded members they should declare any financial and non-financial interests they had in the items of business for consideration, identifying the relevant agenda item and the nature of their interest. There were no declarations of interest.

30. Items for Approval

- 30.1 The Chairman sought and received the approval of the Board to accept and agree the following recommendations contained in the previously circulated “For Approval” paper without further discussion:-
- 30.2 Minutes of the previous Board meeting held on 2 August 2017 - Approved.
- 30.3 Running Action Note – Approved.

Board approved the management of deteriorating patients risk which was the key risk associated with the delivery of the Scottish Patient Safety Work Programme. The Board accepted significant assurance that the corporate risk register contained all appropriate risks which were contained in section 3.2 and set out in detail in appendix 1. Finally the Board accepted that as a system of control the Governance Committees of the Board had confirmed they were assessing the levelling of assurance provided with respect to plans in place to mitigate the risks pertinent to the committee.

30.5 Finance and Resources Committee – Minutes of 12 July 2017 – Endorsed.

30.6 Audit & Risk Committee – Minutes of 28 August 2017 – Endorsed.

30.7 Strategic Planning Committee – Minutes of 10 August 2017 – Endorsed.

30.8 Acute Hospitals Committee – Minutes of 29 August 2017 – Endorsed.

30.9 Edinburgh Integration Joint Board – Minutes of 11 August 2017 – Endorsed.

30.10 Midlothian Integration Joint Board – Minutes of 15 June 2017 – Endorsed.

30.11 East Lothian Integration Joint Board – Minutes of 29 June 2017 – Endorsed.

30.12 Appointment of Members to Committees – The Board agreed to:-

- Mr A McCann to replacing Mrs S Allan as a voting member of the City of Edinburgh Integration Joint Board with the appointment to take effect from 1 January 2018.
- To appoint Professor T Humphrey to replace Mrs S Allan on the Healthcare Governance Committee with effect from 1 January 2018.
- To appoint Councillor F O'Donnell and Councillor R Henderson to the Acute Hospitals Committee with immediate effect.
- To appoint Professor T Humphrey, Councillor D Milligan and Councillor J McGinty to the Staff Governance Committee with immediate effect.
- To remove Mr J Oates from the Staff Governance Committee with immediate effect.
- To appoint Councillor R Henderson and Mr A McCann to the Finance and Resources Committee with immediate effect.
- To appoint Mr M Connor and Mr J Oates to the Audit & Risk Committee with immediate effect.
- To appoint Mrs C Hirst, Professor T Humphrey and Mr A McCann to the Strategic Planning Committee with immediate effect.

- To appoint Mr M Connor as the Chair of the Reference Committee with immediate effect.

30.13 Schedule of Board and Committee Meetings for 2018 – The Board approved the schedule of Board and Committee meetings for 2018.

Items for Discussion

31. Quality Management System – Next 5 Years

- 31.1 The Chairman commented that the discussion around the quality management system was fundamental as this was the way that the health system would be run in future. He commented that it was also important in respect of the financial position, regional planning and transformational Boards at national level and as a way of looking at ways of closing the financial gap and addressing manpower issues over time. It was noted there were no other plans in place to close the gap and as a consequence there was a need to be better at the deployment of quality improvement and innovation. The Chairman reminded the Board that it had been decided that the quality management system was the way of delivering these aspirations with there being a need to create innovation in the journey towards the end point.
- 31.2 The Chief Quality Officer commented that in response to feedback from Board members and others that he would provide a presentation to say a few more words around the context of the paper. The Board noted that the paper and the appendix supplemented by the presentation described the highlevel element of the quality management system over the next 5 years. The Chief Quality Officer commented that he was keen to develop and create a detailed roadmap for communication to service users including patients, workforce and key partners as he felt that cooperation was the key way to gain trust. The Board noted that work with patients would be about agreeing what they needed and for patients to help the NHS to assist in providing the tools necessary to delivery their desires. A key issue would be to build a better system to make coming into work and doing things better, real and viable for everybody.
- 31.3 The Board noted that there had been significant achievements around the quality management system in the previous 18 – 24 months although the paper focused on the future development of the process. The Board paper provided an infrastructure of past work with an info graphic showing some of the key achievements around the initial 6 programmes identified for focus.
- 31.4 The Board noted that one of the issues around the early programmes was how to engage with colleagues to address the inherent feeling that this was a process that was being done to them and that the extant quality programmes in place were not good enough. Moving forward therefore it was important to consider how to best engage with partners. The Board noted that over the previous 18 months there had been a significant focus on the acute stroke pathway with some significant improvements having been evidenced with thrombolysis being provided as an example. In the past NHS Lothian had struggled to achieve the stroke bundle target around the number of people admitted into the stroke unit. An early lesson in this

work programme had been around data quality and defining whether people had even had a stroke in the first instance.

- 31.5 The Board noted that cancer was another major issue for NHS Lothian and other Health Boards. The area of focus for the programme had been around the experience of people receiving chemotherapy. It was noted that most people had reported significant satisfaction with the service. However there had been unused capacity and waiting lists where the quality management approach had been used to look at what changes would be made to the service in discussion with patients and staff. Once the system had started to look at data other issues had emerged like the number of people who had started chemotherapy but did not finish the process. It was noted that the revelations through the data analysis had been challenging and had led to uncomfortable discussions around the realistic medicine agenda.
- 31.6 In terms of psychological therapies again the data had been looked at given that there was a huge range of services provided through a wide geographical spread. A significant amount of the work was reflected in pain management. The focused work had identified that whilst there was a waiting list that spaces on the list were not always being filled and that there was an issue around late cancellations and DNA (did not attend). A lot of work had subsequently been undertaken around the patient experience to try and understand why people did not turn up for appointments. A number of issues had been identified to improve the position while releasing 10% of clinical capacity and this had created enthusiasm in the service. The Board noted that the Royal Edinburgh Acute Services (REAS) quality improvement process had been the nearest to a text book establishment of a programme and had helped to build trust and had clarified the role of teamwork and leadership.
- 31.7 The Board were advised in respect of primary care and general practitioners that the government had announced the introduction of cluster lead models. The programme engagement had been around introducing an infrastructure following a three month process of engagement around what primary care actually needed. Consideration had been given to the known pressures in primary care along with the establishment of the cluster leads which had enabled NHS Lothian to engage and deliver benefits in primary care. The process had involved listening to general practitioners and discussing with them how to work through difficult areas.
- 31.8 In terms of the newer programmes a key area of focus had been around fractured neck of femur where there had been performance issues around how long people spent in hospital. The Board noted that the orthopaedics team had stepped forward and after working through the process had developed an understanding of what high quality care looked like. Initial work had been to address the challenge of replicating services previously provided at Liberton Hospital using a different pathway approach.
- 31.9 Work had also been undertaken around endoscopy which was a high volume service with an increasing waiting list. The service whilst willing to engage in the quality initiative programme had only agreed to do so if this were part of a sustainable process unlike earlier exercises where the engagement had been of a more short term nature. The Chief Quality Officer commented that the real measure of success had been that his staff were now reporting that endoscopy and other areas were making requests for additional resource.

- 31.10 The Board received a powerpoint presentation which provided a qualitative evaluation of the 6 programmes. The Chief Quality Officer undertook to share the evaluation with Board members. It was noted that one key message from the evaluation process was that high performing organisations focussed on 'seeds' and the 'soil' and it was hoped to learn from this approach. The presentation addressed a number of issues specifically raised by Board members including high performing organisations, disruptive innovation and sustaining information. It was noted that large public organisations generally found disruptive innovation difficult because of concerns around risk, accountability and financial budgets etc. Small start-up companies were generally more willing to take risk although there were examples of large companies where this approach had been successful.
- 31.11 The Chairman commented that the paper before the Board despite its title was not a 5 year plan but an excellent position statement of the future need and ambition. He suggested that recommendations 2.2 - 2.4 in the Board paper were the main areas of focus. He commented that the key issue moving forward was how to take the position statement before the Board and turn this into a deliverable action plan. He questioned whether this was an adequate definition of the platform for future planning.
- 31.12 The Board members welcomed the excellent presentation. The point was made that there was an issue about using language that engaged with people and it was felt that the presentation had used a more simplified narrative than that contained in the Board paper which was more professionally based. It was suggested that the presentation had crystallised activity and exiting work and there was now a need to breakdown the detail into concrete stages and timeframes with further highlights being given on some of the areas of work undertaken. The Chief Quality Officer commented that he took the point about the use of language and would liaise with communications about paraphrasing both the report and presentation for wider use. He would also bring back a more detailed and digestible paper to the next Board meeting.
- 31.13 The point was made about the perception of the sometimes glacial pace of change in the NHS with there being a need to consider the resource needed to address cultural issues and support the necessary infrastructure. It was noted there was a need to create a critical mass of expertise in order to ensure that the quality management system approach became the default way of problem solving. In that respect the Board would need to be assured that the correct pace was being used to address challenges and to take account of the thoughts in peoples minds.
- 31.14 The Chief Quality Officer commented on the timescale in the UK for this type of work and made reference to work undertaken in Salford and the East London Foundation Trust where it had taken between 6 to 10 years to reach their current position. The Chief Quality Officer advised that it was not his intention to spend 18 months on a reflection phase particularly given that there were services and collaboratives who were keen to set up quality programmes. He commented that he would expect a significant programme to develop in the next 6 months in line with training conditions. He commented that feedback to date had suggested that the paradise in the classroom versus realism in departments was a real learning lesson that would be addressed moving forward.

- 31.15 The point was made that language issues were reconcilable with the key issue being the need to stick with the programme and shine a light on areas that the Board was keen on looking at with a view to making an organisational improvement. It would be important for the organisation to recognise that the quality approach would be the way forward in future and would not disappear. The point was made that it would be important to consider how to best engage Health and Social Care Partnerships in this opportunity and to ensure that they were as inspired as other parts of the organisation. The point was made that it would be important to be able to see and evidence the links and impact with the overall strategic plans for NHS Lothian and the respective IJBs.
- 31.16 The Board welcomed the embedded nature of the plan and the fact that all teams were included and involved in the proposals moving forward. It was pointed out that there was a need to steer relentless leadership and communication. In terms of data gathering all Board members needed to challenge the quality of data and look at how it was gathered. The point was made that there might be benefit on focussing on junior doctors and younger members of staff who were keen to embrace new ideas and who would be confident enough to lead the leaders.
- 31.17 The Chief Quality Officer advised that there were cultural and sub-cultural issues within the NHS that would determine how best to progress this area of work. He commented that leadership programmes were already being prepared for senior people in Health and Social Care Partnerships and that social care measurement tools were being looked at with some already available nationally. The Board were advised that areas of productive opportunity for different parts of the organisation to work together were being explored although not all of this would happen in the first year of the plan.
- 31.18 The Chief Quality Officer advised that linkages with the NHS Lothian strategic plan and the IJB plans would be made through the Executive Team. He commented that resource would need to be spent with frontline team at grass root levels although further consultation would be required about how to free up time within existing work portfolios. In terms of the proposal to work through more junior members of staff it would be important to embed a culture that allowed mistakes to happen and people to be supported as a by-product of this process would be to bring on a new generation of leaders more quickly than would normally have happened.
- 31.19 The Vice Chair commented that she had attended the event launch at the Royal Edinburgh Acute Services and felt that this had been a text book process and if that could be build on then the benefits should be capable of being secured. She advised she had also Chaired a facilities group that the Chief Quality Officer had spoke at and this had helped colleagues to understand what the new quality approach hoped to achieve.
- 31.20 The point was made that in terms of forced disruption that the introduction of the IJBs and strategic community mechanisms could be regarded as such an event. The Chief Quality Officer in response to a question about locality teams advised that work was already underway in Edinburgh and this was progressing well.
- 31.21 The Chairman commented in respect of strategic planning links that there was the wider issue of needing to think about a top down and bottom up approach in guiding

the vision for the future. He suggested that this would be picked up through the NHS Lothian Strategic Planning Committee.

- 31.22 The Chief Executive commented that he agreed with the approach suggested by the Chairman. He commented that NHS Lothian was currently facing problems as it was losing financial resource as a response to market conditions and he felt this position was not sustainable. He referred to the production of the strategic plan, Our Health Our Care Our Future which described what NHS Lothian would like to do although this would be through incremental change by tweaking existing models rather than fundamental change. He commented that the quality management system was about the 'how' although there was no smart phone answer it was important to recognise that NHS Lothian alone would not come up with the answer. He commented that the cultural issue was about getting people to do the right thing and by clinical leads feeling empowered to do things differently to avoid waste and unwarranted variation. He suggested through this level of empowerment that the elements of disruptive innovation might emerge. The Chief Executive felt that it was important to create conditions to allow clinicians to develop services whilst at the same time running with the current paradigm whilst supporting the future aspirations.
- 31.23 The Chief Quality Officer advised that he would anticipate a road map and costed 5 year action plan to come forward to the Board meeting in February 2018.
- 31.24 The Board agreed the recommendations contained in the circulated paper.

32. Quality and Performance Improvement

- 32.1 The Chief Quality Officer advised that this was the second month of trialing the lighter documentation approach and provided a summary of the approach adopted. He advised that an excel file had been circulated with the papers with work underway to migrate that into a dashboard. The development of the dashboard format would be discussed at the November Board Committee Chairs meeting where views for further improvement would be discussed.
- 32.2 The Board noted in terms of cardiac arrests that the Lothian rates were improving as were HSMR and although there were not enough data points to recalibrate the position that assurance could be given that improvements were being made. It was noted in terms of waiting times for people requiring diagnostic treatments that the growth trend continued although there was significant work being undertaken to mitigate this position.
- 32.3 The point was made that some Board members might feel desensitised to some of the data. It was suggested that in future in the recommendation it would be useful to receive details of initiatives undertaken to tackle difficult cases and the impact these were having in respect of the risk register. The point was made that recommendation 2.1.1 should be amended to acknowledge rather than accept the performance position.
- 32.4 There was a view that the new format was a more appropriate way to reflect the organisations performance and reflected the delegated function to Board Committees whilst recognising that this remained work in progress. There was a

need to ensure compatibility around what was accepted as assurance by a Board Committee in terms of actions and timescales. There was also a need to escalate areas of red performance to the Board. There was a view that the Board had not considered the pace of assurance levels with the point being made that there was a need to consider how best to use data to provide assurance. The Chief Quality Officer advised that he was considering how best to bring data to life.

- 32.5 The Chief Quality Officer commented that it was difficult to portray things properly in a two dimensional paper. He suggested that it would be advantageous to link this to a video presentation showing snapshots of what services were doing. He was keen to be more creative about how to bring information to the Board. This would be linked with the ambitions around Board Committee delegated authority.
- 32.6 The point was made that future reporting would be helpful if it reflected on risks and accountabilities that NHS Lothian was solely responsible for versus those where there was a shared responsibility like delayed discharges. It was clear that there were different risks, responsibilities and accountabilities between the NHS Board and Health and Social Care Partnerships (HSCP). The Chief Quality Officer advised that to a large extent most issues were shared although this was not always immediately obvious and this would be an issue he would look into in further detail.
- 32.7 A comment was made that the governance process between the NHS Board and IJBs still lacked clarity. The Healthcare Governance Committee were addressing this with Chief Officers and expected a report back to the Committee early in the new year.
- 32.8 The Board were advised that there was a need to devise a way of collecting data as a by-product of providing care rather than 'feeding the beast'. It was noted that some of the data used in the reports was fairly historical. The Chief Quality Officer advised that he was unconvinced that the correct data was being collected. He commented however that he was attracted to collecting data as a by-product rather than an additional task.
- 32.9 In terms of Governance Committee's the point was made about how to take the measures that the Committee was being asked to obtain assurance on and provide data to influence how services were provided for example discussions with families about end of life care and to discuss with HSCPs what infrastructure was needed to treat people at home. There was therefore a need to understand the points of influence at Committee level.
- 32.10 The point was made that data demonstrated admission spikes where people were about to breach the 4 hour target. It was suggested that sometimes keeping patients in the emergency department for a little while longer would deliver a better patient outcome but would show as red performance. There was a feeling that there was a need for performance subtleties to be understood.
- 32.11 A workstream would be progressed to coordinate and synchronise who had ultimate responsibility for a range of issues including the strategic plan. This work would be led by the Deputy Chief Executive, Executive Nurse Director and the Chief Quality Officer.

- 32.12 The Chairman commented that the key theme emerging from the debate was how to obtain increased visible connectivity around the assurance work of Committees versus what information came to the Board. There was the additional complexity of the accountability question which had been agreed would be addressed through a separate workstream.
- 32.13 The point was made that the Board did receive an assurance report as part of the audit reporting process. There was a need for Governance Committees to escalate up to the Board issues that needed to be discussed at Board level. It was not felt that the balance was yet correct. The point was made however that it had been agreed in principle that this should be the forward approach.
- 32.14 The Board agreed the recommendations contained in the circulated paper subject to recommendation 2.1.1 starting with 'note' rather than 'accept'.

33. Integration Joint Boards Annual Performance Report 2016/17

- 33.1 The Board were advised that the Public Bodies (Joint Working) (Scotland) Act 2014 required every Integration Joint Board to publish a performance report by 31 July and to provide a copy of that report to the Health Board and Local Authority.
- 33.2 The Deputy Chief Executive advised that initially he had considered the production of a summarised performance report to the Board but had decided to produce a more fulsome version. He commented given the different nuances of the IJBs that the complex reports had been difficult to summarise.
- 33.3 The Board noted that whilst it would not be desirable to duplicate the performance management oversight which the Integration Joint Boards exercised that the NHS Board did need to monitor the strategic effect of the integration arrangements, both in terms of assessing their impact on functions and outcomes for service users, and with due regard to preparing for the formal review of the integration schemes at a later date.
- 33.4 The Chairman commented given that representatives of each Integration Joint Board were around the Board table that he would invite individuals to comment on their respective reports. The point was made that the format of the reports were in large part constrained by Scottish Government requirements. It was anticipated that given that the current reports covered the inception period and therefore required to focus on governance issues that future reports should have more detail around expectation and outcome. Mr Murray commented that he had useful examples of areas where improvements were happening and he would be happy to share these with colleagues.
- 33.5 The point was made that Integration Joint Boards had as part of their membership representatives from both the NHS and Councils. Councillor representatives operated with two trains of thought on the Integration Joint Board with one of these being the need to deliver on manifesto commitments although it was not felt that this hindered progress and it was felt that these influences would still exist albeit in a different guise under alternative arrangements.

- 33.6 The Board were advised that the new Integration Joint Boards were in their second year of operation and there were already green shoots of evidence of where value was being added. It would be important in terms of performance to ensure that agreements were complimentary and did not cause unnecessary tension. The Chairman advised that this point would emerge as part of the matters arising from the previous discussions.
- 33.7 The point was made that it would be worth considering commonality of reports in terms of the information provided given that there was a lot of shared objectives. The four Councils would want to have a view on any such approach given the need for reports to marry with their objectives. In any event it was anticipated that Integration Joint Boards would look at each others reports. There was a feeling that the Lothian Integration Joint Boards were further developed than in some other parts of the country. The Board were assured that integration schemes would be looked at in advance of the prescribed 5 year timeframe. From a finance perspective there was a need to look at integration schemes given current issues about the model of financial allocation because of differences in Integration Joint Board schemes. There was also a need to look at the relationship between resources and what was being achieved in terms of performance. There was a desire to end Integration Joint Boards working in isolation with there being a feeling that the NHS could facilitate the harmonisation process.
- 33.8 The point was made in terms of estates and private finance initiatives (PFI) that Integration Joint Boards could not take PFI into account as savings. The Director of Finance advised that this was an issue that could be taken back through the Strategic Planning Committee to look at the infrastructure available for delegated functions and how Integration Joint Boards through their own strategic plans ensured facilities were maximised and available to both partners.
- 33.9 A key issue moving forward would be to build on improved information mapping it into key performance indicators. It was felt that comparison / trend analysis was where future success lay and it would be important to share lessons of why improvements had happened and were sustained.
- 33.10 The Chairman commented that it would be important not to create a single data set amongst the four Integration Joint Boards solely for the convenience of NHS Lothian. The proper way forward would be to identify issues where a standard approach would add value over the whole piece and within each individual partnership.
- 33.11 It was suggested in terms of a concept of learning approach that the system should capitalise from having all 4 reports available as this provided a unique opportunity for oversight. There was felt to be opportunities to disseminate examples of good practice.
- 33.12 The Board were advised that all Integration Joint Boards would be subject to formal audit which would cover issues around best value against which the performance report would be the base information source. This would help with the desired conversion to commonality. The Chairman commented that it was incumbent on the Board to undertake further work and report back on alternatives that might be helpful.

- 33.13 The Chief Executive commented that a helicopter view of the 31 partnerships in Scotland showed that in one instance a lead agency approach had been undertaken resulting in a total of 30 Integration Joint Boards. He was of the view that of the 4 Lothian Integration Joint Boards that 1 was among the best performing in Scotland while 1 was amongst the poorer performers. He felt that the challenge was how to get whole system congruence around strategic objectives as picked up at the recent annual review meeting with the Minister. The point was made that Integration Joint Boards bore no financial risk as this was carried by the NHS Board and respective Councils. There was therefore a misalignment of risk across the whole system. Integration Joint Boards were separate statutory bodies and the NHS needed to work in partnership in each Health and Social Care Partnership to deliver a 7% cost saving. In Lothian unless there was a targeted reduction in budgets then the risk flowed into the acute sector. The Chief Executive felt there was a need for a whole system financial plan. The consequences around financial planning and decision making was that resources could only be spent once. He commented that the desire to close Liberton Hospital was an example of where the correct decision had been made to shift the balance of care whilst making a contribution to the financial bottom line. However one part of the organisation had been unable to deliver on their responsibility and this had left the hospital still part occupied with no ability to get the significant overhead released. This situation referred back to the need for whole system congruence. It was agreed there was a need to embrace Integration Joint Boards as disruptive innovators although there was a need for them to add to the overall picture and make a contribution. It was acknowledged that Integration Joint Boards did carry reputational risk around the financial position.
- 33.14 The Chairman commented that it would be important to take away the work referred to around data reconciliation. There was a need for coherence amongst and between financial planning issues. The Director of Finance would take forward issues around Integration Joint Board accounting and budgetary issues as well as what schemes looked like and report back in the first instance to the Finance and Resources Committee. It was agreed however that this only represented one aspect of the integration schemes.
- 33.15 The Board agreed the recommendations contained in the circulated paper.

34. Financial Position to August 2017 and Year End Forecast

- 34.1 The Board noted that the month 5 financial position had been considered by the Finance and Resources Committee. The month 6 data had not been available at that point.
- 34.2 The financial position in month 5 was reporting a £6m overspend with a year end outcome of £4.5m. The Finance and Resources Committee had discussed in detail the possibility of achieving a breakeven position at the year end. The current position was consistent with the financial plan with there having been a positive movement in drugs and GP prescribing costs across Scotland in terms of volume and price volatility. This position was welcomed although the reasons for it were not entirely understood meaning this would be an area of continued focus. It was positive that there had also been a slowing of acute drugs spend with some of this being as a result of efficiencies and controls that had been introduced. If the drug

cost position was maintained then this would have a positive impact in future financial years. The impact of the introduction of Scottish Medicines Consortium decisions was also discussed.

- 34.3 The key aspect of negative financial performance was within Edinburgh where there was no expectation of improvement at the year end. Dialogue was underway with colleagues from Edinburgh in respect of finance and performance. The reduction in research and development funding had not been anticipated and discussions were underway with the Research and Development Director to attempt to mitigate this position.
- 34.4 The Board noted that for the year end that the Finance and Resources Committee had taken limited assurance around breakeven. The position would be revisited following completion of the midyear review process. The exchange of missives for the Sciennes site provided financial flexibility as the deposit received could be played into the financial position. The delay in the new hospital opening also provided financial benefit. The objective was to deliver financial breakeven and where there were issues around performance in respect of access targets these needed to be looked at.
- 34.5 The Board noted that work around the relationship of Integration Joint Boards accounting and budgetary issues would conclude in-month. This would cover the approach to be taken in the event of any Integration Joint Board overspend.
- 34.6 The point was made as discussed during the quality presentation that NHS Lothian was nowhere near delivering a sustainable financial position. Although it was anticipated that the quality agenda moving forward would make a significant improvement.
- 34.7 Dr Williams commented that GPs in Lothian continued to prescribe in the most cost effective manner, and if they performed at the level of the Scottish average this would add £30m to the prescribing cost base each year. The Director of Finance endorsed that comment but pointed out that NHS Lothian was the lowest funded Board so spend was broadly in line with NRAC.
- 34.8 The Chair of the Finance and Resources Committee assured the Board that the Committee at each meeting rigorously considered the financial position with limited assurance having been taken. He commented for the benefit of those who had not been able to attend the annual review meeting with the Minister that the point had been made in respect of financial uncertainties and concerns with supplementary points also being made in both the public the private meetings with the Minister. Issues of concern were therefore being escalated and it was important that this was recognised.
- 34.9 The Chief Executive commented that at the annual review he had raised his anxieties about the inconsistency of the Scottish wide position and the need for this to be discussed with the Scottish Government. He pointed out that some Health Boards were performing better than Lothian in terms of waiting times but were forecasting a financial deficit that was being covered by the Scottish Government. NHS Lothian was close to financial breakeven but had a significant care deficit. The NRAC (National Resource Allocation Committee) position was discussed in terms of

the impact on the treatment time guarantee performance with it not being felt that the current arrangements represented an acceptable position for NHS Lothian. The Chief Executive sign posted to the Board that he and the Director of Finance were keen to discuss this position further with the Scottish Government as it was felt that spending increasing funds on waiting times was at odds with the need to reduce spend and make a 7% saving.

- 34.10 The Chief Executive reported that he had asked the Corporate Management Team to look at the position if incremental funding was made available and what the likely impact of this would be on waiting times performance. The Board would be asked to discuss this at its next few meetings with there being a view that ongoing discussions should include Councils and the Scottish Government. The Chief Executive was clear that NHS Lothian could not unilaterally spend money that it did not have. A proposition for future engagement would be brought forward in a substantive paper.
- 34.11 The point was made from a Board member who did not serve on the Finance and Resources Committee that it had been important to be reminded of the work to operate within budgets as well as being advised of the areas that were under funded. The point was made that because of the age and demographic of the population there was a need for Lothian to spend more than other Boards. It was not possible therefore to ignore the fact that NHS Lothian was under funded in some areas and that debate around this should be continued.
- 34.12 The Chairman advised that the point had been made to the Minister at the annual review and other foras about the fact that the imbalance caused underfunding in some areas and the key issue was about how to manage risk within that context. The Chief Executive reminded the Board that NHS Lothian was £12m below NRAC parity with another Health Board being funded at £50m above parity and he felt this was unjust in population health terms.
- 34.13 The Board noted that nursing was likely to be an issue in the current year as there were insufficient nurses in Scotland to staff beds. Currently some beds were being staffed by bank and agency. This resulted in additional financial pressures and also had impacts on patient safety. In terms of the research and development position it was suggested there was a need to look at creative ways of improving the position through using business opportunities to income generate.
- 34.14 The recommendations in the circulated paper were approved.

35. Next Board Development Session

- 35.1 The Board noted that the next Board Development Session would be held on Wednesday 1 November 2017, at 9.30am at the Scottish Health Service Centre, Crewe Road, Edinburgh, EH4 2LF

36. Date and Time of Next Meeting

- 36.1 The next meeting of Lothian NHS Board would be held at 9.30am on Wednesday 6 December 2017 at the Scottish Health Services Centre, Crewe Road, Edinburgh.

37. Invoking of Standing Order 4.8

- 37.1 The Chairman sought permission to invoke Standing Order 4.8 to allow a meeting of Lothian NHS Board to be held in private. The Board agreed to invoke Standing Order 4.8.

Action Required	Lead	Due Date	Action Taken	Outcome
APPOINTMENT OF MEMBERS TO COMMITTEES				
<p>The Board agreed to:-</p> <ul style="list-style-type: none"> • Mr A McCann to replacing Mrs S Allan as a voting member of the City of Edinburgh Integration Joint Board with the appointment to take effect from 1 January 2018. • To appoint Professor T Humphrey to replace Mrs S Allan on the Healthcare Governance Committee with effect from 1 January 2018. • To appoint Councillor F O'Donnell and Councillor R Henderson to the Acute Hospitals Committee with immediate effect. • To appoint Professor T Humphrey, Councillor D Milligan and Councillor J McGinty to the Staff Governance Committee with immediate effect. • To remove Mr J Oates from the Staff Governance Committee with immediate effect. • To appoint Councillor R Henderson and Mr A McCann to the Finance and Resources Committee with immediate effect. • To appoint Mr M Connor and Mr J Oates to the Audit & Risk Committee with immediate effect. • To appoint Mrs C Hirst, Professor T Humphrey and Mr A McCann to the Strategic Planning Committee with immediate effect. • To appoint Mr M Connor as the Chair of the Reference Committee with immediate effect. 	Secretariat	04/10/17	Members notified and distribution groups amended.	Complete
SCHEDULE OF BOARD AND COMMITTEE MEETINGS FOR 2018				
The Board approved the schedule of Board and Committee meetings for 2018.	Secretariat	04/10/17	Scheduled Circulated and placed online	Complete

Action Required	Lead	Due Date	Action Taken	Outcome
QUALITY MANAGEMENT SYSTEM – NEXT 5 YEARS				
<ul style="list-style-type: none"> It was suggested that the presentation had crystallised activity and exiting work and there was now a need to breakdown the detail into concrete stages and timeframes with further highlights being given on some of the areas of work undertaken. The Chief Quality Officer commented that he took the point about the use of language and would liaise with communications about paraphrasing both the report and presentation for wider use. He would also bring back a more detailed and digestible paper to the next Board meeting. 	SW	06/12/17		
<ul style="list-style-type: none"> The Chief Quality Officer advised that he would anticipate a road map and costed 5 year action plan to come forward to the Board meeting in February 2018. 	SW	07/02/18		
<ul style="list-style-type: none"> The Board agreed to note the five recommendations described in Appendix 1:- <ul style="list-style-type: none"> ➤ To become a High Performing Organisation (HPO) through transformational change across nine system-wide domains ➤ To demonstrate ‘on the ground’ evidence of a HPO that creates optimal conditions for continuous quality improvement and disruptive innovation at microsystem level ➤ To invest in effective ‘catalytic’ infrastructure to accelerate change ➤ To align and deploy change management infrastructure and approaches in the pursuit of aspirational strategic objectives ➤ To engage with patients, workforce and key partners and create a detailed roadmap for the next 18 months and broader vision for the coming five years 				
<ul style="list-style-type: none"> The Board Supported the further development of these recommendations into a comprehensive and costed five-year change programme. 	SW			
<ul style="list-style-type: none"> Agreed to Invite a future paper describing additional investment to support this five year programme, including a proposal for endowment funding 	SW			

<ul style="list-style-type: none"> • Invite a future paper describing a detailed implementation plan breaking down the key recommendations into a series of SMART actions 	SW			
INTEGRATION JOINT BOARDS ANNUAL PERFORMANCE REPORT 2016/17				
<p>The Board noted that whilst it would not be desirable to duplicate the performance management oversight which the Integration Joint Boards exercised that the NHS Board did need to monitor the strategic effect of the integration arrangements, both in terms of assessing their impact on functions and outcomes for service users, and with due regard to preparing for the formal review of the integration schemes at a later date.</p> <p>From a finance perspective there was a need to look at integration schemes given current issues about the model of financial allocation because of differences in Integration Joint Board schemes. There was also a need to look at the relationship between resources and what was being achieved in terms of performance. There was a desire to end Integration Joint Boards working in isolation with there being a feeling that the NHS could facilitate the harmonisation process.</p> <p>The point was made in terms of estates and private finance initiatives (PFI) that Integration Joint Boards could not take PFI into account as savings. The Director of Finance advised that this was an issue that could be taken back through the Strategic Planning Committee to look at the infrastructure available for delegated functions and how Integration Joint Boards through their own strategic plans ensured facilities were maximised and available to both partners.</p> <p>A key issue moving forward would be to build on improved information mapping it into key performance indicators. It was felt that comparison / trend analysis was where future success lay and it would be important to share lessons of why improvements had happened and were sustained.</p>	<p>JC</p> <p>JC</p> <p>SG</p> <p>JC</p>			

<p>The Chairman commented that it would be important not to create a single data set amongst the four Integration Joint Boards solely for the convenience of NHS Lothian. The proper way forward would be to identify issues where a standard approach would add value over the whole piece and within each individual partnership.</p> <p>It was suggested in terms of a concept of learning approach that the system should capitalise from having all 4 reports available as this provided a unique opportunity for oversight. There was felt to be opportunities to disseminate examples of good practice.</p> <p>The Board were advised that all Integration Joint Boards would be subject to formal audit which would cover issues around best value against which the performance report would be the base information source. This would help with the desired conversion to commonality. The Chairman commented that it was incumbent on the Board to undertake further work and report back on alternatives that might be helpful</p> <p>The Chairman commented that it would be important to take away the work referred to around data reconciliation. There was a need for coherence amongst and between financial planning issues. The Director of Finance would take forward issues around Integration Joint Board accounting and budgetary issues as well as what schemes looked like and report back in the first instance to the Finance and Resources Committee. It was agreed however that this only represented one aspect of the integration schemes.</p>	JC			
	JC			
	JC/SG			
	SG			
QUALITY AND PERFORMANCE IMPROVEMENT				
<ul style="list-style-type: none"> The development of the dashboard format would be discussed at the November Board Committee Chairs meeting where views for further improvement would be discussed. 	SW	21/11/17	Chief Quality Officer presenting to Board Chairs Committee on 21/11/17	Complete
FINANCIAL POSITION				
<ul style="list-style-type: none"> The Chief Executive was clear that NHS Lothian could not unilaterally spend money that it did not have. A proposition for future engagement would be brought forward in a substantive paper. 	SG	06/12/17		

NHS Lothian Corporate Risk Register**1 Purpose of the Report**

- 1.1 The purpose of this report is to set out NHS Lothian's Corporate Risk Register for assurance.

Any member wishing additional information should contact the Executive Lead in the advance of the meeting.

2 Recommendations

The Board is recommended to:

- 2.1 Acknowledge the corporate risks are undergoing review to improve the expression of risk, controls and actions.
- 2.2 Acknowledge the Healthcare Governance Committee in November 2017 reduced the Healthcare Associated Infection risk to Medium due to current performance.
- 2.3 Accept significant assurance that the current Corporate Risk Register contains all appropriate risks, which are contained in section 3.2 and set out in detail in Appendix 1 (updates are in bold).
- 2.4 Accept that as a system of control, the HCG Governance is assessing the levels of assurance provided with respect to plans in place to mitigate the risks pertinent to the committee.

3 Discussion of Key Issues

- 3.1 The Board has approved a number of changes to the risk register as initiated as part of the risk review process. A number of risks have been under significant review and/or change.

These include:-

- Approving an additional patient focused access to treatment risk
- Change in title from 'Achievement of National Waiting Times' to 'Access to Treatment (Organisation Risk)'. Strengthening of controls within the current

performance and raising this risk from High 16 to Very High 20, given the current performance

- Change in title from 'Unscheduled Care: Delayed Discharges' to 'Timely Discharge of Inpatients', as this title is more illustrative of the risk
- Review the Patient Experience risk and reduced in severity from Very High to High.

As stated above, the corporate risks are undergoing review which is to be completed by November 2017. The aim of the review is to improve clarity of expression of risks, controls and actions to maximise effectiveness of the process which was an Audit & Risk Committee agreed risk management objective for 2017/18. Table 1 below illustrates progress with this review.

Table 1

Datix ID	Risk Title	
3600	The scale or quality of the Board's services is reduced in the future due to failure to respond to the financial challenge.	Risk has been reviewed and approved by the Finance & Resources Committee in July 2017. Approved by August 2017 Board.
3203	Unscheduled Care: 4 hour Performance	Risk to be reviewed and to be approved by Acute Services Committee in November 2017
3726	Timely Discharge of Inpatients (Previously Unscheduled Care: Delayed Discharge)	Risk agreed at June 2017 Board
3829	GP Workforce Sustainability	Risk agreed at June 2017 Board
3211	Access to Treatment – Organisation Risk (Previously Achievement of National Waiting Times)	Risk agreed at June 2017 Board
4191	Access to Treatment Risk – Patient (New Risk May 17)	Risk agreed at June 2017 Board and also reviewed by HCG in July 2017
3454	Management of Complaints and Feedback	Risk reviewed and grading reduced. Supported by September HCG Committee
1076	Healthcare Associated Infection	HCG in November 2017 approved a reduction in grade to Medium due to current performance.
3480	Management of Deteriorating Patients in Acute Inpatient Settings (previously Delivery of SPSP Work Programme)	Risk reviewed and approved at September HCG Committee prior to submission to October Board which approved this risk.
3527	Medical Workforce Sustainability	Risk reviewed and approved by the Staff Governance Committee in October 2017.

Datix ID	Risk Title	
3189	Facilities Fit for Purpose	Risk to be reviewed at Finance & Resources Committee, January 2018
3455	Management of Violence & Aggression	Risk reviewed in draft.
3828	Nursing Workforce – Safe Staffing Levels	Risk reviewed and approved at October 2017 Staff Governance Committee
3328	Roadways/Traffic Management	Risk reviewed and approved at October 2017 Staff Governance Committee.

3.2 As part of our systematic review process, the risk registers are updated on Datix on a quarterly basis at a corporate and an operational level. Risks are given an individual score out of 25; based on the 5 by 5 Australian/New Zealand risk scoring matrix used; 1 being the lowest level and 25 being the highest. The low, medium, high and very high scoring system currently used, is based on the same risk scoring matrix, remains unchanged.

3.3 There are currently 14 risks in total in Quarter 1; the 6 risks at Very High 20 are set out below.


1. The scale or quality of the Board's services is reduced in the future due to failure to respond to the financial challenge *
2. Achieving the 4-Hour Emergency Care standard *
3. Timely Discharge of Inpatients *
4. General Practice Sustainability
5. Access to Treatment (organisational risk)
6. Access to Treatment (patient risk)

* Outwith risk appetite as illustrated in Table 3.

3.3.1 The Board and Governance committees of the Board need to assure themselves that adequate improvement plans are in place to attend to the corporate risks pertinent to the committee. These plans are set out in the Quality & Performance paper presented to the Board and papers are considered at the relevant governance committees. Governance Committees continue to seek assurance on risks pertinent to the committee and level of assurance along with the summary of risks and grading is set out below in Table 2.

3.3.2 If you have an electronic version of this report, links to each risk in Appendix 1 have been embedded in the below table (please click on individual Datix risk number in the table).

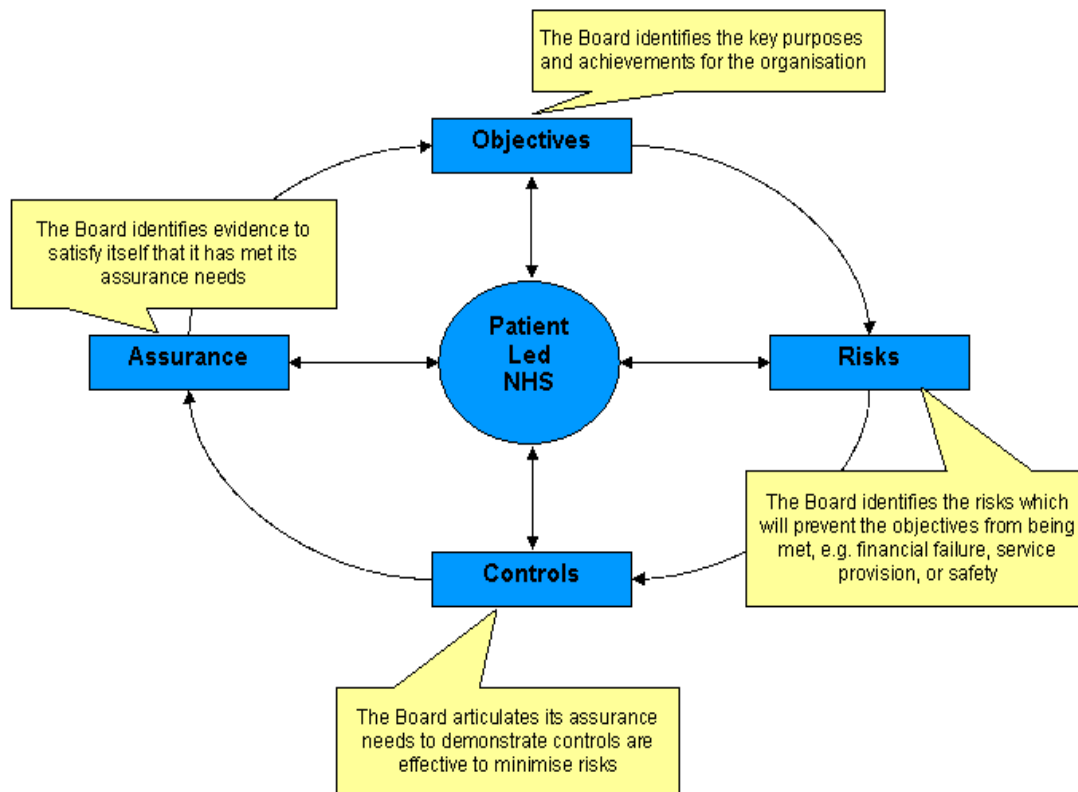
Table 2

Datix ID	Risk Title	Assurance Review Date	Initial Risk Level	Oct-Dec 2016	Jan-Mar 2017	Apr-Jun 2017	Jul-Sep 2017
3600	The scale or quality of the Board's services is reduced in the future due to failure to respond to the financial challenge. (Finance & Resources Committee)	March 2017 Limited assurance with respect to financial balance 2017/18. July F&R considered the revised risk and accepted limited assurance.	High 12	Very High 20	Very High 20	Very High 20	Very High 20
3203	Unscheduled Care: 4 hour Performance (Acute Services Committee) (Set out in Quality & Performance Improvement Report)	February 2017 Moderate Assurance; Members approved the recommendations laid out in the paper and accepted moderate assurance, but asked for more detail in the next paper on the greater impact of the measures taken to manage unscheduled care. Paper received and moderate assurance accepted due to performance over the last 4 quarters. In November 2017, Acute Services Committee continued to accept moderate assurance.	High 10	Very High 20	Very High 20	Very High 20	Very High 20
3726	Timely Discharge of Inpatients (Previously Unscheduled Care: Delayed Discharge) (HCG Committee) (Set out in Quality & Performance Improvement Report)	January 2017 Limited assurance. No clear improvement plans in place to mitigate the risk. A plan was presented to the September 2017 HCG committee who accepted limited assurance and ask for regular updates from the Chief Officers.	Very High 20	Very High 20	Very High 20	Very High 20	Very High 20
3829	GP Workforce Sustainability (HCG Committee)	March 2017. Limited assurance. No clear improvement plans in place at March 2017. Plans presented in May 2017. September 2017 HCG continued to accept limited assurance, but more confident that the plans in place will mitigate this risk over time and asked for regular updates.	Very High 20	Very High 20	Very High 20	Very High 20	Very High 20
3211	Access to Treatment – Organisation Risk (Previously Achievement of National Waiting Times) (Acute Services Committee)	July 2017. Limited Assurance. The Committee was impressed with the work in progress but also disappointed that performance remained of concern with the volume of	High 12	High 16	 Very High 20	Very High 20	Very High 20

Datix ID	Risk Title	Assurance Review Date	Initial Risk Level	Oct-Dec 2016	Jan-Mar 2017	Apr-Jun 2017	Jul-Sep 2017
	Committee) (Set out in Quality & Performance Improvement Report)	patients waiting over 12 weeks. Recognition that systems of control were in place was accepted.					
4191	Access to Treatment Risk – Patient (New Risk May 17) (Acute Services Committee)	Considered at HCG July 2017. Continues to be limited assurance and update to come regularly.	Very High 20			Very High 20	Very High 20
3454	Management of Complaints and Feedback (HCG Committee) (Set out in Quality & Performance Improvement Report)	July 2017. Moderate assurance with respect to a plan being in place, but need assurance that the plan will lead to an improvement and asked for an update every 2 nd meeting. November 2017 HCG considered and moderate assurance accepted.	High 12	Very High 20	Very High 20	High 16 ↓	High 16
1076	Healthcare Associated Infection (HCG Committee) (Set out in Quality & Performance Improvement Report)	July 2017. Overall moderate assurance due to SAB infections, but significant with respect to CDI HEAT target achievement. Committee asked for the risk grading to be reviewed in light of current performance. Incorporated into the Risk Review process. Risk reviewed and grading reduced and approved at November 2017 HCG due to current performance.	High 12	High 16	High 16	High 16	Medium 9 ↓
3480	New Title - Management of Deteriorating Patients in Acute Inpatients (previously Delivery of SPSP Work Programme) (HCG Committee & Acute Services Committee) (Set out in Quality & Performance Improvement Report)	July 2017 Significant assurance received for Patient Safety Programme with the exception of the management of deteriorating patients. Committee in March. Review presented to HCG July 2017. Significant assurance re robustness of the review, limited as actions agreed that will lead to an improvement as changes not tested at scale.	High 16	High 16	High 16	High 16	High 16
3527	Medical Workforce Sustainability (Staff Governance Committee)	March 2017 Moderate Assurance that all reasonable steps are being taken to address the risks. Paper requested for 26 th July meeting. Risk considered in paper at October 2017 meeting and continues to accept moderate assurance.	High 16	High 16	High 16	High 16	High 16

Datix ID	Risk Title	Assurance Review Date	Initial Risk Level	Oct-Dec 2016	Jan-Mar 2017	Apr-Jun 2017	Jul-Sep 2017
3189	Facilities Fit for Purpose (accepted back on the Corporate Risk Register October 2015) (Finance & Resources Committee)	Risk reviewed in draft. To be considered by F&R Committee in January 2018.	High 15	High 16	High 16	High 16	High 16
3455	Management of Violence & Aggression. (Reported at H&S Committee, via Staff Governance Committee)	March 2017 Limited Assurance. Pending the review of the management of violence and aggression commissioned by Medical Director. Findings of review to be considered by Staff Governance on 26 th July 2017 and inform the management of this risk.	Medium 9	High 15	High 15	High 15	High 15
3828	Nursing Workforce – Safe Staffing Levels (Staff Governance Committee)	March 2017 Moderate assurance that systems are in place to manage this risk as and this risk will be regularly reviewed particularly with respect to District nursing. Staff Governance in October 2017 considered a paper on this risk and continues to accept moderate assurance.	High 12	Medium 9	Medium 9	Medium 9	Medium 9
3328	Roadways/ Traffic Management (Risk placed back on the Corporate Risk Register December 2015) (Reported at H&S Committee, via Staff Governance Committee)	March 2017 Moderate Assurance that issues are regularly reviewed, managed and improvements developed as supported by recent audits. Further report requested for 26 th July meeting. Staff Governance Committee considered report at October 2017 meeting and continues to accept moderate assurance.	High 12	High 12	High 12	High 12	High 12

3.4 Since mid-2016/17 NHS Lothian has been using standard levels of assurance in its system of governance, and the Corporate Governance Manager has prepared some internal guidance on Corporate Governance and Assurance set out below and assurance levels are now routinely being used in governance committees.



Source: Health Care Standards Unit, as referred to in the [Oxford University Hospitals Foundation NHS Trust Assurance Strategy](#) (September 2015)

- 3.5 The Audit & Risk Committee has raised a challenge to explore the mechanisms by which the Board's Corporate Objectives inform NHS Lothian's Risk Profile and support the achievement of the Board's Corporate Objectives.

In response, a workshop has been convened for late November 2017 with the members of the Audit & Risk Committee and the Chairs of the other governance committees. The session will reflect on the 2017/18 Corporate Objectives and identify key risks to delivery of those objectives and the impact of these risks. The session will conclude with a reflecting of what has been learned from the exercise.

- 3.6 A session took place in October 2017 to develop sustainable arrangements for the Integration Joint Boards (IJBs) to engage with the NHS Lothian internal audit function and the NHS Lothian Audit & Risk Committee. To inform this session risks were mapped across Health & Social Care Partnerships, NHS Lothian and IJBs, and the mapping illustrated considerable commonality across the system.

3.7 Risk Appetite Reporting Framework

NHS Lothian's Risk Appetite Statement is:-

"NHS Lothian operates within a low overall risk appetite range. The Board's lowest risk appetite relates to patient and staff safety, experience and delivery of effective care. The Board tolerates a marginally higher risk appetite towards delivery of corporate objectives including clinical strategies, finance and health improvement."

Risk Appetite relates to the level of risk the Board is willing to accept to achieve its corporate objectives and measures has been identified as set out in Table 3 to provide a mechanism for assessing the delivery of these objectives. Green denotes Appetite met, Amber denotes Tolerance met but not Appetite and Red denotes Tolerance not met.

Table 3

	Current Status	Current Position	Data Report
Corporate Objective 3 – Improve Quality, Safety & Experience Across the Organisation (LDP 2016-17 - 2.3 Deliver Safe Care) Low Risk Appetite			
<ul style="list-style-type: none"> Scotland target to reduce acute hospital mortality ratios by 10% with a tolerance of 15-20% by Dec 2018¹ All sites within HS limits & <=1 	Green	0.77	Quality & Performance Improvement Report (HCG Committee)
<ul style="list-style-type: none"> Achieve 95% harm free care with a tolerance of 93-95% by Dec 2015 	Green	99.9%	Patient Safety Programme Annual Report (Jan 2017) (HCG Committee)
<ul style="list-style-type: none"> Achieve 184 or fewer SAB by March 2018 with a tolerance of 95% against target. n=193 to 184 	Green	125	Quality & Performance Improvement Report (HCG Committee)
<ul style="list-style-type: none"> Achieve 262 or fewer C.Diff by March 2018 with a tolerance of 95% against target. n=275 to 262 	Green	103	Quality & Performance Improvement Report (HCG Committee)
<ul style="list-style-type: none"> Reduce falls with harm by 20% with a tolerance of 15-20% by March 2017 	Green	53%	Quality & Performance Improvement Report (HCG Committee)
Corporate Objective 3 – Improve Quality, Safety & Experience Across the Organisation (LDP 2016-17 - 2.4 Deliver Person-centred Care) Low Risk Appetite			
<ul style="list-style-type: none"> Patients would rate out of 10 their care experience as 9, with a tolerance of 8.5 	Amber	8.90	Quality & Performance Improvement Report (HCG Committee)
<ul style="list-style-type: none"> 90% of staff would recommend NHS Lothian as a good/very good place to work by Dec 2015 with a tolerance of 93-95% 	Red	74%	iMatters first report. Frequency of reporting to be confirmed. (Staff Governance Committee)
<ul style="list-style-type: none"> Staff absence below 4% with a 5% tolerance (4.2%) 	Red	4.63%	Quality & Performance Improvement Report (Staff Governance Committee)
Corporate Objective 3 – Improve Quality, Safety & Experience Across the Organisation (LDP 2016-17 - 2.7 Scheduled Care & Waiting Times) Low Risk Appetite			
<ul style="list-style-type: none"> 90% of patients of planned/elective patients commence treatment within 18 weeks with a tolerance of 85-90% 	Red	78.3%	Quality & Performance Improvement Report (Acute Hospitals Committee)
<ul style="list-style-type: none"> 95% of patients have a 62-day cancer referral to treatment with a tolerance of 90-95% 	Red	88.5%	Quality & Performance Improvement Report (Acute Hospitals Committee)

¹ This is a Scotland-wide target which NHS Lothian will contribute to.

	Current Status	Current Position	Data Report
Corporate Objective 3 – Improve Quality, Safety & Experience Across the Organisation (LDP 2016-17 - 2.8 Appropriate Unscheduled Care) Low Risk Appetite			
<ul style="list-style-type: none"> 98% of patients are waiting less than 4 hours from arrival to admission by Sept 2014 with tolerance of 93-98% 	Amber	93.8%	Quality & Performance Improvement Report (Acute Hospitals Committee)
<ul style="list-style-type: none"> No patients will wait more than 14 days to be discharged by April 2015 with an appetite of 14 days, and a tolerance of 15 days * 	Red	239	Quality & Performance Improvement Report (HCG Committee)
<ul style="list-style-type: none"> No of all patients admitted to hospital with an initial diagnosis of stroke should receive the appropriate elements of the stroke care bundle, with an appetite of 80% and a tolerance of 75%. 	Amber	79.2%	Quality & Performance Improvement Report for management actions (Acute Hospitals Committee)
Corporate Objective 1 – Protect & Improve the Health of the Population. Medium Risk Appetite			
<ul style="list-style-type: none"> Sustain and embed successful smoking quits at 12 weeks post quit, in the 40% SIMD areas, with a 10% tolerance (36-40%). (Target = 293 minimum per quarter). 	Red	233	Quality & Performance Improvement Report (HCG Committee)
<ul style="list-style-type: none"> At least 80% of women in each SIMD percentile will be booked for antenatal care by 12th week of gestation, with a 10% tolerance (69.3-77%) 	Green	Lowest SIMD is SIMD 4 – 88.4%	Quality & Performance Improvement Report (HCG Committee)
Corporate Objective 5 – Achieve Greater Financial Sustainability & Value (LDP 2016-17 – 3.1 Financial Planning) Medium Risk Appetite			
<ul style="list-style-type: none"> In the preceding month, the monthly overspend against the total core budget for the month is not more than 0.5% 	Green	£724k underspend at period 6 equating to 0.5%	Period 6 Finance Report (Finance & Resources Committee)
<ul style="list-style-type: none"> For the year to date, the overspend against the total core budget for the year to date is not more than 0.1% 	Red	£5,903k overspend for the year-to-date, equating to 0.8%	Period 6 Finance Report (Finance & Resources Committee)

* Note: There is now a national target for Delayed Discharges with patients waiting no more than 72 hours to be discharged. The above Delayed Discharge targets will be replaced with the 72 hour target once they have been met.

3.7.1 The above table reporting would suggest NHS Lothian is outwith risk appetite on corporate objectives where low risk appetite with respect to Patient/Staff Experience and Access to Treatment, and medium appetite with respect to Finance. It should be noted the improvements in Safe Care.

4 Key Risks

- 4.1 The risk register process fails to identify, control or escalate risks that could have a significant impact on NHS Lothian.

5 Risk Register

- 5.1 Not applicable.

6 Impact on Health Inequalities

- 6.1 The findings of the Equality Diversity Impact Assessment are that although the production of the Corporate Risk Register updates, do not have any direct impact on health inequalities, each of the component risk areas within the document contain elements of the processes established to deliver NHS Lothian's corporate objectives in this area.

7 Duty to Inform, Engage and Consult People who use our Services

- 7.1 This paper does not consider developing, planning and/or designing services, policies and strategies.

8 Resource Implications

- 8.1 The resource implications are directly related to the actions required against each risk.

Jo Bennett

Associate Director for Quality Improvement & Safety

20 November 2017

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List of Appendices

Appendix 1: Summary of Corporate Risk Register

Corporate Risk Register

Appendix 1

ID	NHS Lothian Corporate Objectives	Title	Description	Controls in place	Updates	Adequacy of controls	Risk level (current)	Risk level (Target)	Risk Owner	Risk Handler	Assurance
3600	3: Secure Value & Financial Sustainability	The scale or quality of the Board's services is reduced in the future due to failure to respond to the financial challenge.	<p>There is a risk that the Board does not systematically and robustly respond to the financial challenge to achieve its strategic plan.</p> <p>This could be due to a combination of: uncertainty about the level of resource availability in future years, the known demographic pressure which brings major potential service costs and increasing costs of new treatment options, e.g. new drugs, leading to a reduction in the scale or quality of services.</p> <p>NOTE: During the last few years, NHS Lothian has been reliant on non-recurring efficiency savings, which has exacerbated the requirement to implement plans which produce recurring savings.</p>	<p>The Board has established a financial governance framework and systems of financial control.</p> <p>Finance and Resources Committee provides oversight and assurance to the Board.</p> <p>Quarterly review meetings take place, where acute services COO, site/service directors in acute, REAS and joint directors in Primary Care are required to update the Director of Finance on their current financial position including achieve delivery of efficiency schemes.</p> <p>Rationale for Adequacy of Control: A combination of uncertainty about the level of resource availability in future years combined with known demographic pressure which brings major potential service costs, requires a significant service redesign response. The extent of this is not yet known, nor tested.</p>	<p>Risk reviewed for period July-Sep 2017</p> <p><u>Finance update at 20 October 2017 Board Meeting</u></p> <p><u>At 2 August 2017 Board Meeting, it was reported that the anticipated 2017/18 funding gap of £22m has been reduced to £13.4m. However, the overspend to date and recurring financial balance continues to give significant cause for concern.</u></p> <p>The medium term financial plan will have a renewed focus on the national opportunities identified via the national Value and Sustainability work streams. The positive impact on finance from the Quality initiatives work on reducing unwarranted variation and waste will also be reflected in the plan.</p> <p>The Board has agreed to produce a medium term strategic financial plan, with the specific aim of identifying a plan for the Board to return to recurring financial balance.</p> <p>The National Health and Social Care Delivery Plan has requested that Regional service models are enhanced to support delivery of recurring financial balance. The Board is committed to working with regional partners to deliver this aim.</p> <p>Risk Grade/Rating remains Very High 20</p>	Inadequate; control is not designed to manage the risk and further controls & measures required to manage the risk	Very High 20	Medium 6	Director of Finance	Deputy Director of Finance	Finance & Resource Committee

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3203	2: Improve the quality and safety of health care	Unscheduled Care: 4 hour Performance	<p>There is a risk that NHS Lothian will fail to meet the 4 hour performance target for unscheduled care which could mean that patients fail to receive appropriate care, due to volume and complexity of patients, staffing, lack and availability of beds, lack of flow leading to a delay to first assessment, a delay in diagnosis and therefore in treatment for patients and a reputational risk for the organisation.</p>	<p>A range of governance controls are in place for Unscheduled Care notably:</p> <p>Board Monthly NHS Lothian Board oversee performance and the strategic direction for Unscheduled Care across the NHS Lothian Board area.</p> <p>NHS Lothian's Winter Planning Project Board is now established as NHS Lothian Unscheduled Care Committee in collaboration with the Integrated Joint Boards to promote sustainability of good performance all year round. The Unscheduled Care Programme Group chaired by West Lothian HSCP joint director meet on a weekly basis, monitoring performance reporting and unscheduled attendances.</p> <p>Winter Preparedness is on the Agenda of the Unscheduled Care Committee seasonally, however notable improvements through planning will be embedded as systems to promote sustainable access performance and mitigate risk.</p> <p>The winter planning process has started earlier this year, with agreement in place on schemes to be funded, and sites are now progressing to implementation.</p> <p>The approved Winter Plan outlined the approach to supporting performance over the winter period and beyond. This reflected a number of actions namely:</p> <ul style="list-style-type: none"> • Winter Readiness plans established for each site • Plans focused on discharge capacity as well as bed capacity for 2017-18 • Clear measures in terms of escalation procedures • Measures to counter any demand unmatched to support winter and patient flow • A focus on DD and POC to ensure sustainable performance throughout the winter period liaising closely with IJB partner organisations including <ul style="list-style-type: none"> - Weekly teleconference with IJBs - Trajectories in place to support reduction in DD for each partnership - Agreed data set to assist with developing a wider capacity plan across all health & social care partnerships <p>A number of performance metrics are considered and reviewed weekly, including:</p> <ul style="list-style-type: none"> - 4 hour Emergency Care Standard and performance against trajectory - 8 and 12 hour breaches - Attendance and admissions - Delayed Discharge (see Corporate Risk ID 3726) - Boarding of Patients - Length of Stay (LOS) - Cancellation of Elective Procedures 	<p>Risk Reviewed October 2017</p> <p>Risk to be reviewed and approved by Acute Services Committee in November 2017</p> <p>Updates highlighted below Risk Grade/Rating remains Very High/20</p> <p>Through the Unscheduled Care Committee work continues in line with the Scottish Governments 6 Essential Actions initiative. Each site is taking forward a set of actions to support a step change in performance. Priority interventions are focussing on:</p> <ul style="list-style-type: none"> • Clinical Leadership • Escalation procedures • Site safety and flow huddles • Workforce capacity • Basic Building blocks models • Proactive discharge • Flow through ED/ Acute Receiving • Smooth admission/ discharge profiling • Effective capacity and Demand models being developed re in /out , BBB methodology • Patients not beds principle • Daily Dynamic Discharge/check, chase, challenge methodology rolled out across the acute sites • Plan to roll out across the whole system and partnerships campuses <p>The regular quarterly report on 6EA progress is due to be submitted to the Scottish Government at the end of October.</p> <p><u>Debrief from winter was in May 2017. NHS Lothian achieved target of 95% performance in 4 of the last 6 months (January to June 2017).</u></p> <p>Winter plans for 2017/18 are based on lessons learned from 2016/17 debrief. Focus is on integrated approach to plans, reducing attendances, unscheduled admission length of stay and timely discharge</p>	Adequate but partially effective; control is properly designed but not being implemented properly	Very High 20	Low 1	Jim Crombie	Jacquie Campbell (NHSL) / Jim Forrest (W/Lothian IJB)	Acute Services Committee

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3726	2: Improve the quality and safety of health care	Timely Discharges of Inpatients	<p>There is a risk that patients are not being discharged in a timely manner resulting in sub optimal patient flow impacting on poor patient, staff experience and outcome of care.</p>	<p>A range of management/governance controls are in place for Unscheduled Care notably:</p> <p>NHS Lothian Board (bi monthly) oversee performance and the strategic direction for Delayed Discharges across the Lothian Board area.</p> <p>The bi-monthly Acute Hospitals Committee as well as formal SMT and SMG meetings.</p> <p>Further weekly briefings to the Scottish Government on performance across the 4 main acute sites (data analysis from EDISON)</p> <p>NHS Lothian's Winter Planning Project Board is now established as the NHSL Unscheduled Care Committee in collaboration with the Integrated Joint Boards</p> <p>Integrated Joint Boards will report via the Deputy Chief Executive to Scottish Government on the delivery of key targets which include Delayed Discharges and actions in response to performance.</p> <p>Delayed discharges are examined and addressed through a range of mechanisms by IJBs which include:</p> <ul style="list-style-type: none"> Performance Management. Each Partnership has a trajectory relating to DD performance and these are reported through the Deputy Chief Executive Oversight of specific programmes established to mitigate this risk for example Edinburgh Flow Board and/or Strategic Plan Programme Board (East Lothian) 	<p>Risk reviewed and approved at June 2017 Board</p> <p>Risk Grade/Rating remains Very High/20</p> <p>Action to help tackle DD across NHS Lothian include:</p> <ul style="list-style-type: none"> Criteria led discharge pilots Downstream hospitals to have admission and discharge quotas similar to main acute sites. A capacity and demand exercise is being implemented re hours of care at home required across the City of Edinburgh and other councils Locality based Services (hubs) being developed to support pulling patients out of hospital and promoting prevention of admission and reducing delayed discharges Evidence Based Daily Dynamic Discharge is rolled out across the whole system in collaboration with Scottish Government Improvement Team Extending Hospital to Home and HAH capacity Additional capacity to support weekend discharge (diagnostic, pharmacy, AHPs, transport etc) Twice daily Teleconference to plan and match transfer of care to right place for patients Weekly teleconference with the IJB Chief Officers, chaired by WLH&SCP Chief Officer and Deputy Chief Executive Joint Venture with CEC to create additional models of interim care capacity – Gylemuir/Liberton Discharge Hubs in the Royal Infirmary of Edinburgh, the Western General Hospital and St John's Hospital Orthopaedic Pathway Review <p>The Winter Planning Board/ NHS Lothian Unscheduled Care Committee are overseeing the necessary actions in support of sustained performance during the winter period and beyond. Lothian's approved Winter Plan sets out the key requirements in supporting service delivery and access performance during winter and beyond. Actions include:</p> <ul style="list-style-type: none"> Development of robust site winter readiness plans Focus on Capacity and Demand in relation to beds and hours of care requirements Clear measures in terms of escalation procedures Counter any demand as a result of the extended 4 day break during the festive period. Focus on DD and POC liaising with IJB Partner organisations to support patient flow and sustainable performance throughout the winter period. Agreed Trajectories in place for each partnership and being monitored to support capacity to meet demand Agreed data set to assist with developing a wider capacity plan that covers all health and social care areas Further planning capabilities have been enhanced following the 2015/16 winter de-brief process Health and social Care Partnerships are embracing the Integration agenda and working collaboratively to mitigate risk to patients due to poor performance and have put joint plans in place to support 	Adequate but partially effective; control is properly designed but not being implemented properly	Very High 20	Medium 9	Deputy Chief Executive	Director of West Lothian H&SCP/Chief Operating Officer (Acting)	Acute Hospitals Committee in partnership with IJBs

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3829	2: Improve the quality and safety of health care	GP Workforce Sustainability	<p>There is a risk that the Board will be unable to meet its duty to provide access to primary medical services for its population due to increasing population combined with difficulties in recruiting and retaining general practitioners, other staff and premises difficulties (e.g. leases). This may affect:</p> <ul style="list-style-type: none"> ability of practices to accept new patients (restricted lists); patients not being able to register with the practice of their choice; ability to cover planned or unplanned absence from practice; ability to safely cover care homes; and difficulties in one practice may impact on neighbouring practices/populations, occur at short notice with the result that practices are unable to provide services in their current form to existing patients; other parts of the health and social care system e.g. secondary care, referrals, costs <p>As a result of these pressures practices may choose to return their GMS contracts to the NHS Board who may in turn not be able to successfully fill practice vacancies or recruit sufficient medical staff to run the practice under 2c (direct provision) arrangements</p>	<p>Governance and performance monitoring</p> <ul style="list-style-type: none"> Regular updates reported to Healthcare Governance Committee NHS Lothian Board Strategic plan, HSCP primary care transformation plans and reports to Board and Strategic Planning Committee. Establishment of the Primary Care Investment and Re-design Board which will oversee implementation of local plans and measure associated improvement across NHS Lothian. The risk is highlighted on all HSCP risk registers with local controls and actions in place and on the East Lothian IJB risk register as host IJB for the Primary Care Contractor Organisation (PCCO) <p>Core prevention and detection controls</p> <ul style="list-style-type: none"> PCCO maintain a list of restrictions to identify potential and actual pressures on the system which is shared with HSCPs and taken to the Primary Care Joint Management Group (PCJMG) monthly. PCJMG review the position monthly with practices experiencing most difficulties to ensure a consistent approach across the HSCPs and advise on contractual implications. Ability to assign patients to alternative practices through Practitioner Services Division (PSD). "Buddy practices" through business continuity arrangements can assist with cover for short-term difficulties. <p>Rationale for Adequacy of Controls - remains inadequate as HSCP transformational plans are still at developmental stage and GP retention and recruitment is a national issue (see Medical workforce risk. Risk grading therefore remains very high/20).</p>	<p>Risk reviewed for period July-Sep 2017</p> <p><u>Risk reviewed at Primary Care Joint Management Group on 14/09/17.</u></p> <p><u>Position on golden hellos reviewed and updated - discretionary applications to be considered on a case by case basis.</u></p> <p><u>Healthcare Governance Committee received a report in September 2017 which again confirmed limited assurance.</u></p> <ul style="list-style-type: none"> All HSCPs developing transformational plans for Primary Care based on agreed, joint priorities and a second Lothian-wide Primary Care summit was held on 4 May and reported to May HCG. NHS Lothian proposed investment of £5m over three years from 2017/18 to address the key pressures are reflected in HSCP integration plans along with the additional national funding in 2017/18 for Primary Care Transformation, funding to increase provision of clinical pharmacist posts in General Practice to provide alternatives to GP consultations for medicines and prescribing related issues. Further work on GP recruitment including: <ul style="list-style-type: none"> Testing the recruitment market (using Google clicks or a social media campaign to identify where GPs might come from before running a more visible, targeted campaign to recruit) Promotion of Edinburgh and Lothians as good place to work Provision of local contacts to discuss job opportunities GP practice recruitment micro site 	Inadequate: control is not designed to properly manage the risk and further controls and measures are required.	Very High 20	High 16	Medical Director	Joint Director, East Lothian H&SCP	Healthcare Governance Committee

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3211	2. Improve patient pathways and shift the balance of care	Access to Treatment Risk – Organisation Risk (Previously Achievement of National Waiting Times)	<p>There is a risk that NHS Lothian will fail to achieve waiting times targets for inpatient / day case and outpatient appointments, including the overall Referral To Treatment target, due to a combination of demand significantly exceeding capacity for specific specialties and suboptimal use of available capacity, resulting in compromised patient safety and potential reputational damage.</p>	<p>Governance & performance monitoring</p> <ul style="list-style-type: none"> Weekly Acute Services Senior Management Group (SMG) meeting Monthly Acute Services Senior Management Team meeting- monthly outturn and forecast position Performance reporting at Corporate Management Team (CMT) NHS Lothian Board Performance Reporting Performance Reporting and Assurance to Acute Hospital Committee Monthly access and Governance Committee, to ensure compliance with Board SOPs relating to waiting times. <p>Core prevention and detection controls</p> <ul style="list-style-type: none"> Establishment of the Delivering for Patients Group to monitor performance and work with individual specialties to delivery efficiency improvements against key performance indicators on a quarterly basis Scope for improvement identified with recommendations made to specialties e.g. target of 10% DNA rate; theatre session used target of 81 %, cancellation rate 8.9%; for every 10 PAs recommendation of 6 DCCs directly attributed to clinic or theatre. <p>Rational for adequacy of controls Some controls are in place and additional controls currently being designed and as such, overall control is inadequate. Controls and actions are now being reviewed quarterly at Acute SMT to ensure any areas of concern are highlighted and actioned. Risk remains high while demand continues to exceed available capacity.</p>	<p>Risk reviewed and approved at June 2017 Board</p> <p><u>Ongoing Actions</u></p> <ul style="list-style-type: none"> Weekly Acute SMG monitors TTG, RTT, long waits, cancer performance, theatre performance and recovery options on a weekly basis, with monthly deep dives into theatre and cancer performance. Monthly Acute SMT has sight of Access & Governance minutes, to monitor ongoing actions and escalate as appropriate. Performance is also reported to, and monitored by, Acute CMT. Performance is also monitored by the Board and Acute Hospitals Committee, using the Quality & Performance pro forma format. A considerable amount of work is being undertaken by the Performance Reporting team, in conjunction with Acute divisional management, to streamline the pro formas making them easier to use and improving their relevance to the performance improvement process at service level. <p><u>Additional Actions</u></p> <ul style="list-style-type: none"> Implementation of a Theatres Improvement Programme – a significant programme with multiple work streams (Pre-assessment, HSDU, Booking and Scheduling, Workforce) to improve theatre efficiency. Establishment of an Outpatient Programme Board that focuses on demand management, clinic optimisation and modernisation. <p>Risk Grade/Rating is Very High/20</p>	Inadequate – control not designed to properly manage risk; further controls required	Very High 20	Medium 4	Deputy Chief Executive	Chief Operating Officer (Acting)	Acute Services Committee

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4191	2. Improve patient pathways and shift the balance of care	Access to Treatment Risk - Patient	<p>There is a risk that patients will wait longer than described in the relevant national standard due to demand exceeding capacity for in-patient / day case and outpatient services within specific specialties.</p> <p>Clinical risk is identified in two dimensions: 1) the probability that due to length of wait the patient's condition deteriorates; 2) the probability that due to the length of wait significant diagnosis is delayed.</p>	<ul style="list-style-type: none"> Service developed trajectories, that are used to monitor performance, early indications of pressures, and opportunities to improve efficiencies/productivity. A re-invigorated Delivering for Patients (DfP) programme provides a framework for learning and sharing good practice through a programme of quarterly reviews. New referrals are clinically triaged, a process which categorises patients as Urgent Suspicion of Cancer (USOC), Urgent or Routine. Within each of these categories, patients are triaged into the most appropriate sub-specialty queue, each of which is associated with a different level of clinical risk. A revised communications strategy has been established to ensure that both patients and referrers are appropriately informed of the length of waits. If the patient's condition changes, referrals can be escalated by the GP by re-referring under a higher category of urgency. There is an expectation that the GP would communicate this to the patient at the time of re-referral. Specific controls are in place for patients referred with a suspicion of cancer. Trackers are employed to follow patients through their cancer pathways, with reporting tools and processes in place which trigger action to investigate / escalate if patients are highlighted as potentially breaching their 31-day and / or 62-day targets. Trackers undergo ongoing training, and have access to clear escalation guidance on how to deal with (potential) breachers. <p>Rational for adequacy of controls Some controls are in place and additional controls currently being designed and as such, overall control is inadequate. Controls and actions are now being reviewed quarterly at Acute CMG to ensure any areas of concern are highlighted and actioned. Risk remains high while demand continues to exceed available capacity.</p>	<p>New Risk May 2017. Approved at June 2017 Board.</p> <p><u>Ongoing Actions</u></p> <ul style="list-style-type: none"> DfP quarterly reviews are supported by more regular meetings with service management teams and clinicians to develop and implement improvement ideas, and to facilitate links to the Outpatients and Theatre improvement programmes. Running action notes are kept at each service meeting, and regularly reviewed by service management teams and the DfP core group. Significant redesign and improvement work is being undertaken through the Outpatient Programme Board and through the Theatre Improvement Programme Board, to help mitigate some of the increasing waiting time pressures and clinical risks. Revised communications strategy includes an "added to outpatient waiting list" letter, which informs patients that their referral has been received, and that some service waits are above the 12-week standard. Current waiting times are also published on <i>RefHelp</i>, making them available to GPs at the time of referral. It has been agreed (March 2017) that a link to <i>RefHelp</i> waiting time information will be included in letters to patients, allowing them to check service waiting times regularly. Information on the projected length of wait throughout a patient's pathway is communicated clearly to patients at clinical appointments throughout their cancer journey. <p><u>Additional Actions</u></p> <ul style="list-style-type: none"> There are some ongoing issues with resilience with regard to cross-cover among trackers during periods of absence and / or annual leave and these are being addressed robustly with, in the first instance, an in-depth review of current cancer tracking arrangements. Executive Medical Director and Interim Chief Officer have developed risk matrix for specialties under waiting time pressures, and will work with NHS Grampian to develop a clinician led framework for risk analysis to help prioritise resources. <p>Risk is very high while demand exceeds available capacity and as such Risk Grade/Rating is Very High/20</p>	Inadequate – control not designed to properly manage risk; further controls required	Very High 20	Medium 4	Deputy Chief Executive	Chief Operating Officer (Acting)	Acute Services Committee

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3454	2: Improve the quality and safety of health care	Management of Complaints and Feedback	<p>There is a risk that learning from complaints and feedback is not effective due to lack of reliable implementation of processes (for management of complaints and feedback) leading to the quality of patient experience being compromised and adverse effect on public confidence and expectation of our services.</p> <p>It is also acknowledged that a number of other corporate risks impact on this risk such as the processes and experience of unscheduled care, patient safety, primary care and waiting times.</p>	<p><u>Governance and performance monitoring</u></p> <ul style="list-style-type: none"> Routine reporting of complaints and patient experience to every Board meeting Regular reports to the Healthcare Governance Committee - complaints and patient experience reports. Additional reports are submitted to the Audit and Risk Committee Monthly quality and performance reporting arrangements include complaints and patient experience <p><u>Core prevention and detection</u></p> <ul style="list-style-type: none"> The complaints improvement project board, chaired by the Executive Nurse Director oversees implementation of the new complaints handling model for management and learning from complaints as part of a wider improvement project to improve patient experience Feedback and improvement quality assurance working group meets monthly, chaired by Non-executive Director and is overseeing implementation of the SPSP action plan Corporate Management Team and Executive Nurse Directors group review and respond to weekly/monthly reports <p>Complaints management information available on DATIX dashboard at all levels enabling management teams to monitor and take appropriate action. Weekly performance reports on complaints shared with clinical teams. Patient experience data is fed back on a monthly basis at service and site level to inform improvement planning and is available via Tableau Dashboard.</p> <p>Rationale for inadequate controls: Governance processes and improvement plans are in place but yet to be fully implemented.</p>	<p>Risk Reviewed for period July-Sep 2017 A new complaints handling procedure was implemented 1 April 2017 which introduced a 3-stage approach: 1) front line resolution, 2) Investigation and 3) SPSO.</p> <ul style="list-style-type: none"> Complaints Improvement Project Board now in place chaired by the Executive Nurse Director. <u>Stakeholder engagement from across the organisation continues and paper going to Oct CMT on the new delivery model (Hybrid Model) to support the new CHP.</u> Feedback & Improvement Quality Assurance Working Group meet monthly chaired by Non Executive and has overseen the implementation of SPSO action plan. Further meeting with the new Ombudsman took place on 26 July 2017. Complaints and patient experience reports was given moderate assurance by the HCG committee – May 2017. Discussions are ongoing with independent contractors to explore how new model can be implemented in Primary Care Ongoing support, training and awareness raising within services to increase confidence and capability in managing complaints Work ongoing to support the complaints and feedback systems within the 2 prisons encouraging early resolution. Services are being supported to test a range of approaches including Care Opinion, Tell us 10 Things and Care Assurance Standards Tell us Ten things questionnaire has been aligned with “5 must dos with me” and is being tested in 3 acute sites with adults and an amended version with children and young people <p>Risk Grade / Rating is High / 16 Rationale for this – moderate assurance given at July 2017 HCG committee. Performance improved 11 out of the last 12 months (before the new CHP was implemented). SPSO cases reduced by half – currently 32 (02.10.17) Complaints Improvement Project Board in place. Blended approach to patient feedback (TTT, Care Opinion & CAS)</p>	Inadequate: control is not designed to manage the risk and further controls & measures required to manage the risk	High 16	Medium 6	Executive Director Nursing, Midwifery & AHP's	Head of Patient Experience	Healthcare Governance Committee

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1076	2: Improve the quality and safety of health care	Healthcare Associated Infection	<p>There is a risk of patients developing an infection as a consequence of healthcare interventions because of inadequate implementation of HAI prevention measures leading to increased morbidity and mortality and further treatment requirements, including potential extended stay in hospital.</p>	<p>Governance & Performance Monitoring There is a comprehensive reporting and monitoring of system in place both at Board and operational level directing action as required.</p> <ul style="list-style-type: none"> • Bi-monthly board papers • The NHS Lothian Infection Committee (LICC) reports to the Board through Healthcare Governance Committee. • Lothian Infection Control Advisory Committee (LICAC) receives reports from this committee, public health, facilities on environmental aspects of infection control and advises actions. • Sites have established local monitoring/reporting either as standalone infection control committees or as part of agenda in site management meetings reporting through Pan Lothian ICC • In addition to LICAC and local committees, Infection Prevention and Control report routinely at a senior management level to CMG and & Director of Nursing Group <p>Core prevention & detection controls Strategy/Training Overarching HAI Education Framework developed in collaboration with Workforce Planning & Development which is currently under review.</p> <p>Corporate Induction and mandatory update programme for Infection Prevention and Control training is in place for all staff and compliance is reported through Tableau. Additional, specialised modules are also available through LearnPro for relevant staff. Local and ad hoc sessions are provided often in response to events/incidents.</p> <p>IPCNs work collaboratively with clinical and non clinical services to communicate risk, support improvement and escalate concerns as appropriate.</p> <p>ICT IT systems are in place to allow IPCNs to monitor incidence, trends and patterns of HAI within their geographical region. Monthly reports with progress made against local delivery plan KPI's and are shared with clinical teams and senior management and are widely available on the Intranet. Clinical teams undertake local audits for compliance against SICPs and their data is published within QIDS.</p> <p>A Problem Assessment Group (PAG) or Incident Management Team (IMT) is convened to investigate and manage any significant event or outbreak. These are reported to the Local ICC and LICAC for shared learning and any system wide actions.</p> <p>SAE reviews are undertaken for CDI and SAB related deaths by services with support of IPCNs.</p> <p>Surveillance Enhanced surveillance is carried out for all SAB, CDI and <i>E-coli bacteraemia</i> cases. Monthly case review of all SAB and CDI carried out to determine key issues/learning opportunities. ICNet is a software system which imports positive results and also has an alert set to notify team of increased incidence. These are reported to the local ICC's for discussions on how to reduce them.</p> <p>Mandatory surveillance is undertaken for Surgical Site Infections within Obstetrics for C Section and Orthopaedics for Hip Arthroplasty.</p> <p>Where SSI or alert organism surveillance indicates a data exceedance there are processes in place for investigation. The Antimicrobial Management Team is responsible for the review and development of the Antimicrobial Prescribing Guidelines and provide oversight of antimicrobial use, compliance with guidelines and report findings to clinical teams to help drive improvement. Summary Reports are also provided to Clinical Management Team.</p> <p>Decontamination Responsibility for operational aspects of decontamination of reusable medical devices is with Facilities. There is a Decontamination Project Board, chaired by the Director of Public Health, which consider capital projects and wider strategic objectives – limited monitoring function Progress/monitoring of actions associated with endoscopy, reusable surgical, dental and podiatry equipment is via the operational group which has been established to support local delivery and is chaired by Service Director, DATCC. The decontamination lead provides updates to</p>	<p>Risk Reviewed September 2017</p> <p>Risk to be reviewed and considered at Nov 2017 Staff Governance Committee</p> <p>Current reporting and governance arrangements for HSCP's are being reviewed.</p> <p>A review of the current workload is ongoing as the service cannot sustain existing work streams and integrate the new work programmes into business as usual within the current workforce establishment. This is further complicated by recent changes in staffing and the subsequent ratio of trained staff to trainees. Following a review of the existing mandatory surveillance activity NHS Lothian have advised Scottish Government that in the short term, we will not submit for the Colorectal/Vascular programme and are seeking a sustainable solution.</p> <p>The new NES SICEP (Standard Infection Control Education Pathway) which replaces the Cleanliness Champion Programme has been reviewed in conjunction with NHS Lothian Education and other key stakeholders. It has been agreed that the complexity of the programme and volume of content would increase the risk of non-compliance with mandatory education. Collaboration in the development of a more deliverable programme is being sought from NHS Borders and Fife.</p> <p>Progress in moving to reporting HAI through Tableaux Dashboards has stalled due to resource/ workload issues within informatics teams</p> <p>Risk Grade/Rating has been reduced to Medium 9 based on the current SAB and C Diff data that shows improvement</p>	Adequate but partially effective: control is properly designed but not being implemented properly	Medium 9	Medium 4	Tracey Gillies	Fiona Cameron	Healthcare Governance Committee

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				<p>Lothian ICC and LICAC.</p> <p>The physical condition of building and capacity is struggling to maintain levels of provision for service demands, There is person dependant expertise through the decontamination lead nurse and without a business continuity plan this service could be at significant risk.</p> <p>Estate/ Care Facilities</p> <p>There are a number of aging properties within NHS Lothian built environment that do not meet current standards and are continuing to decline such as Edington Cottage Hospital , PAEP and recognition that within economic climate, prioritisation of works means some areas that are no longer fit for purpose will continue to pose a risk.</p> <p>PCT, facilities and clinical teams working collaboratively to implement current national standards and guidance in new builds, refurbishments and maintenance programmes - Healthcare Associated Infection System for Controlling Risk in the Built Environment (HAI SCRIBE).</p>							

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3480	Improve the quality and safety of health care	Management of Deteriorating Patients	There is a risk that NHS Lothian does not reliably manage deteriorating patients in adult acute inpatient settings leading to potential harm and poor patient/family experience	<ul style="list-style-type: none"> The Quality Report, reported to the Board monthly, contains a range of measures that impact and relate to management of deteriorating patients Healthcare Governance Committee provides assurances to the Board on person-centred, safe, effective care provided to patients across NHS Lothian as set out in its Assurance Need Statement, including clinical adverse event reporting and response. The Patient Safety Programme reports to relevant governance committees of the Board setting out compliance with process and outcome safety indicators and includes external monitoring. Adverse Event Management Policy and Procedure. Quality of care reviews which include patient safety issues is subject to internal audit and compliance with recommendations, and is reported via Audit & Risk Committee and HCG Committee when appropriate. Patient safety walkrounds to gain an understanding of safety culture and work taking place at service level. Also now in general practice. Charge Nurse Ward Round and Patient Centred Audit put in place as Quality Assurance Mechanisms to validate self reporting of patient safety data Quarterly visit by HIS to discuss progress actions and Quarterly submission of data. Access to national outcome data by Board which enables boards to see whether they are outliers and escalate concern and risk as appropriate Adverse Event Improvement Plan in place monitored via HCG Site Based Quarterly Reports including Patient Safety Data (QIDS) sent monthly. Live data at ward level 	<p>Risk reviewed for July-Sep Period Approved at September 2017 HCG Committee.</p> <ul style="list-style-type: none"> As part of the Quality and Performance reporting the issue of meeting the 50% reduction in Cardiac Arrests by January 2016 was considered. Lothian has achieved 8% with the 4 major sites above Scottish rate A HIS visit has taken place, plans are in place and monitored through the service supported by QIST and reviewed by HIS. Plan progressing well. The risk is not related to quality of care but about data reporting The HCG committee have approved a review of the management of deteriorating patients in March 2017 with an improvement plan based on finding going to the 11th July 2017 meeting. The review provided significant assurance with respect to the robustness of the review and areas for improvement. The HCG Committee accepted limited assurance that a potential impact on cardiac arrest rates will follow from the improvement plan, since the elements of it are as yet untested in Lothian at scale. <u>Implementation plan developed results of this fed back to individual service areas to inform improvement planning. Progress to go back to HCG in March 18 and regular monitoring through Quality and Performance Report.</u> <p>Risk grade/rating remains High/16 based on unmet actions for key safety priorities</p>	Adequate but partially effective; control is properly designed but not being implemented properly	High 16	Medium 6	Medical Director	Associate Director for Quality Improvement & Safety	Healthcare Governance Committee

ID	NHS Lothian Corporate Objectives	Title	Description	Controls in place	Updates / Actions	Adequacy of controls	Risk level (current)	Risk level (Target)	Risk Owner	Risk Handler	Assurance
3527	3: Secure value and financial sustainability	Medical Workforce Sustainability	<p>There is a risk that the availability of medical staffing will not be adequate to provide a safe and sustainable service to all patients because of the inability to recruit and increase in activity resulting in the diverting of available staff to urgent and emergency care.</p> <p>Service sustainability risks are particularly high within Paediatrics, Emergency Medicine and Obstetrics & Gynaecology. Achievement of TTGs is at risk due to medical workforce supply risks within Anaesthetics, Geriatrics and Ophthalmology</p>	<p><u>Governance & Performing Monitoring</u></p> <ul style="list-style-type: none"> A report is taken to the Staff Governance Committee when required, providing an update of the actions taken to minimise medical workforce risks in order to support service sustainability and address capacity issues within priority areas. A Lothian Workforce Planning & Development Board has been established to coordinate work within all professional groups including the medical workforce. <p><u>Core prevention and detection controls</u></p> <ul style="list-style-type: none"> Medical workforce risk assessment tool is available and implemented across all specialties. The assessments are fed back to local Clinical Directors and their Clinical Management Teams. They use these to inform their own service/workforce plans to minimise risk. For the risks that require a Board or Regional response the findings are fed back to the SEAT Regional Medical Workforce Group and feed into the national medical workforce planning processes co-ordinated by NES/SG. <p>A recent update paper was taken to the Staff Governance Committee providing a detailed update and the current risk rating was supported. There was moderate assurance that all reasonable steps are being taken to address the risks.</p>	<p>Risk Reviewed for period July-Sep 2017</p> <p>A recent review of trained doctor establishments show significant improvements in recruitment from 2 years ago with an overall establishment gap of 4.3% from 4.9% in March 2015 and is relatively stable. There remain challenges in particular at the St John's site within General Medicine(7.6wte), there also remain gaps. There has however been recruitment to 2wte Ophthalmology posts with successful candidates taking up posts in June/July. Recruitment to 8wte posts to provide additional capacity at both RHSC and St John's sites in line with the recommendations of RCPCH review has been partially successful with 6wte successfully appointed, there remains however 2wte vacancies.</p> <p>For those specialties at high risk, local workforce plans and solutions which minimise risk have been developed and are monitored closely through existing management structures.</p> <p>Vacancies in 'hard to recruit' specialties regularly reviewed and different ways explored of delivering services where there are persistent gaps e.g. psychiatry and paediatrics.</p> <p>Ongoing implementation of risk assessment tools used to inform local workforce plans and solutions which minimise risk and are monitored closely through existing management structures.</p> <p><u>An updated paper has been written for the October staff governance committee highlighting the relatively strong position in relation to recruitment overall. The committee was asked to note that the level risk had not changed substantially since the last update and to accept a moderate level of assurance that the controls in place mitigate any risks to patient safety related to this. However given that there is not a generalised problem with recruitment for trained and training grade doctors there is a need to reconsider the risk contained on the risk register to ensure that it better reflects that only a small number of specialties would be regarded as having a high level of risk with a significantly lower level of risk across specialties in general.</u></p> <p>Risk Grade/Rating remains High/16</p>	Adequate but partially effective; control is properly designed but not being implemented properly	High 16	Low 2	Medical Director	Head of Workforce Planning	Staff Governance Committee

ID	NHS Lothian Corporate Objectives	Title	Description	Controls in place	Updates/Actions	Adequacy of controls	Risk level (current)	Risk level (Target)	Risk Owner	Risk Handler	Assurance
3189	3. Secure Value of Financial Sustainability	Facilities Fit for Purpose	There is a risk that NHS Lothian is unable to deliver an efficient healthcare service because of unsuitable accommodation and clinical environments leading to potential delays in patient care and threatening patient and staff safety.	<p>A stringent Governance Process and structure for reporting of Backlog Maintenance (BLM) has been implemented as follows:</p> <ul style="list-style-type: none"> Property & Asset Management Strategy (PAMS) Group Capital Steering Group Lothian Capital Investment Group (LCIG) Finance & Review Committee Scottish Government through the annual Property & Asset Management Strategy <p>To ensure accurate reporting the Board has implemented the following controls:</p> <ul style="list-style-type: none"> Ensure that 20% of the Board's estate is surveyed annually for physical condition and statutory compliance by the surveyors appointed by Scottish Government. Review the outcome of surveys with the Operational Hard FM Managers and review and assess risks in accordance with the operational use of the properties to ensure priorities are addressed. Recurring capital funding approved of £2.5m to undertake priority works (high and significant areas) Capital Investment Plan which addresses refurbishment and re-provision of premises, linked to the Estate Rationalisation Programme includes the termination of leases and disposal of properties no longer fit for purpose. The Procurement Framework has been implemented that allows issues identified to be rectified without the need for lengthy tendering exercises 	<p>Risk Reviewed September 2017</p> <p>To be reviewed at Finance & Resources Committee in Jan 2018</p> <p>Action undertaken 2016/17</p> <ul style="list-style-type: none"> Review of Risks and programme of works resulted in BLM exposure of £53.8 a reduction of £5m from previous year Reduction in high and significant risk - exposure from High Risk 2015/16 - £1m to £036m in 2016/17 Significant Risk 2015/16 £41m to £37.4. this has been achieved by capital investment, disposal strategy, re-categorisation of risks BLM programme of works for 2016/17 addressed fire precaution works across all sites, mechanical and electrical plant replacement, legionella, building fabric (external cladding and window replacement), external grounds maintenance (car park upgrades) The closure of Corstorphine Hospital, Royal Victoria, Edenhall, former Wester Hailes HC and sale of 4 residential care houses , in addition the expiry of leases has reduced backlog maintenance exposure. Programme of works for 2017/18 is currently being finalised. <p>The overall Backlog Maintenance Risk remains High as there a disparity between the level of funding and the cost of reducing BLM exposure. The age and nature of the Board's estate also is a contributory factor on BLM exposure.</p> <p>Risk Grade/Rating remains High 16</p>	Adequate but partially effective: control is properly designed but not being implemented properly	High 16	Medium 4	Jim Crombie	George Curley	Finance & Resources Committee

ID	NHS Lothian Corporate Objectives	Title	Description	Controls in place	Updates / Actions	Adequacy of controls	Risk level (current)	Risk level (Target)	Risk Owner	Risk Handler	Assurance
3455	2: Improve the quality and safety of health care	Management of Violence & Aggression	There is a risk of Corporate Prosecution by HSE under the Corporate Homicide Act or the H&S at Work Act Section 2, 3 and 33 or any relevant H&S regulations If the risk from violence and aggression adverse events are not adequately controlled. Highest risk would be under H&S at Work Act Section 2 and 3. If we harm our staff (2) or visitors to our sites (3). There is also a statutory requirement to provide an absolute duty of care regarding NHS Lothian staff safety and well being.	<ul style="list-style-type: none"> •Closed loop Health & safety management system in place. •Robust H&S Committee structure. •Violence & Aggression related policies and procedures in place (attached document). •Competent specialist V&A and H&S advice in place. Robust Occupational Health Services. Learning lessons through adverse event investigation. • The Interim Director of Occupational Health & Safety delivers an annual report to the NHSL H&S Committee with specific actions related to controlling violence & aggression risk within these reports. <p>ROSPA QSA Audit complete and action plan in place. NHS Lothian Health and Safety Strategic Plan endorsed. Specific actions related to controlling violence & aggression risk are contained within these reports.</p>	<p>Risk Reviewed for Period April-June 2017. (As per Quarterly Review. Still to be reviewed)</p> <p>A review has been commissioned by the Executive Lead. The purpose of the review is to ensure NHS Lothian's approach to the management of violence and aggression is appropriate and effective. Where improvements in approach or resource are required these will be highlighted.</p> <p>Risk Grade/Rating remains High/15 whilst the review is taking place. The review will inform the risk exposure to the Board.</p>	Adequate but partially effective: control is properly designed but not being implemented properly	High 15	Medium 6	Medical Director	Head of Health & Safety	Staff Governance Committee

ID	NHS Lothian Corporate Objectives	Title	Description	Controls in place	Updates / Actions	Adequacy of controls	Risk level (current)	Risk level (Target)	Risk Owner	Risk Handler	Assurance
3828	3. Improve Quality, Safety and Experience Across the Organisation	Nurse Workforce – Safe Staffing Levels	There is a risk that safe nurse staffing levels are not maintained as a consequence of additional activity, patient acuity and / or inability to recruit to specific posts, the subsequently high use of supplementary staffing to counteract shortfalls potentially leading to compromise of safe patient care impacting on length of stay and patient experience.	<p>Governance & Performance Monitoring</p> <ul style="list-style-type: none"> Two Nursing and Midwifery Workforce meetings are being held (one for in patient areas and one for community nursing) alternate months. These provide a delivery function and monitor progress against agreed actions. The governance arrangements are through the Safe Staffing Group which reports to Staff Governance Committee Professional governance is through monthly review at the Nurse Directors Committee with Associate Nurse Directors & Chief Nurses. <p>Core Prevention and Detection Controls</p> <ul style="list-style-type: none"> Recruitment Group, Safe Staffing and Nursing Workforce Groups to plan requirements The agency embargo remains with every use of agency subject to scrutiny by a senior nurse. Recruitment meetings to oversee the implementation of the recruitment plan are being held monthly Use of tools to ensure safe staffing levels: <ul style="list-style-type: none"> A calendar to ensure the annual use of the nationally accredited workload and workforce tools is in place to ascertain required establishment levels eRostering and SafeCare Live tools are being rolled out to all nursing and midwifery teams, community teams and departments to provide real time information for local decision making around the deployment of the available staffing. Datix reports are escalated on a weekly basis for reports of staffing issues/shortages these are reviewed by the senior management team at the PSEAG. The supplementary staffing and rostering detail is annotated with this information to provide context and enable risk to be understood. Tableau Dashboard in place provides data overview of staffing at all levels. 	<p>Risk Reviewed for period July-Sep 2017 Staff Governance committee to take over risk (agreed at meeting in July 2017).</p> <p>UPDATE The controls have been updated and are producing sustained results in most areas. <u>District Nursing and St John's Hospital site are experiencing greater risk than other parts of the system. The establishment gap Board wide has increased from 4.51% in July 2017 to 5.8% in August 2017, reversing period of sustained decreases for 3 consecutive months..</u></p> <p><u>The increased vacancy rate is compounded by fewer applicants for vacant positions than in previous months. The risk likelihood remains possible and the impact would remain moderate</u></p> <p><u>The staffing in St John's Hospital has a higher turnover than other similar units on RIE/ WGH and despite successful recruitment at open day filling all vacancies in July 2017 there have been 26 resignations at band 5 level over the last 2 months.</u></p> <p><u>The national work being taken forward to mitigate against agency in critical care and theatres has been abandoned in favour of a regional approach.</u></p> <p>ACTIONS A new agency supplier has been engaged to supply into the exempt areas of critical care / theatres and PICU where 3/12 block booking is in place pending the national arrangements for bank for critical care and theatres. <u>This supplier will also be asked to provide into St John's Hospital.</u></p> <p><u>St John's Hospital has been given authorisation to use agency in Emergency Department and other areas as required.</u></p> <p>The infrastructure for the Theatres and Anaesthetics, Critical Care regional I bank is in place.</p> <p><u>NHS Lothian is leading on commissioning a national theatre / ODP training programme</u></p> <p>Health visiting continues to show an improving picture with an additional 40 being trained in 17/18.</p> <p>Increased number of trainee District Nurses being engaged (up from 7 to 17) for the specialist practitioner qualification and an alternate modular approach being implemented with 22 candidates on the first cohort</p> <p>Work is underway to improve the efficiency of the community complex care service for adults, working with the home ventilation team to reduce use of agency nurses.</p>	Satisfactory; controls adequately designed to manage risk and working as intended	Medium 9	Low 2	Executive Director Nursing, Midwifery & AHP's	Assistant Director - Nursing Workforce & Business Support	Healthcare Governance Committee

ID	NHS Lothian Corporate Objectives	Title	Description	Controls in place	Updates/Actions	Adequacy of controls	Risk level (current)	Risk level (Target)	Risk Owner	Risk Handler	Assurance
3328	1: Improving the Quality and Safety of Healthcare	Roadways / Traffic Management	There is a risk of injury to staff, patients and the public from ineffective traffic management as a result of inappropriate segregation across NHS Lothian sites leading to loss of life or significant injury	<p>A stringent Governance Process and structure for reporting has been implemented as follows:</p> <ul style="list-style-type: none"> Site specific Traffic Management Groups Reported in Facilities H&S quarterly reports Reported to Health & Safety Corporate group via Facilities Health & Safety Group Reported to Staff Governance via Health & Safety Committee <ul style="list-style-type: none"> Escalation process in place through the Governance process should congestion become an issue on any site. Governance process is - Local Traffic Management Groups to Facilities Quarterly Reports, Facilities Health & Safety Group (also reported to Facilities Heads of Service) Overarching Health & safety Group Traffic surveys have been conducted across all hospital sites, and action plans have been prepared and subject to regular review The commission of Independent expert reviews of road infrastructures on high traffic high inpatient sites Action plans have been developed across all sites by the Local Site Traffic Management Groups and high risk items approved subject to funding. Additional dedicated car park personnel in high volume traffic sites has been implemented A policy for reversing has been implemented across all sites, which includes – all NHS L vehicles have been fitted with reversing cameras and audible alarms, no reversing unless with the assistance of Banksman Risk assessments and procedures are developed and regularly reviewed where risks have been identified, and a more task specific process has been developed. Work Place Transport Policy available and reviewed within agreed timescales. 	<p>Risk Reviewed September 2017 Reviewed and approved at October 2017 Staff Governance Committee</p> <p>Actions Undertaken – 2016/17::</p> <ul style="list-style-type: none"> A paper has been submitted to Staff Governance Committee July 2017 – providing an update on current issues and confirming that the risk remains high. RIE - Consort have now commissioned Goodison Structural and Civil Engineers to take forward the scope of works to alter the road layout required to accommodate RHSC/DCN coming on site. It is anticipated that the works will be tendered in autumn 2017 Works have been completed on the AAH and REH to comply with the requirements to implement Traffic Regulation Orders (TRO). Applications have been submitted to extend the TRO at the REH and introduce a TRO at the AAH. The upgrade of the main car parking (resurfacing, relining and drainage works) at St John's Hospital has now been completed. Number plate recognition has now been installed – all will alleviate inappropriate parking and assist with the segregation of traffic and pedestrian traffic and improve and improve traffic controls. Alterations to the road network at the WGH have now been completed. This will assist with the implementation of speed limit on the site. Cycle path works are now complete Traffic Management works are due to commence at Whitburn Health Centre, this is dependent on the outcome of discussions with West Lothian council regarding an area of land which falls out with the Board's title. It is anticipated that this will be undertaken in 2017/18 Traffic controls have also been undertaken on the following sites - Liberton Hospital, PAEP and Midlothian Community Hospital. <p>Further works will be implemented subject to approval of capital funds in 2017/18.</p> <p>Risk grade/rating remains unchanged - High/12</p>	Inadequate; control is not designed to manage the risk and further controls & measures required to manage the risk	High 12	Medium 8	Jim Crombie	George Curley	Staff Governance Committee

**INGRESS OF CARBON DIOXIDE INTO HOUSES AT GOREBRIDGE,
MIDLOTHIAN APRIL 2014**

1 Purpose of the Report

- 1.1 The purpose of this report is to advise the Board of the final recommendations and actions taken following the ingress of carbon dioxide (CO₂) into houses at Gorebridge in Midlothian in April 2014 and to provide the Board with the findings and recommendations from the investigations and actions that were carried out.
- 1.2 Any member wishing additional information should contact the Executive Lead in advance of the meeting.

2 Recommendations

The Board is recommended to:

- 2.1 Commend the work of the Incident Management Team and partner agencies in the investigation of this incident.
- 2.2 Recognise the work of the Care for People Group, established by Midlothian Health and Social Care Partnership together with NHS Lothian and Midlothian Council, as a model of good practice.
 - 2.2.1 Support the Director of Public Health and Health Policy in taking forward the recommendations made by the Incident Management Team (IMT), including where these require action by local and national partner agencies, Scottish and UK Governments. The recommendations relate to the Gorebridge incident, to the wider implications in terms of the potential for future incidents and the need to reconsider current government policy. The actions and recommendations are detailed in the appended report, appendix 1, 'Carbon Dioxide Incident in Gorebridge, Midlothian, April 2014'.
 - 2.2.2 To endorse the work of public health staff to advise and work with local and national agencies to address shortcomings in the existing national (including UK) policy and guidance on the investigation, management, remediation and reclamation of coal mining sites, and to address gaps in the evidence to guide an effective response to similar incidents that will require further research.
 - 2.2.3 To support implementation of the recommendations for action by any future local Incident Management Teams

- 2.2.4 The IMT recommends that there should be closer interagency collaboration in training and awareness raising to ensure clear understanding of IMT principles, roles and functions; the need for early notification of incidents; understanding of partner roles and responsibilities during incidents; the need for a 'care for people group' during major incidents; consistent and timely messages to the public; and the need for good quality administrative support during incidents.

3 Discussion of Key Issues

- 3.1 The seepage of carbon dioxide into the houses in Gorebridge was a rare, complex and costly incident associated with old coal mine workings. This incident is, to date, probably the most serious such CO₂ related incident in Scotland.
- 3.2 In April 2014 NHS Lothian set up an Incident Management Team (IMT) to investigate reported cases of ill health affecting a number of the residents of a recently built housing estate in the previous mining area of Gorebridge, Midlothian.
- 3.3 A total of 22 residents from a total of 165 in the affected area made contact with healthcare services between September 2013 and September 2014. The most common complaints were headaches, dry coughs, dizziness and anxiety. The IMT concluded that the seepage of CO₂ into the residential houses was a significant risk to the health of residents and thus warranted intervention.
- 3.4 The migration of CO₂ into the houses was thought to have been associated with a number of potential pathways including ungrouted disused mine shafts, natural cracks in the ground and manmade interventions over time such as investigation drill holes, grouting work for the Borders rail link, the installation of deep drainage and the presence of vibro stone columns introduced during construction to stabilise the ground for house building. These ground openings could have provided preferential pathways for gas migration into spaces below the foundation slabs.
- 3.5 No gas membranes or other specific mitigation measures had been installed during the construction of the houses, which meant that there was a route for CO₂ through service (utilities) access points in the foundation slabs.
- 3.6 The initial pre-development mine gas risk assessment at the site classed the risk as low and therefore not requiring any mitigation measures. The implication was that this assessment had been insufficiently precautionary given the evidence of potential risk available at the time.
- 3.7 The potential for mine gas migration into the properties was further increased by the floor slab design of the properties, which facilitated ingress of CO₂ especially under amplifying weather conditions of low pressure and high winds.
- 3.8 The IMT considered possible remediation measures and recommended that these should seek to eliminate the recurrence of a similar risk to public health from the mine gases. The IMT found no published evidence to confirm that retrospective

remedial action, designed to prevent migration of mine gases into houses constructed without gas membranes, would be guaranteed to prevent migration of mine gases into the houses in the long term.

- 3.9 The IMT identified, and provided to the council, criteria against which any long term options for the affected houses should be assessed.
- 3.10 Having reviewed five main remediation options in detail, Midlothian Council decided to re-house all the residents and demolish the 64 properties on the site to safeguard the future health of the local residents.

4 Key Risks

- 4.1 Environmental public health incidents can occur suddenly and adversely affect the health of local residents and visitors to the area. The key risk for NHS Lothian is the potential of the NHS and Local Authorities to have insufficient capacity across the organisation to respond to incidents and to sustain an effective and appropriate response without compromising other aspects of the service.
- 4.2 There is an ongoing programme of refresher training in emergency planning for major incidents and outbreaks focussing on the key departments in NHS Lothian to reflect on lessons learned. Regular training and exercising is required to maintain knowledge and skills attained.

5 Risk Register

- 5.1 NHS Lothian is a Category 1 responder under the Civil Contingencies Act 2004. This issue is covered under the Corporate Risk Register as part of our preparedness in emergency planning.
- 5.2 The risk of insufficient capacity in Environmental Health to run a formal 24/7 rota for investigation and enforcement has been raised with the Chief Executives of the Local Authorities and at national level.

6 Impact on Inequality, Including Health Inequalities

- 6.1 The risk of exposure to environmental hazards and major incidents is greater for individuals and in areas that are less affluent. The NHS and Local Authority have responsibilities to intervene to address this and these duties are set out in single outcome agreements and in national outcomes frameworks.

The ingress of carbon dioxide occurred in social rented accommodation owned by Midlothian Council. NHS Lothian has a legal responsibility to ensure that vulnerable individuals and groups such as those with long term conditions, socially deprived families and those in need are supported and cared for. NHS Lothian advocated for the setting up of a Care for People Group. This group assessed vulnerability and risks to the physical and mental health of the affected residents and ensured that

appropriate support was provided to those who needed it during the incident and during relocation to new accommodation.

7 Involving People

- 7.1 During the incident, leaflets were distributed to all residents in the affected houses. Information was provided to the public via daily updates to the press and media involvement. Midlothian Council responded to queries from members of the public and referred specific concerns to the Health Protection Team for response. Since the incident, regular updates and feedback have been provided by the Incident Management Team via Midlothian Council and members of the Care for People Group.
- 7.2 Residents with specific concerns were given the opportunity of raising them directly with the Midlothian Council and the Health Protection Team.
- 7.3 The Director of Public Health and Health Policy addressed elected members and discuss the incident in a seminar and in a Council meeting.

8 Resource Implications

The resource implications are linked to the actions outlined above and include:

- 8.1 Ensuring sustainable infrastructure and funding of resilience within NHS Lothian to enable an expert response and timely management of environmental hazards to human health.
- 8.2 Ensuring at least annual rehearsal of the major multi-agency incident plans.

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18 September 2017

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List of Appendices:

Appendix 1: Carbon Dioxide Incident in Gorebridge, Midlothian, April 2014. Final report of the IMT

Appendix 2: Summary paper, 'Ingress of carbon dioxide into houses of Gorebridge'.



**Carbon Dioxide Incident in Gorebridge,
Midlothian, April 2014**

**Final Report of the
Incident Management Team**

November 2017

Executive Summary

The incident

In April 2014, NHS Lothian set up an Incident Management Team (IMT) to investigate reported cases of ill health affecting a number of the residents of a recently built housing estate in the previous mining area of Gorebridge, Midlothian. The IMT was set up following notification to the Health Protection Team (HPT) from a general practitioner (GP) and hospital doctor who had seen patients with complaints that they associated with carbon dioxide (CO₂) exposure. It was later established that the incident had been going on since September 2013 when two households were first affected.

Safeguarding the health and safety of the residents throughout the incident was a priority for the IMT. From the start the IMT ensured that the situation remained under close surveillance and recommended measures to the NHS Lothian HPT and Midlothian Council to minimise the acute risk to residents. This included alerting local GPs to the incident, ensuring that adequate and appropriate health related information was provided to residents and the public, and advising on the installation of alarm monitors in all houses, supported by a dedicated 24-hour council response team, evacuation and rehousing, and adequate and continuous monitoring of mine gases.

Investigation and Risk Assessment

A total of 22 residents from a total of 165 in the affected area made contact with healthcare services between September 2013 and September 2014. The most common complaints were headaches, dry coughs, dizziness and anxiety. The IMT concluded that the seepage of CO₂ into the residential houses was a significant risk to the health of residents and thus warranted intervention.

The IMT conducted systematic investigations using the source-pathway-receptor model to assess risks to health, and to identify appropriate options for action to manage those risks in the short and long term. The process involved obtaining copies of previous relevant investigations and background reports provided by Midlothian Council, obtaining independent expert advice to inform its decisions, sampling gas from the houses and mine gas, monitoring the levels of CO₂ in the affected houses and surveillance of interaction of the residents with health services.

The investigation by the IMT was heavily reliant on the support of agencies including SEPA and the Coal Authority, as well as on the findings of technical investigations undertaken by commercial consultants commissioned by the local authority. The cumulative evidence from all these investigations lead the IMT to conclude that the CO₂ detected in the properties was of historical coal mine origin.

The source of the ground gas was considered most likely to be the abandoned coal workings containing elevated levels of oxidising coal deposits, creating carbon dioxide, which migrated to the surface as a result of changes in atmospheric pressure and other factors. This hypothesis was supported by the findings of radiocarbon analysis carried out on behalf of the IMT, that the CO₂ from the houses was of geological origin and similar to that originating in the areas abandoned coal mines.

The migration of CO₂ into the houses was thought to have been associated with a number of potential pathways including ungrouted disused mine shafts, natural cracks in the ground and manmade interventions over time such as investigation drill holes, grouting work for the Borders rail link, the installation of deep drainage and the presence of vibro stone columns introduced during construction to stabilise the ground for house building. These ground openings could have provided preferential pathways for gas migration into spaces below the foundation slabs. No gas membranes or other specific mitigation measures had been installed during the construction of the houses, which meant that there was a route for CO₂ through service (utilities) access points in the foundation slabs.

The evidence from the Coal Authority (**Appendix 1 and Appendix 2**) also identified that the initial pre-development mine gas risk assessment at the site classed the risk as low and therefore not requiring any mitigation measures. The implication was that this assessment had been insufficiently precautionary given the evidence of potential risk available at the time. The initial assessment was heavily dependent on very limited measurements of gas concentration and flow. The assessment did not apparently anticipate the additional risk associated with the impact of ground treatment measures used to stabilise the site, including extensive grouting of the area and use of vibro stone columns to provide support to the house foundations. The potential for mine gas migration into the properties was further increased by the floor slab design of the properties, which facilitated ingress of CO₂ especially under amplifying weather conditions of low pressure and high winds.

Risk Management

The IMT recognised early that whatever solutions were devised to address residents' exposure to potentially harmful levels of CO₂, substantial engineering work would be required. A plan for residents to leave their homes had to be developed. The IMT recommended that Midlothian Council and NHS Lothian put in place a Care for People Group (CPG) to look after the health, social and mental wellbeing of the residents as they were relocated while investigations continued. The group addressed the individual resident's issues and situations and was very helpful in the successful resettlement of residents in new homes.

The IMT considered possible remediation measures and recommended that these should seek to eliminate the recurrence of a similar risk to public health from the mine gases.

In this incident, the Coal Authority deemed that it did not have legal liability for the migration of the mine gas due to the circumstances surrounding the construction of the estate. Responsibility for managing the situation therefore fell to Midlothian Council. However, where it does determine that it has liability for a mine gas migration problem in residential property, the response by the Coal Authority for managing similar situations is usually to demolish the property and rebuild.

The IMT found no published evidence to confirm that retrospective remedial action, designed to prevent migration of mine gases into houses constructed without gas membranes, would be guaranteed to prevent migration of mine gases into the houses in the long term.

Conclusions

The seepage of carbon dioxide into the houses in Gorebridge was a rare, complex and costly incident associated with old coal mine workings. This incident is, to date, probably the most serious such CO₂ related incident in Scotland. The IMT has made recommendations to the Scottish Government on areas where national level review, research and guidance are required. It has also made recommendations for action by local authorities that are likely to have housing developments on similar sites.

For the long-term use of the site, the IMT recommended that before any future developments took place, the council should ensure that all statutory procedures were taken plus appropriate advice from bodies with expertise in relevant technical fields. This will ensure that there will be no possible recurrence of the problem, and no future threat to public health.

The current procedure for mine gas risk assessment gives the primary responsibility, for assessing the risk and determining what mitigation if any is required, to the site developers. The IMT concluded that this is unsatisfactory, unsafe and not consistent with a precautionary approach designed to protect public health. The investigation identified fundamental flaws in the present system creating the potential for failure to assess the risk correctly or to adopt adequate mitigating measures when necessary at the time of property construction. The IMT therefore considered that, at the very least, there should be a comprehensive review and revision of the current risk assessment and mitigation process.

A review is also justified in view of information provided by SEPA that as time progresses groundwater levels in abandoned mining areas gradually rebound to their pre-mining state. Monitoring of groundwater levels in abandoned mine areas is often undertaken by the Coal Authority. Rising groundwater levels are known to be associated with an increased risk of mine gas migration. Hence, in any abandoned mining area where the water table level has not yet reached an equilibrium point, there is likely to be additional uncertainty in future mine gas migration risk prediction. This is another reason to encourage a more highly precautionary approach to mitigation measures.

An additional environmental cause of mine gas risk uncertainty relates to future change in precipitation associated with predicted climate change in Scotland. It is possible that climate change may cause alterations in rainfall patterns in future however how this will be reflected in groundwater levels is currently unclear. As ex-mining areas complete

their groundwater rebound phase, the relative impact of any such change will increase over time. The consequential impact of any climate change related effect on mine gas migration risk is uncertain but could act to increase the overall risk. This is therefore yet another source of uncertainty making mine gas risk prediction more imprecise and another reason for advocating the adoption of a more highly precautionary stance to future proof mine gas mitigation measures.

The IMT concluded that a review and revision of the present mine gas risk assessment and management process is necessary. However, the IMT was not persuaded that a change to the risk assessment process alone would be sufficient to guarantee that a similar incident could not occur in future. The IMT was convinced that any process that leaves the primary responsibility for mine gas risk assessment and management to the site developers is likely to fail at some point. The process is therefore not “fail safe”; the risk of failure in terms of the potential harm to public health is unacceptable and the costs of remediation works are unsustainably wasteful.

The final position of the IMT was that mandatory use of mitigation measures in new build developments would be the only effective way to minimise the risk of a recurrence of the problems identified in the Gorebridge incident.

The IMT therefore concluded that installing mine gas mitigation measures should be made mandatory in all new residential and similar developments at the time of construction, in all areas of Scotland designated by the Coal Authority as former mining areas.

Recommendations

The IMT has made a series of 26 recommendations on:

- The Gorebridge incident and future site management
- The management of future incidents
- National policy and guidance on mine gas risk assessment and risk management
- Future research needs in relation to the problem of mine gas migration

The Gorebridge Incident and Site

1. A robust mechanism should be implemented to limit public access to the site at Gorebridge, to limit the potential for unauthorised occupation of the affected houses until the houses are demolished.

Action: Midlothian Council (N.B. demolition was completed in early 2016).

2. Before any redevelopment, efforts should be made to ensure that there is no ongoing threat to public health associated with a recurrence of the mine gas migration problem.

Action: Midlothian Council

3. A long term monitoring strategy for any houses built on the site in future should be set out as part of the redevelopment plan, to provide objective evidence for public reassurance, and to confirm that there is no gas migration into any new properties.

Action: Midlothian Council

Management of Future Incidents

4. Agencies should notify each other of any relevant potential public health incident at the earliest suspicion.

Action: all relevant agencies involved in managing EPH incidents (NHS boards, local authorities, SEPA, FSS etc).

5. IMT representatives should inform their parent agencies of the principles that govern the operation of an IMT as defined in Scottish guidance on managing public health incidents.

Action: NHS boards (Chairs of IMTs) and IMT partners.

6. Roles and responsibilities of each IMT member should be clarified at each IMT meeting to ensure that members understand each agency's roles.

Action: NHS boards (Chairs of IMTs) and IMT partners.

7. Joint training and exercising by partners and familiarisation with each other's methods of work is recommended to improve the effective working of IMTs.

Action: NHS boards (Chairs of IMTs) and IMT partners.

8. Consistent and good quality administrative support is required for an IMT especially in complex incidents (such as this), which may need to be managed over a long time period.

Action: NHS boards (Chairs of IMTs).

9. The communication teams of all agencies represented on an IMT need to work closely with each other to ensure consistency in message content and in the timely release of messages for the public.

Action: IMT partners from all relevant agencies involved in managing Environmental Public Health incidents (NHS boards, local authorities, SEPA, FSS etc).

10. The need for a Care for People Group (or equivalent) should be considered during any such incident, to provide a focus for coordinating advice and action on the needs of affected people.

Action: NHS boards and local authorities

11. Arrangements for funding highly specialist impartial expert scientific and technical advice that is beyond the competence and expertise of the public sector agencies represented on the IMT needs to be considered further, with a view to providing clear guidance to IMTs in future.

Action: Scottish Government.

National Policy and Guidance on Mine Gas Migration Risk

12. With respect to the Coal Authority, in addition to fulfilling its statutory responsibilities, the potential role of the Coal Authority to assist public health led IMT investigations into future mine gas incidents should be reviewed. A mechanism should be established to facilitate the active participation of the Coal Authority as an IMT member, irrespective of the Coal Authority's own liability.

Action: UK Department for Business, Energy and Industrial Strategy.

13. The potential for the Coal Authority to adopt a more active role in quality assuring the adequacy of pre-development mine gas risk assessments and ensuring the adoption of adequately precautionary gas migration mitigation measures, should be explored.

Action: The Coal Authority

14. Relevant Scottish Government directorates should be made aware of this incident, its implications and the potential scale and significance of the IMT findings.

Action: Scottish Government.

15. The potential for increases in mine gas migration risk linked to water table rise should be flagged to relevant Scottish Government Directorates as a concern in terms of both the ongoing natural water table rebound phenomenon in former mining areas and in terms of the potential consequences of future climate change.

Action: Scottish Government.

16. Developers, land use consultants and planning authorities should be made aware of the content of this report.

Action: Relevant Scottish Government Directorates to advise developers, consultancies, local authority planning and environmental health departments.

Action: Scottish Government.

17. Local Authorities (LAs) in Scotland reviewing proposals for the development of land with a history of former mining activity should review the adequacy of any accompanying mine gas risk assessment with added care. LAs should determine if an assessment has considered the potential risk of gas migration in the short, medium and the longer term future.

Action: All Local Authorities.

18. The existing Scottish Government arrangements for licensing access to British Geological Survey (BGS) mapping data should be reviewed to enable increased free access to British Mine Gas Risk maps by public sector bodies in Scotland. Improved access to these datasets is needed to improve the capacity of local authorities and other public sector agencies to more easily independently evaluate the adequacy of mine gas risk assessments carried out by developers in their areas.

Action: Scottish Government

19. To protect the health of existing or future occupants of a property where persistent mine gas has been identified as a problem, there is need for a mechanism to require the owner to take appropriate action which may include demolition or closure of the property if it is considered that remediation works will not guarantee the future protection of public health.

Action: Scottish Government

20. Mine gas mitigation measures should be made mandatory in all new residential and similar developments, in all areas of Scotland designated by the Coal Authority as former mining areas, irrespective of their current designation as either low or high risk.

Action: Scottish Government.

Research Needs

Further research is needed to investigate specific issues identified in this incident.

21. An assessment is required to determine the impact that natural rebound of groundwater levels is having in ex-mining areas in Scotland in terms of the effect on altering the risk of mine gas migration.

Action: Scottish Government.

22. An assessment is required to determine the impact of predicted increases in rainfall and severe weather events, associated with climate change, on the risks of mine gas migration.

Action: Scottish Government.

23. A systematic review is required of the evidence in relation to the options for and efficacy of retrospective mitigation measures to control the ingress of mine gas, including CO₂, to existing developments (properties).

Action: Scottish Government

24. Specific research studies are required and should be funded to investigate the utility and efficacy of retrospective measures to control CO₂ ingress and levels in CO₂ affected properties in Scotland.

Action: Scottish Government

25. Research should be conducted in former mining areas across Scotland to determine if mine gas migration is occurring in housing developments similar to that constructed in Gorebridge, where no mine gas mitigation measures have been incorporated in their construction.

Action: Scottish Government

Independent Expert Review of Mine Gas Risk Assessment and Mitigation in Scotland:

26. Scottish Government should consider establishing an independent expert group to review the processes and guidance for mine gas risk assessment and mitigation in Scotland.

Action: Scottish Government

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Glossary and abbreviations

Adit	Horizontal access or drainage passage leading into a mine.
Atmospheric pressure	The pressure exerted by the weight of air in the atmosphere.
Blackdamp	Air with elevated CO ₂ and low oxygen levels. It is an asphyxiant, reducing the available oxygen content of air to a level incapable of sustaining human or animal life.
Carbon dioxide (CO₂)	Odourless gas existing in normal air. High levels can displace oxygen, causing sickness or death through asphyxiation.
CIRIA	Construction Industry Research and Information Association
Clinical Portal	An electronic window that allows clinicians to view defined information about individual patients in a 'virtual' electronic patient record drawn from information held in different clinical systems.
CPG	Care for People Group.
Coal Authority	The Coal Authority is an executive non-departmental public body, sponsored by the Department for Business, Energy and Industrial Strategy. The Coal Authority manages the effects of past coal mining, including subsidence damage claims which are not the responsibility of licensed coal mine operators. It deals with mine water pollution and other mining legacy issues.
Coalification	A process by which vegetable matter becomes converted to coal.
Decant	To rehouse (people) while their homes are being investigated, rebuilt or refurbished.
Dewatering	Removal or draining of groundwater or surface water from a riverbed, construction site or mine shaft, by pumping or evaporation.
Health Protection Scotland (HPS)	Public body co-ordinating public health protection.
Health Protection Team (HPT)	Investigates and manages communicable diseases and environmental hazards in a local NHS Board.
Health and Safety Executive (HSE)	Public body safeguarding health and safety at work.
Incident Management Team (IMT)	Specialist expert group representing participating agencies or health disciplines brought together to investigate and manage an incident.
Joint Health Improvement Partnership	Group addressing local health improvement priorities.
Lake overturns	Eruptions of dissolved CO ₂ from deep water forming a gas cloud.
Methane	Colourless, odourless flammable gas.
Midlothian Council	Local authority for Midlothian

Mine gases	Harmful vapours resulting from mining
NHS 24	Scotland's national tele-health and tele-care provider.
NHS Lothian	Health board responsible for NHS services in Edinburgh and the Lothians.
Oxygen O₂	Gas essential to life forming 20.8% of the atmosphere.
Radiocarbon analysis	Technique using the radioactive decay of ¹⁴ C to determine the age of a substance.
Radon	Gas formed by the decay of uranium in rocks and soils.
Remediation	Action reversing or stopping environmental damage.
SCI Store	A primary healthcare data repository. SCI Store provides a number of patient and result information.
Scottish Environment Protection Agency (SEPA)	Public environmental protection body.
Source-pathway-receptor model	Approach to pollution risk control that identifies the source, pathway and human or environmental receptor.
Surface drift	A slow and gradual movement or change from one place at or near the ground surface.
TrakCare	An electronic hospital based healthcare information system. TrakCare provides a comprehensive set of clinical, administrative, and departmental modules, providing a unified record for each patient, with advanced functionality to serve the needs of diverse care settings.
Upcast shaft	Shaft allowing air to leave a mine.
Vibro stone	Crushed stone pillars below a structure that increase the soil's load-bearing capacity and drainage.
VOCs (volatile organic compounds)	Organic compounds that easily become vapours or gases containing elements such as carbon, hydrogen, oxygen, fluorine, chlorine, bromine, sulphur or nitrogen.

Foreword

This report describes the investigation and management of the seepage of Carbon Dioxide into the houses of Newbyres Crescent and Gore Avenue in Gorebridge, Midlothian between 2014 and 2016.

On behalf of the Incident Management Team (IMT), I am grateful to the following for their invaluable contribution to the investigation and management of this incident:

- Midlothian Council
 - Environmental Health
 - Care for People Group
- Health Protection Scotland
- Midlothian Health and Social Care Partnership
- NHS Lothian
 - Health Protection Team and the Directorate of Public Health and Health Policy
 - GPs and practice staff in Gorebridge
- Scottish Government Health Department
- External expert agencies including British Geological Survey, Fairhurst Consultants, the Coal Authority, SEPA and Building Research Establishment
- Members of the public, residents of Newbyres Crescent and Gorebridge Avenue and relatives of those affected by this incident.

I would like to thank all the members of the IMT for their contribution and support during the management of the incident and their help to co-produce this report.

Special acknowledgement to staff in NHS Lothian Health Protection Team including nursing scientific and administrative staff of the Directorate of Public Health and Health Policy for their support in incident management and administration.

The contents of this report and recommendations are supported by all the members of the IMT.

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1 Background

1.1 The Incident

In September 2013, members of two families on Newbyres Crescent, Gorebridge, experienced ill health that required five individuals to be taken to hospital. It was initially thought that the cause was carbon monoxide (CO) poisoning arising from a faulty central heating system. The initial investigations conducted at the houses ruled out carbon monoxide but identified elevated levels of carbon dioxide (CO₂) and depleted levels of oxygen (O₂) in two residential properties, 87 and 89 Newbyres Crescent. The families from these properties were immediately decanted to alternative accommodation and an investigation and monitoring commenced. The suspicion was that ground gas migration was affecting the homes at Newbyres Crescent. The initial investigation was undertaken by Midlothian Council and the Coal Authority.¹ Investigations continued into early 2014. As monitoring continued three further families were decanted by Midlothian Council during February and March 2014 due to high levels of CO₂. It became apparent that the problem was widespread and affected more homes in the estate.

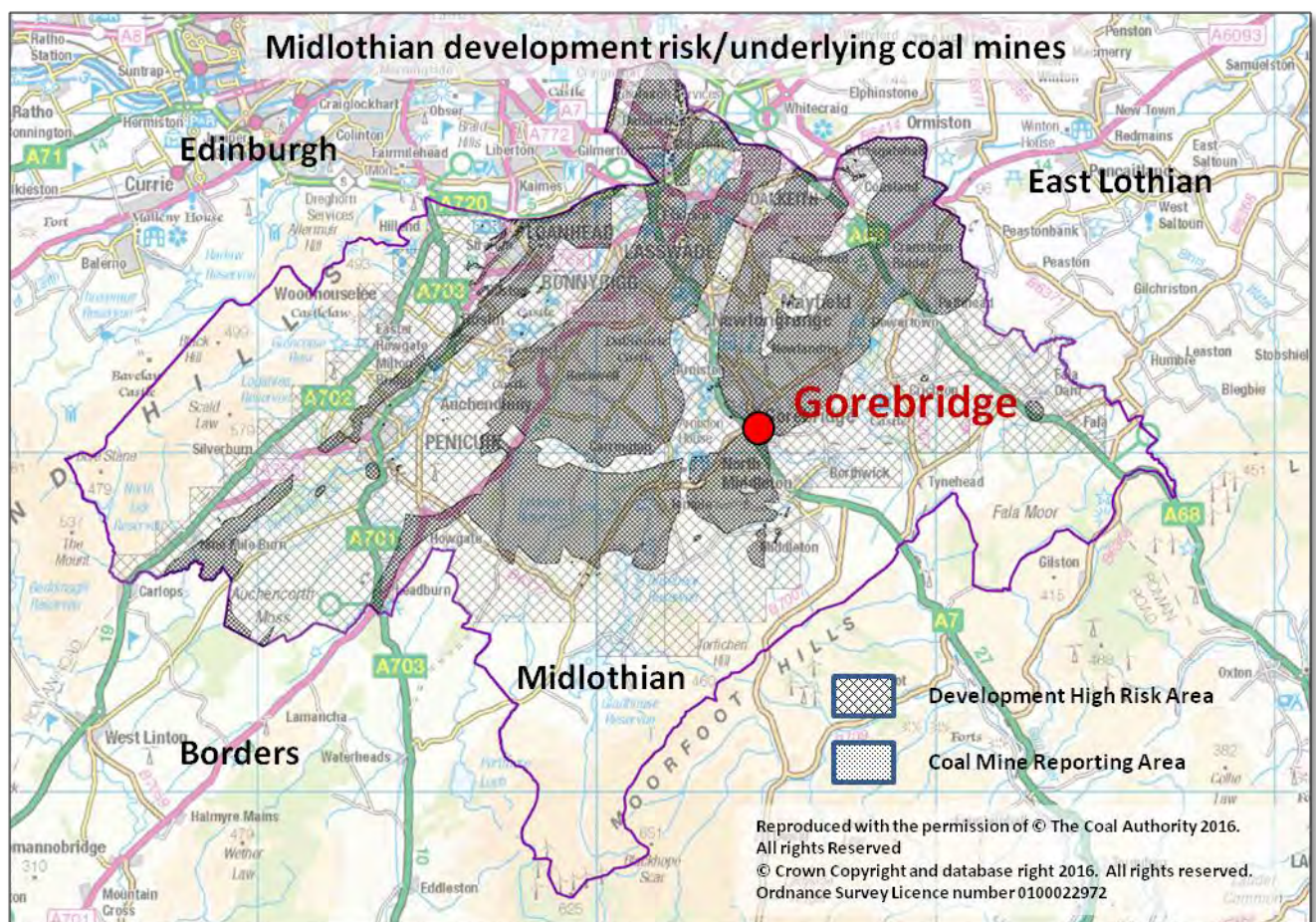
In March 2014, NHS Lothian Health Protection Team (HPT) of the Directorate of Public Health and Health Policy was notified by a GP and a hospital doctor that they had seen patients who were presenting with complaints which they associated with carbon dioxide (CO₂) exposure. The HPT established that a number of residents from the estate had sought healthcare at accident and emergency (A&E) and NHS24. NHS Lothian then set up a multi-agency incident management team (IMT) (**Appendix 3**), chaired by the Consultant in Public Health Medicine (CPHM) to investigate the reports of ill health affecting residents of the housing estate.

1.2 The Incident Site Description

Newbyres Crescent and Gore Avenue are located in the town of Gorebridge, Midlothian, Scotland (**Figure 1**). The site covers approximately two hectares and had 64 council housing residential properties, comprising of single-storey detached, two-storey semi-detached, maisonette and flatted blocks. It also has 10 single-storey supported living residential care properties with associated roads and infrastructure. The area is split into two by Gore Avenue with the main site having the residential properties of Newbyres Crescent and flatted blocks on Gore Avenue and the rest of the site holding the 10 single-storey supported residential care properties.

Historic mappings show that the site has, since the 1850s, been the subject of underground coal mining (**Figure 1**) with greenfield agricultural land on the surface.² Mining continued until 1957 when the site was first developed as a residential area. Around 1999, the historical residential units were no longer fit for purpose and were demolished. The site was prepared for residential redevelopment with construction taking place in 2006. The Newbyres Village Care Home, which was also built around this time, is close to the site.

Figure 1: Map of Midlothian showing development risk areas with underlying old coal mines



NB map revised 2016

1.3 Gorebridge Population and Housing

Gorebridge is a small former mining town in Midlothian, north of the Moorfoot Hills, 12 miles south-east of Edinburgh (**Figure 1**) and has a train station for the recently opened Borders Railway. It has a population of 6,454 according to the 2011 census (around 7.8% of the Midlothian total)⁵⁴. About 21.5% are aged 0-16 with 15% over 65. Youth unemployment (16-24) is almost 10% above the national figure but well below average for those aged 50+. A relatively high proportion are in skilled trades, caring and leisure services, sales, plant and machine operations and elementary occupations* compared to the rest of Midlothian and Scotland⁵⁴.

Home ownership in Gorebridge is around 10% lower than the Scottish average with more public and social rented housing⁵⁵. The percentage of home ownership in local authority housing provision is more than twice the Scottish average. The typical number of people per household is above the Scottish average and the number of rooms lower⁵⁵.

1.4 Chronology of Events

The chronology of events are summarised in Figure 2 but the details are as follows:

7 September 2013:

Five residents were taken ill from two residential properties at Newbyres Crescent, Gorebridge with suspected gas poisoning. All the tenants, from both properties, were decanted by Midlothian Council.

12 September 2013:

The Coal Authority commenced continuous data monitoring at 87 Newbyres Crescent which ran until 12 October 2013. Initial results indicate mines gas, possibly carbon dioxide.

11 October 2013:

The Coal Authority concluded its monitoring, monitors were removed but sporadic spot checks continued.

* These are cleaning offices and other buildings, washing windows, delivering messages or goods, product-sorting, packing by hand and freight handling.

1 November 2013:

The Coal Authority concluded its investigations confirming high CO₂ levels at properties 87 and 89 Newbyres Crescent and recommended “that the properties should not be occupied until this has been remediated”.

10 February 2014:

Midlothian Council contract Fairhurst to undertake cavity wall monitoring. (Round 1, 10-12 February 2014, Round 2, 12-14 March 2014).

24 February 2014:

Tenant from 6 Newbyres Crescent decanted.

25 February 2014:

Midlothian Council instructed Fairhurst to undertake CO₂ monitoring inside houses - continued until 24 July 2014.

24 March 2014:

Tenants from 4 and 30 Newbyres Crescent decanted.

26 March 2014:

NHS Lothian Health Protection Team were notified by a general practitioner (GP) at Newbyres Medical Practice that there were a number of patients presenting with symptoms and concerns about CO₂ exposure at home.

2 April 2014:

Multiagency Problem Assessment Group (PAG) Incident Management Team (IMT) meeting.

- Health advice given to residents including on ventilating their homes.
- HPT contacted GP to obtain a list of residents who presented due to CO₂ exposure.
- Consultant in Public Health Medicine liaised with Coal Authority to inform health risk assessment.

7 April 2014 – 17 April 2014:

Carbon dioxide alarms installed in all occupied homes on the development. These remained in situ until tenants permanently relocated.

22 April 2014:

The Newbyres Care for People Group set up by Midlothian Council.

29 April 2014:

NHS Lothian Director of Public Health briefed Midlothian Council on behalf of the IMT.

20 May 2014:

A special Midlothian Council meeting convened.

June 2014:

IMT confirms, from analysis, that the CO₂ was positively identified as mine gas.

13 June 2014:

IMT interim report published.

17 June 2014:

Midlothian Council special meeting held at which the council determined to rehouse all tenants on the development and demolish all 64 properties.

1 July 2014:

Rehousing of residents from the affected houses continued using criteria developed by the Care for People Group (CPG) until all 64 houses were fully vacated on 1 September 2015.

22 August 2014:

IMT met with Coal Authority.

September 2014:

Monitoring in all remaining occupied properties began using specific CO₂ sensitive monitor.

1 September 2015:

Last resident rehoused.

5 October 2015:

IMT meeting held and incident declared over.

17 November 2015:

Multiagency debrief held.

Figure 3: Summary of chronology of events

2 Review of Evidence

Health Protection Scotland conducted a literature review on behalf of the IMT to provide evidence to support investigation and management of the incident. The review covered the nature of carbon dioxide; UK CO₂ standards and health effects; reported major incidents of CO₂ which affected health in the wider environment; carbon dioxide migration from coal mines into buildings particularly in domestic settings; significant incidents attributed to oxygen deficient atmospheres associated with mines and; reported incidents of CO₂ migration into buildings and effectiveness of mitigation measures. A summary of the key findings of the review are listed below but the details of the review are contained in Appendix 4.

2.1 Carbon Dioxide Gas

Carbon dioxide is an odourless gas found naturally in the atmosphere at around 0.03% and is vital to a number of natural processes including plant respiration.³

Oxidation of organic materials such as coal or landfill, combustion of organic materials, and respiration can result in raised concentrations. The reaction of acid water with carbonate rock (e.g. limestone) also produces CO₂. Most CO₂ emissions from natural sources in the UK come from coal-bearing strata particularly disused coal mines.

In reported incidents carbon dioxide is denser than air and therefore lies low, near the ground therefore basements, cupboards and areas under stairs are common indoor spaces for CO₂ to build up high concentrations.

2.2 Carbon Dioxide Standards and Health Effects

Carbon dioxide is used for domestic and commercial purposes and, as such, is controlled by legislation.³ In the UK, CO₂ is a recognised hazard in the workplace with workplace exposure limits (WELs) set under the Control of Substances Hazardous to Health Regulations 2002 (COSHH).⁴ The WELs take account of an average exposure over a defined time period.³ The approved limits listed in the Health and Safety Executive EH40/2005 Workplace Exposure Limits are:⁵

- Long-term exposure limit (8hr reference period) of 0.5%⁵, (5000 ppm)
- Short-term exposure limit (15 minute reference period) of 1.5%⁵, (15000 ppm)

There is no specific non-workplace indoor air quality guideline value for CO₂ in the UK.

Carbon dioxide can pose a threat to life through asphyxiation as it can displace oxygen in the air to dangerously low levels. At levels of 15% in air CO₂ poses an immediate threat to life through toxicological effects on the body. Inhalation of raised CO₂ levels causes increased blood acidity resulting in adverse effects on the respiratory, cardiovascular and central nervous systems.³ The severity of physical symptoms will vary depending on age, general health, level of physical activity, concentration of CO₂ in the air and length of exposure (Table 1). Some people may experience more severe symptoms if exposed to increased CO₂ (and lowered oxygen levels). Those likely to be affected include people with poor cardiac health (heart failure, high blood pressure, etc.) or poor respiratory health due to illnesses such as asthma, chronic obstructive pulmonary disease (COPD), or other conditions that increase the risk of breathlessness.⁶

Table 1: Symptoms following a range of carbon dioxide exposures

Concentration	Duration	Symptoms
Around 3%	1 hour	Headache
4-5%	A few minutes	Headache, dizziness and difficulty breathing
7-10%	Several minutes to 1 hour	Headache, increased heart rate, shortness of breath, dizziness, sweating, rapid breathing and near or full loss of consciousness
10-15%	1 minute to several minutes	Dizziness, drowsiness, severe muscle twitching and unconsciousness
>15%	< 1 minute	Loss of consciousness
30%	Within minutes	Death

Source: HSE^{3,7}

Prolonged low-level CO₂ exposure (3%) in the presence of normal oxygen can produce relatively modest short-term effects in healthy young adults. When low-level exposure is prolonged it has been found to cause alterations in bone metabolism and related blood calcium concentrations which may have no long-term sequelae in healthy young people but may have implications for those with bone disease. The lowest observed adverse

effect level (LOAEL) for CO₂ is 0.1% (1000 ppm). Exposure to high levels of CO₂ may reduce oxygen levels in the blood leading to symptoms of illness. Very high exposures can ultimately prove fatal.⁶

The Health and Safety Executive has a framework for the assessment of exposure in relation to concentration and duration. This shows significant danger to humans inhaling CO₂ above concentrations of 7% in air and that small changes in concentration can elicit rapid increases in toxicity.³

2.3 Carbon Dioxide in Coal Mines and its Migration into Buildings

Methane and CO₂ are produced during the coalification process, some of which is held in the coal in an adsorbed state.⁸ Gas is only released either near geological disturbances such as faults or due to mining. Whilst working mines have their gas emissions carefully regulated areas of shallow mine workings, have many disused mines and these pose a greater risk of uncontrolled methane and CO₂ emissions.⁹

Migration of gas tends to be upwards along faults and fractures and is influenced by changes in pressure, temperature, concentration gradients and density effects. A reduction in atmospheric pressure may increase the flow of gas and groundwater changes may also affect migration. Following the closure of a mine, procedures are undertaken to reduce the risk of surface gas emissions, however gas will continue to be produced and therefore accumulate, particularly if dewatering and/or ventilation is stopped. Water levels will influence the migration of gases through the mine and if water levels rise, seepages can occur at the surface through natural (e.g. faults) or artificial pathways (e.g. tunnels, adits, shafts etc) connecting to the surface.

Freezing conditions or water logging will, on the other hand, temporarily prevent gas release.⁸ Mineshafts provide a migration path from both shallow and deeper seams which is important with respect to rising water levels following closure of a mine.⁹ Even if shafts have been filled there may be permeable sections especially if surface debris has been used.⁹ Growing urbanisation has also sealed natural seepages requiring mine gas to migrate via alternative routes.¹⁰ Improving housing standards through factors such as central heating, home insulation and reduction in open fires and chimneys also play a role in increasing the number of occasions where mine gas is detected in houses.¹⁰

Once released to the open air CO₂ does not generally pose a problem as it dissipates. However, if it enters buildings along a migration pathway such as cracks in floors,

sewage systems, construction joints, cavity walls, floor structures, wall claddings, ventilation ducts or gaps around service pipes, it can accumulate in poorly ventilated enclosed spaces such as basements or cupboards. In the wider environment, tunnels, caves etc provide similar spaces for potential accumulation.⁸ Such an accumulation is toxic and if people are exposed to high levels, they can be asphyxiated leading to ill health and fatalities.⁸ The insidious release of CO₂ emissions and number of factors affecting migration make detection difficult.

2.4 Incidents of Carbon Dioxide Affecting Public Health

Deaths have been associated with large releases into the population from industrial and natural processes such as lake “overturns” and volcanic activities which can cause massive mortality and morbidity. Review findings on these large-scale releases are contained in **Appendix 4**.^{3,11,12,13} There are relatively few recorded incidents in the UK. However a broader search on the health impact of CO₂ from coal mines demonstrates issues across the world. 8 Incidents reported from the UK and the USA were often related to oxygen deficient atmospheres and homes built on or near coal mines.^{19, 22, 23, 24,}
41

Carbon dioxide releases from mines have long been known to be associated with blackdamp (air with elevated CO₂ and low oxygen levels).^{14,15} Several incidents have been reported where CO₂ has caused morbidity and mortality, in a variety of settings, when conditions were such that a migration pathway connected mine gases to enclosed or poorly ventilated spaces. There have been instances where victims have been asphyxiated due to poorly ventilated trenches, unfilled shafts, collieries and other old mine workings, and oxygen deficient undergrounds.^{16,14,15} In a few instances failed ventilation fans in abandoned mines caused serious concerns resulting in police, mines rescue and environmental health responders to be called out but there were no deaths or serious long term consequences reported.^{17,18}

2.4.1 Significant incidents caused by oxygen deficient atmospheres attributed to mine gas

Several mine gas surface incidents have been recorded in domestic properties in the north east of England since the 1950s. Although many of them were not specifically attributed to high levels of CO₂ at the time, they were caused by oxygen deficient mine gas or blackdamp.⁹ In County Durham, in 1979, investigation of road settlement within a council estate revealed the presence of two abandoned shafts. Random testing for mine gas in a nearby house demonstrated oxygen levels that dropped below 14% at times. The house had been built above the material used to seal off a surface drift to an

abandoned mine.⁹ The family was temporarily rehoused following frequent complaints of ill health during their four-year residency.

In 1980, in Cramlington, Northumberland, families in two adjacent semi-detached properties had complained of breathlessness, feeling faint and unwell. Investigation revealed low oxygen levels; around 11% in confined spaces such as cupboards and 15% in the ground floor rooms. Oxygen levels were affected by drops in atmospheric pressure.⁹ Similar environmental conditions were observed in other houses in the area.

In 1987, Seaton Sluice, Northumberland, emergency services were called out by council officials following a rapid fall in atmospheric pressure which resulted in an oxygen deficient atmosphere that affected 15 properties in a mining area.⁹ A similar incident was reported in Pegswood, Northumberland, in 1993 where a number of homes were evacuated when falling atmospheric pressure was associated with a rise in blackdamp from an underlying shallow mine. The mine had been closed for 30 years but was connected to a larger colliery that had shut more recently with subsequent cessation of ventilation and dewatering resulting in blackdamp emissions. Again in 1995, in Widdrington Station, Northumberland, occupants of a privately owned house experienced symptoms following exposure to blackdamp. It had previously been the fan house of a closed colliery and the bathroom was directly above an imperfectly filled upcast shaft (a shaft which allows air to leave the mine).

2.4.2 Significant incidents of elevated carbon dioxide in homes on or near coal mines

In 1992 Hendrick and Sizer reported a case study of a 42-year-old female who bought a home in 1987 in an area of Newcastle upon Tyne where a mine had closed in the early 1940s.¹⁹ The woman and her helpers started to report symptoms including dizziness, nausea and headaches, all of which passed as they moved to fresh air. On investigation high CO₂ and low O₂ levels were recorded. Spikes in carbon dioxide concentrations during the initial incident and on several subsequent occasions were found to be associated with periods of bad weather and, in particular, rapid drops in atmospheric pressure.¹⁹

In August 2000 four people from three homes in Lawrence County, USA, experienced difficulties in breathing and anxiety associated with high levels of CO₂ and low levels of O₂ in their homes. One family attended hospital with flu-like symptoms. While each of the properties had different site conditions one was on, and the other two adjacent to, a

strip mine.²⁰ Again high CO₂ and low O₂ levels were recorded particularly during periods of low atmospheric pressure.²⁰

In West Virginia, USA, Kreiss et al reported on the investigation of elevated carbon dioxide levels in a two-storey new-build property occupied in 2001 by a couple, both aged 42.²¹ Shortly after they moved in the woman reportedly experienced episodes of dizziness, shortness of breath and fatigue, while the man reported episodes of mild confusion, headache and blurry vision. All of these episodes occurred while the occupants were working in the basement of the property and always resolved once they moved back upstairs. Subsequent investigations at the property identified CO₂ levels as high as 9.5% in a crawlspace adjacent to the basement, with concentrations greater than the upper limit of detection of the standard carbon dioxide monitor (1%) recorded in the upper levels of the property. Oxygen levels as low as 14% were also recorded in the crawlspace area.²¹

Laughrey and Baldassare investigated cases of CO₂ migration in seven different homes, three of which appear to be the same Lawrence County homes reported above.^{20, 22} Of the four remaining houses, one report of CO₂ toxicity symptoms came from a family living in Derry, Pennsylvania, in 2002. The two daughters had bedrooms in the basement and awoke on several occasions with increased heart rate, difficulty breathing and chest tightness. Their father experienced similar symptoms on entering the basement. The house was located on steep bedrock in an area which had been both deep and surface mined. CO₂ of more than 10% was found. Evacuation of the house was necessary.

Three other properties in Western Pennsylvania were investigated, each with high CO₂ and low O₂ concentrations. Stable carbon isotopic analysis revealed the source to be the acid mine drainage (AMD) reaction with carbonate minerals in the spoil in the latter two houses with the source for the first house remaining unclear, however, the strip mine spoil was suspected to be the origin of the raised CO₂.²²

The United States Geological Survey (USGS) reported on the occurrence of elevated levels of CO₂ in a property built on reclaimed surface coal mines in Indiana, USA. Depending on environmental conditions this property was, at times, considered uninhabitable.²³ The authors reported that spikes in CO₂ levels were most closely linked to rapid drops in atmospheric pressure and heavy rainfall.

In 2015, at Lagny, France, episodes of CO₂ emissions from former underground mines, both iron and coal, were reported in the area of Lorraine when some inhabitants noted

faulty gas cookers and boilers in cellars. Others experienced symptoms consistent with CO₂ toxicity with some losing consciousness. Concentrations of up to 8% CO₂ and low O₂ levels (down to 7% volume) were noted in the basements of some houses, generally occurring during a drop in atmospheric pressure. The exact date of the incident was unknown however it was thought to be the late 1990s.

In summary, a range of CO₂ concentrations were reported in the 10 properties investigated in these five studies (excluding the reference to issues by Lagny in France). Seven of the ten properties reported spikes in CO₂ levels during rapid drops in atmospheric pressure, or periods of heavy rainfall. On lower floors, in poorly-ventilated areas, nine of the ten properties were reported to have higher concentrations of CO₂ while elevated carbon dioxide concentrations were associated with reduced oxygen levels in all ten properties.

2.5 Effectiveness of mitigating measures for CO₂ and oxygen deficient atmosphere in domestic settings

The review found that several types of mitigation measures were put in place in each of the properties with varying degrees of success. In one incident initial remediation including ventilation in the under floor spaces and cleaning and enlarging of airbricks was unsuccessful. Other unsuccessful remediation measures included removal of the suspended floor, insertion of a bonded impervious plastic membrane with particular care to avoid leakage paths and injections of bentonite below the concrete foundations through boreholes. Oxygen levels varied in surrounding housing depending on the presence or absence of an underlying intact protective bed of clay. This had been disrupted in places during construction of the housing. It was not easy or in many cases possible to replace this protective barrier through substitution with bentonite. The solution was to install a ventilation system underneath the properties to automatically extract the air from the shallow mine workings at times of low atmospheric pressure.⁹

One study noted the installation of a shallow shaft in the soil adjacent to the affected property, in the hope that gases would vent at this point, diverting away from the property. This was unsuccessful. Sinking new shafts into the mines and using mechanical ventilation to dilute and dissipate ongoing mine gas production appeared successful.¹⁹

One study recommended that sealing of cracks, use of subsurface ventilation and ensuring maintenance of positive pressure within new buildings built over such ground should be considered as part of any future building codes to protect public health.²¹

Another study noted three different mitigation techniques including both pressurisation and depressurisation of the walls and/or sub-floor areas. None of these was sufficient to prevent CO₂ migration into the property when atmospheric conditions were conducive to intrusion, for example, during periods of rapid drop in atmospheric pressure or heavy rainfall. The authors also highlighted the limitations in extrapolating these findings to other properties due to the likely impact of many site-specific factors on any attempted mitigation, including foundation characteristics, physical and geochemical properties of the site and proximity of the water table to the property.²³

A positive pressure sub slab ventilation system was constructed in three properties, two of which were new with tight foundations and were more suited to mitigation measures. The third, older property had additional work undertaken to seal an earthen floor. The ventilation system allowed fresh air to be pumped into the gravel sub base to displace the CO₂ and resulted in a tenfold reduction in CO₂, with levels maintained at normal atmospheric levels including during periods of low atmospheric pressure.²⁰

A further study demonstrated that excavation of an open trench in a property and similar measures including sub slab positive pressure ventilation system in three other properties were also reported to be successful.²² While these studies have reported some success, it is important to note the variation in geology, housing conditions or age, and variation in the comprehensiveness of the remediation measures employed.

In conclusion, the studies show a great deal of uncertainty around the effectiveness of any attempted mitigation measures employed to prevent CO₂ migration into properties. The potential impact of so many site-specific factors also reduces the ability to estimate the likely effectiveness of any one technique in preventing ongoing gas migration in another situation. This therefore reduces the confidence that any mitigating measure would be completely successful in preventing the ongoing threat of CO₂ intrusion into affected properties.

The findings of the literature review support the views in the Department of the Environment 1996 report that remedial measures in existing developments have had mixed success.²⁴ Passive venting of mine adits is not always effective under varying atmospheric pressure conditions unless located close to the affected area, and retrofitting of gas protection through seals to floors and service entries have not had much success. Remedial measures in existing developments are recognised to be unreliable²⁴. The report concluded that effective precautionary gas mitigation measures

for developments are achieved by attention to structural details, which cannot be readily addressed post-construction.

Uncertainty about the effectiveness of retrospective gas migration mitigation measures means that options for CO₂ remediation in existing properties contrast with the relatively clearer guidelines and more effective regimes established for managing radon (another mine related gas).²⁵

3 Management of the Incident

3.1 Incident Notified to the Health Protection Team

On 26 March 2014 the NHS Lothian Health Protection Team received a phone call from a Midlothian GP (Newbyres Medical Centre), who had seen patients in the previous couple of days with symptoms and concerns about CO₂ levels in their houses in Newbyres Crescent, Gorebridge. Their reported symptoms included nausea and headaches. The GP also reported that another family from Newbyres Crescent had attended out of hours on 25 March 2014 reporting similar symptoms and concerns. The GP was concerned that they were likely to see more residents presenting with symptoms and they had learned that residents had recently been evacuated from the area.

A further call was received on 27 March 2014 from a doctor at the Royal Hospital for Sick Children (RHSC) requesting advice regarding a patient who lived in the Gorebridge area. The patient was due to see them for routine tertiary care for a non-related condition but had phoned with concerns about possible CO₂ exposure at home.

On further enquiry, health protection staff established that the issue first came to light in early hours of Saturday morning of 7 September 2013 at 87 Newbyres Crescent, when a family took ill, starting with their son who was sleeping in the living room.²⁶ Tenants of two properties (87 and 89 Newbyres Crescent) alerted Midlothian Council. It was initially suspected that the two properties were affected by carbon monoxide being emitted from a boiler. Midlothian Council investigated, and undertook a testing regime during the week commencing 9 September 2013. Carbon monoxide was not identified. Midlothian Council then requested the Scottish Gas Network (SGN) visit the site to inspect the central heating boilers. The SGN engineer's personal CO₂ gas alarm went off during the inspection, whereas carbon monoxide had been anticipated. Midlothian Council Environmental Health Team then invited the public analyst, City of Edinburgh Council Scientific Services, to test the properties for elevated gas levels, and subsequently confirmed the presence of elevated CO₂.

Between September 2013 and March 2014 Midlothian Council sought external expert advice to investigate, monitor and advise on necessary action in relation to this issue.

3.2 Incident Management Team Response

Following notification to NHS Lothian's Health Protection Team, a consultative teleconference was held between the team and Midlothian Council. It was identified that the addresses of interest were homes built for and owned by Midlothian Council and were occupied by its tenants. On realising that the problem was likely to be a wider environmental public health issue a multi-agency Problem Assessment Group (PAG) with representation from NHS Lothian, Scottish Environment Protection Agency (SEPA), Health Protection Scotland (HPS) and Midlothian Council's Environmental Health Services was convened on 2 April 2014. Given the potential of significant risk to public health, the PAG immediately became an Incident Management Team (IMT). Sixteen further core IMT meetings were held until the incident was declared over on 5 October 2015 (**Appendix 5**). Fairhurst (consultants acting on behalf of Midlothian Council), Midlothian Council Customer and Housing Services Department and the Coal Authority were, at various points, invited to attend the IMT to provide relevant information. Representatives of Scottish Government Health and Social Care Directorate attended initial IMT meetings as observers (**Appendix 3**).

The remit of the IMT, as derived from the Scottish Government guidance on managing public health incidents, was to:²⁷

- Minimise the number of cases of illness by promptly recognising the incident, defining the way in which cases became exposed to the hazard identified as leading to exposure, identifying and controlling the source of that exposure, and preventing secondary exposure.
- Minimise mortality and illness by ensuring access to effective healthcare.
- Inform the patients, actual or potentially exposed groups, staff, clinical and management colleagues, public, their representatives and the media of the health risks associated with the incident and how to minimise them.
- Collect information for use in better understanding the nature and origin of the incident, its monitoring and to make recommendations on how best to prevent and manage future incidents.

From the outset the IMT recognised its role was to determine the likely cause of the exposure and assure the effectiveness of mitigation, not to consider who, if anyone was culpable. This latter responsibility lies with the relevant official statutory agencies that

have defined and continuing responsibilities for regulating situations involving hazards associated with old mine workings. They remain responsible for ensuring that appropriate precautionary measures were taken to control any such hazards and prevent the public from being exposed to these in a built environment setting. The NHS board and IMT did not lead on these statutory responsibilities and functions. The IMT remit is bounded by its responsibilities regarding issues related to the maintenance and protection of public health.²⁷

4 Risk Assessment

In pursuit of its primary objective of protecting public health, the IMT conducted systematic investigations into the possible sources of the gas, the potential pathways by which the gas reached the houses and the people who may be affected, a model referred to as the source-pathway-receptor model. The model was used for health risk assessment and to identify appropriate health risk management options for action by the respective member agencies. This involved:

- Obtaining copies of relevant investigation and background reports provided by Midlothian Council.
- Obtaining independent expert advice to inform its decisions and taking action to minimise the impact on the residents' health and wellbeing.

The IMT risk assessment was mostly based on the technical investigations carried out by the Coal Authority, Fairhurst and SEPA and review of published evidence.

The priority of the IMT was the safety of the residents with a focus on the health risk associated with CO₂ and other gases and the long-term risk of recurrence of elevated levels of the gas in their houses. In addition, the IMT assessed the psychosocial impact of the incident on the residents while the investigations were ongoing up to the point where the residents were rehoused.

4.1 Source Investigation

Examination of geological maps, mine maps, previous investigations and reports showed that the site was made up of coal seams with soft and broken grounds, with voids and intact strata in some places. The superficial soil cover was found to vary between one to 11.2 metres.²⁹

The site was potentially transected by two faults, the first described as “trending east to west through the central north area and a downthrow to the south” the second “to the

southeast from the previous fault". It was underlain by abandoned mine workings with potentially unstable zones and insufficient rock cover. Two mineshafts were reported in the area but only one was located at the time of the original pre-development site investigation early in 2006 and that mineshaft was subsequently grouted as part of the pre-construction preparatory ground-works.²⁸

The initial investigations of the source of the gas were carried out by the Coal Authority at the invitation of Midlothian Council.¹ The Coal Authority established that the CO₂ was migrating through the ground and collecting beneath the concrete slab at the base of the properties and then most likely finding the path of least resistance, through service ducts and the cavity walls into the buildings. Their initial efforts were concentrated on 87 and 89 Newbyres Crescent and the immediate vicinity, where the Coal Authority identified levels of CO₂ in excess of 20%.^{29,1} They then recommended immediate evacuation of the residents of those properties owing to the very high CO₂ levels. They identified that the unventilated cupboard with utilities entry points and the downstairs toilet were the areas with the highest elevations of CO₂.^{2, 26}

The incident resulted in all the properties in the estate being checked, initially by monitoring of gases in cavity walls. In February and March 2014, Fairhurst Consultants found elevated levels in 4, 6 and 30 Newbyres Crescent. These properties were decanted and the residents rehoused.²

4.1.1 Source Identification

In order to establish whether the CO₂ was coming from the historic mine workings or other sources, the IMT requested SEPA, via Midlothian Council, to undertake a gas capture from two of the properties thought to be worst affected.

The SEPA report (**Appendix 6**) details the sampling of air at 87 and 89 Newbyres Crescent, and describes the subsequent radiocarbon analysis of the air samples collected from property 87 Newbyres Crescent.

The air sampling was carried out by SEPA, with the assistance of a representative from Midlothian Council, on 5 May 2014. The samples were submitted for radiocarbon analysis to the Natural Environment Research Council (NERC) Radiocarbon Facility, East Kilbride. The air sampled from the living areas of the vacant and boarded up houses at 87 and 89 Newbyres Crescent on 5 May 2014 contained dangerously high concentrations of CO₂.

The air at floor level in the hallway of 87 was analysed and found to contain 4.8 % CO₂ and 15.9 % oxygen. Radiocarbon analysis of the sample identified that the sample mainly contained carbon from a geological or ancient source.

The high level of CO₂ at number 87, and the fact that the carbon dioxide was found to be mainly geological in origin, supports the hypothesis that it is highly likely to have been migrating from the underlying coal mines.

The higher CO₂ and lower oxygen concentrations measured within the service duct of 87 (6.3% carbon dioxide and 13.8% oxygen) relative to the hallway are also consistent with the hypothesis that the service duct was acting as a point of ingress. This is further supported by the fact that the CO₂ in the hallway and in the service duct had statistically identical radiocarbon compositions?

Based on the evidence of the Coal Authority investigations and the subsequent reports by Fairhurst for Midlothian Council, the IMT concluded that the mine workings below the housing site were acting as the source of CO₂ which was seeping into the houses.

4.2 Pathway identification

The IMT was not able to identify evidence suggesting that remediation or reclamation of the Gorebridge coal mining site was carried out after the mining stopped. However the IMT noted that over the years a variety of investigations and ground preparation works had taken place on the site.

In 2005/6 prior to the development of the site for housing, investigations were carried out by consultancies acting on behalf of the developers. This included an assessment of the mine gas risk based on a limited amount of ground gas sampling via borehole and measurement of CO₂ concentrations and gas flows. The conclusion drawn by the consulting engineers (**Appendix 7**) was that:

“This risk due to the generation of carbon dioxide ground gas has been assessed as low. Guidance on gas protection measures is given in Table 29 in CIRIA Report 149 (Ref. 23). However, this document makes its recommendations based on gas concentrations and since publication it has been recognised that the source and the flow rate should be taken into account. Accordingly, it is considered that the measures proposed by Wilson and Card (Ref. 24) are more appropriate. The most likely source, the concentrations and flow indicate a ‘characteristic situation 1’ which means that no special gas protection measure will be required.”

Reference was made to guidance on the need for gas protection measures^{44, 45} and an alternative⁴⁶ which was considered more appropriate than the CIRIA guidance. This led to the conclusion that no special gas protection measures will be required

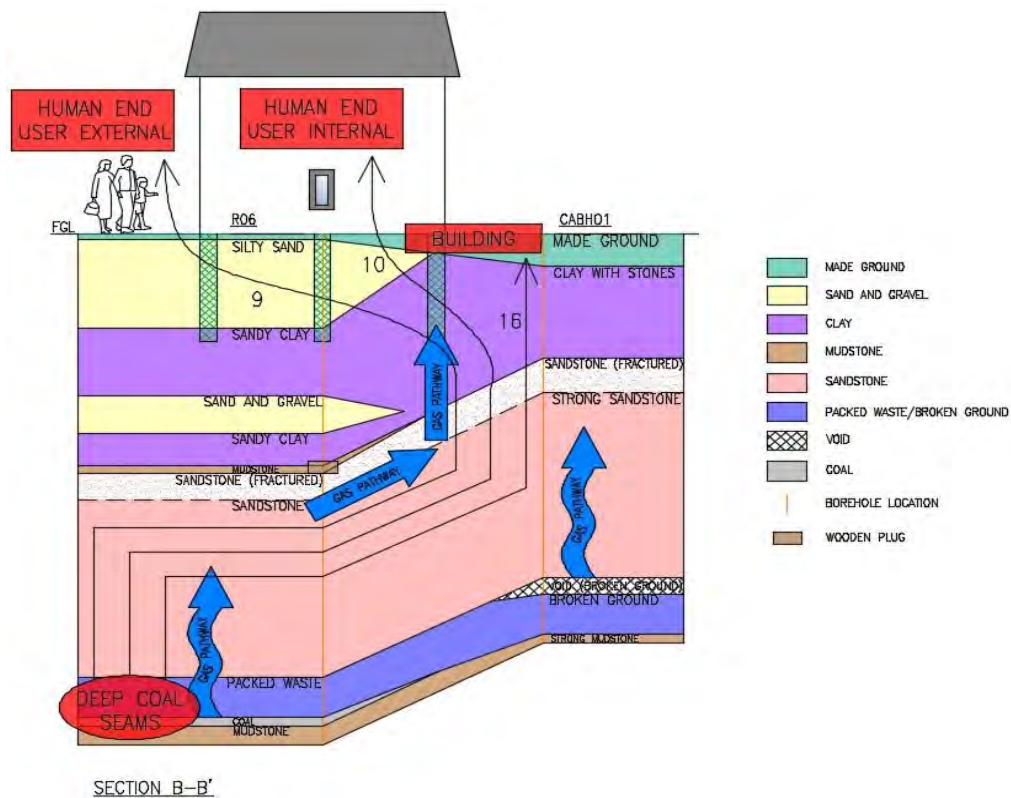
However, as a precautionary measure, the same risk assessment recommended ground gas monitoring where construction workers were likely to be working in excavations and advised that forced ventilation (of workings) might be required (**Appendix 7**).

As a result of the advice, it appears that no gas mitigation measures were incorporated in the house construction, specifically there were no gas proof membranes installed and no sealing of service duct entries.

Before the construction of these houses in this estate, a programme of site stabilisation works was undertaken. This involved grouting in a grid spaced 3.5 metres apart to provide stabilisation (**Appendix 8**). The geology and the previous work at the site present a number of mechanisms (**Figure 4**), by which gas could migrate into the houses.² The migration of CO₂ into the building was hypothesised to be associated with potential pathways including the following:^{1,2}

- The drill holes made during ground investigations may not have been sealed up sufficiently to limit them acting as gas migration routes.
- The recent grouting up of the mine workings for the new Borders rail link, may have created pressure in the area, disturbing the seal of the historic boreholes or the geotechnical ground investigation drill holes, allowing them to act as gas migration routes.
- The installation of deep drainage, particularly in the granular superficial deposits may have created a sufficient pathway to allow them to act as gas migration routes.
- The presence of vibro stone columns introduced during construction, may have provided preferential pathways for gas migration into spaces below the foundation slabs and then into the houses via service access points in the slabs. These were designed to be installed on the strip foundation pattern with spacing of less than two metres and to a depth which may have exceeded four metres.

Figure 4: Schematic diagram showed the potential CO₂ migration pathways



Source: Fairhurst

The report by Fairhurst² for Midlothian Council noted that the potential to amplify the risk of mine gas migration as a result of development is well recognised and cited reports from the National House Building Council (NHBC), CIRIA (reports 131 and 665) and the Environment Agency, all of which highlighted risks linked to interference with the ground at a development site. Factors that may exacerbate ground gas migration are noted to include “surface paving, capping via the construction of roads and pavements” that can result in gas accumulating in the ground that would previously have vented naturally via open ground, as well as the use of vibro stone columns, and grouting which effectively create new pathways by which underground gas may migrate to the surface.²

In addition to these known amplifying factors, the use of unventilated solid concrete slab ground floors in the houses increased the potential for ground gas ingress into properties at this site. The initial mine gas risk assessment was however, based principally on relatively limited ground gas concentration and flow rate assessment prior to any site stabilisation and development work. The initial assessment did not apparently take account of the potential for a (predictable) increase in gas migration risk associated with the building development itself. This calls into question the adequacy of

the mine gas risk assessment process if it is not apparently able to ensure that the possibility of the risk level increasing due to site development interventions is taken into account. The ability of the existing process is also open to question in terms of its capability to ensure that an appropriately precautionary approach is adopted to mitigating even an existing low risk, where there is any potential to increase due to unforeseen changes.

4.3 Environmental Factors that may have Influenced CO₂ Migration

The IMT considered a number of other environmental factors which could have influenced the migration of CO₂. Migration of gas has been reported to be upwards along faults and fractures and is influenced by changes in pressure, temperature, concentration gradients and density effects. As noted from the review of evidence a reduction in atmospheric pressure will increase the flow of gas and groundwater changes will also affect migration.^{8,9,10} Freezing conditions or water logging will, on the other hand, temporarily prevent gas release.⁸

4.3.1 Groundwater levels

It is known that groundwater levels influence the migration of gases through abandoned coal mines and that if water levels rise, seepages can occur at the surface through natural (e.g. faults) or artificial pathways (e.g. tunnels, adits, shafts etc) connecting to the surface.⁸

Monitoring of groundwater levels in abandoned mine areas is often undertaken by the Coal Authority. SEPA did not hold any site-specific monitoring data for the Gore Avenue/Newbyres Crescent site and therefore could not confirm if groundwater levels at the site had risen over recent months and years. SEPA was, however, aware that groundwater levels at some other sites in Midlothian and East Lothian have been rising in recent years.⁴² This was due to the closure of historic deep coal mines (in the late 20th century) and the resulting flooding of the mined ground in the subsurface with groundwater, when pumps, which previously kept the mines dry, were switched off.

Without a historic record of site-specific monitoring (using one or more boreholes) at the Gore Avenue and Newbyres Crescent site, it was not possible for the IMT to determine at the time of the initial investigation, if groundwater levels at the site had risen and if a rise had occurred then knowing whether this was the result of the flooding of subsurface mines. In 2017, as this report was being finalised, The Coal Authority provided

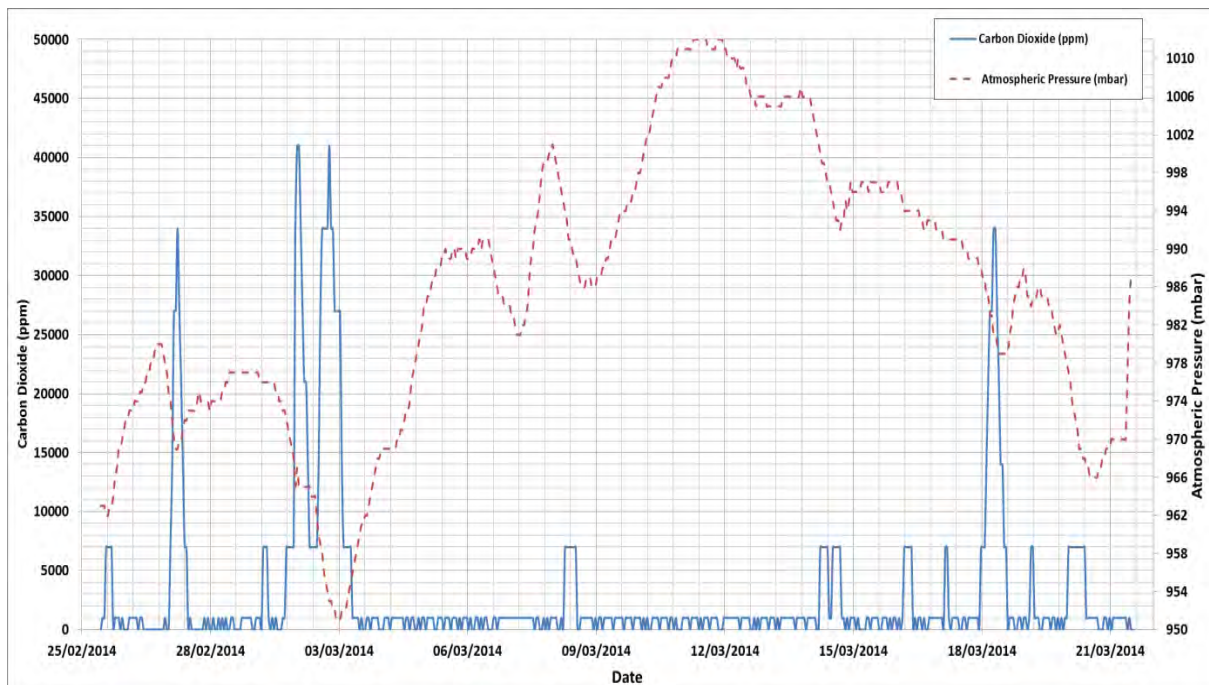
information that the ground water levels in the relevant mine workings closest to the incident were considered to have “recovered” fully.

4.3.2 The role of atmospheric pressure

Rapid changes in atmospheric pressure influence the risk of mine gas entry into properties.^{19,23,24,30} As atmospheric pressure decreases the likelihood of mine gas entry into the properties on the site increases. This relationship was evident from early monitoring in a vacated property (**Figure 5**). When atmospheric pressure dropped rapidly below 960 milibars, there was a reactive event of increased CO₂ concentration for the duration of the very low pressure evidenced through monitoring by the increase of CO₂ concentrations in 4, 6 and 87 Newbyres Crescent. The highest concentrations of CO₂ were recorded when the atmospheric pressure was lowest and had fallen rapidly.

During a significant part of the CO₂ monitoring, the atmospheric pressure varied between 976 milibars and over 1000 milibars.³¹ Although ultra low pressure was not experienced, this could be regarded as a low-pressure environment. Weather reports at the time of monitoring showed uncharacteristic UK atmospheric pressure with very low readings.³¹

Figure 5: CO₂ versus atmospheric pressure over 25/2/14 to 21/03/14 in an affected house.



Source: Fairhurst³¹

4.4 Radon Monitoring

Although CO₂ was the main gas identified in this incident, it is recommended that, in this type of investigation, consideration should be given to other mine gases including radon, particularly because radon and its products of decay have been shown to increase the risk of lung cancer.^{25, 31} Radon is a naturally occurring radioactive gas formed by the radioactive decay of small amounts of uranium that occur naturally in all rocks and soils. It is found in most places in the UK with higher concentrations in some geographical areas, these are shown on radon maps.³³

The radon maps for Scotland (2011) did not identify any of the 64 houses in Newbyres Crescent and Gore Avenue Gorebridge as having an elevated risk of high radon levels.³³ However, some spots of potentially increased risk were noted at approximately 350 to 400 metres distance from the site.³³ There was also another ex-mineworking with an elevated risk level approximately one kilometre from the site.

Considering that gas migration could be linked to underground geology and the mine networks, the IMT hypothesised that radon could possibly find its way into the houses via the underground mine network, following the same pathway as CO₂. The IMT recommended radon monitoring at ground level in the homes including all the previously evacuated properties. Midlothian Council commissioned Public Health England to undertake an analysis of radon levels.

In total 29 properties were monitored with 27 showing no elevated levels of radon. Number 87 Newbyres Crescent and 18A Gore Avenue did show elevated levels (maximum 290 Becquerel per cubic metre (Bq m³) and 130 Bq m³ respectively) (Table 2). The results in one property were above the action level for radon of 200 Bq m³ the other exceeded the target level of 100 Bq m³ where occupants at higher risk, such as smokers, are advised to reduce the radon levels. Where action is advised it is normally recommended that radon levels should be cut to below the target level.

Table 2: Houses where high radon levels were detected

Radon Monitoring Results Property	Radon House Average Bq/m³	Living Area as Measured Bq/m³	Bedroom as Measured Bq/m³	¹Advice
*87 Newbyres Crescent	270	290	70	Reduce the radon level, ideally to below the target Level
18a Gore Avenue	130	89	77	If any of the occupants are smokers or ex-smokers, serious consideration should be made to reducing radon to below the target level

* Vacant at the time of testing ¹Advice from Public Health England

It is important to note that 87 Newbyres Crescent had been vacated and sealed up during the testing period. The recorded levels were likely to represent a worst-case scenario because air movement and ventilation was likely to have been greater when it was occupied. The results are therefore unlikely to provide an accurate estimate of the likely levels of exposure experienced by residents. Residents at 18a Gore Avenue only occupied the property for six years (2009-16). Therefore, even at the slightly elevated levels recorded, the risk is unlikely to be significant in relation to average lifetime exposures. Furthermore, it would only be if the occupants were current or ex-smokers that action would have been advised at these levels.

4.5 Household Risk Associated with Potential Exposure to CO₂

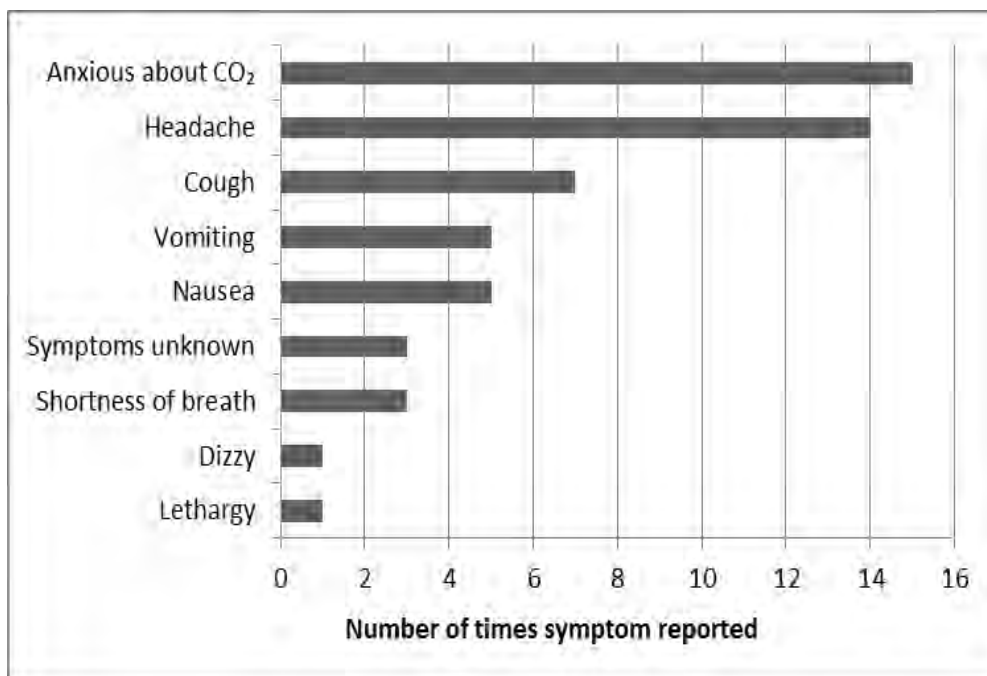
As part of the investigations, the IMT sought information from NHS Lothian HPT on the residents' contact with health services in relation to CO₂. Authorised staff from the team confidentially extracted and analysed non-identifiable healthcare data on residents through database searches (TrakCare, Clinical Portal and SCI-store). Phone interviews were carried out with NHS 24, GPs and A&E departments.

The list of residents provided by Midlothian Council was complemented by Health Protection Nursing Staff searching of patient electronic records (TrakCare, GP records and SCI Store) for residents in the area. Of the 165 residents in the affected area, the authorised staff identified 132 (80%) named residents in the area. The staff then investigated the residents who had sought healthcare between September 2013 and

July 2014, and updated this in October 2015. Only those who had sought healthcare in relation to the CO₂ event were included in the analysis. A total of 132 known residents were reviewed, of whom 22 (16.7%) had sought healthcare in relation to CO₂ exposure. Three residents presented to more than one service, resulting in 25 presentations to various healthcare facilities.

A range of symptoms were reported with the most common being headache (63.6%), cough (31.8%) and vomiting (22.7%). These are common symptoms that are also consistent with CO₂ exposure. In addition, a large proportion was anxious (68.2%) about the situation and the impact that it might have had on their health (**Figure 6**).

Figure 6: Reported symptoms of residents who sought healthcare



Note: Some residents reported more than one symptom. (N=25)

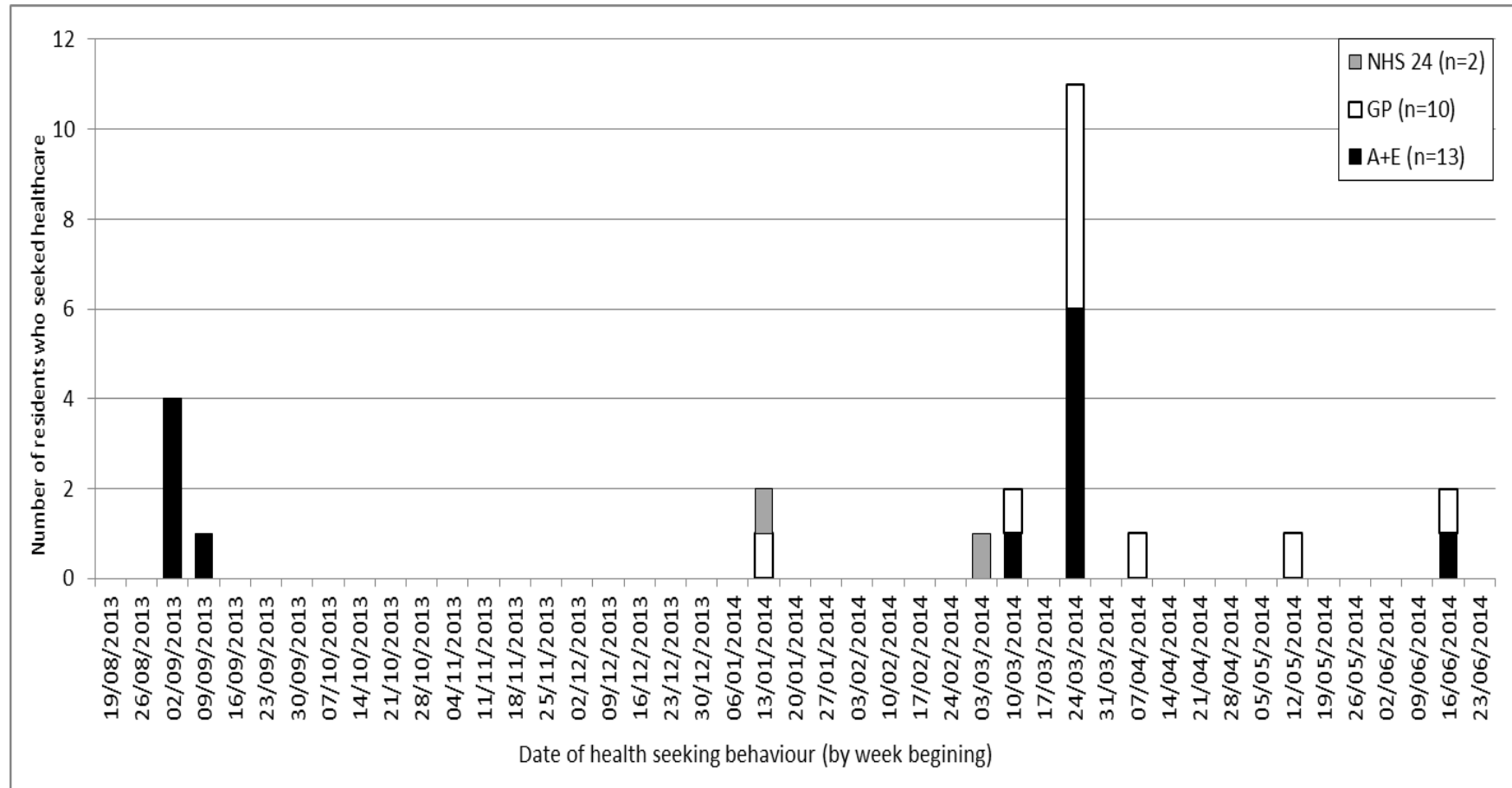
There were two identified clusters of healthcare seeking behaviour. The first was in September 2013 when the incident first occurred and the second in March 2014 (**Figure 7**) when three property evacuations occurred within a four-week window. After March 2014 healthcare contacts due to concerns over CO₂ dropped dramatically. Despite an extensive search, it was difficult to be certain that all healthcare presentations had been captured.

Carbon dioxide alarms were fitted in all occupied properties between 7 and 17 April 2014 and remained in place until the tenants were permanently rehoused. Following installation of the alarms there was a drop in the CO₂ related healthcare contacts.

Most of those who sought advice or treatment, attended their general practitioner (45.5%) or A&E (59.1%), with a small number using NHS 24 (9.1%) (**Figure 7**).

In summary this analysis shows that some residents reported symptoms which are consistent with the hypothesis that they were exposed to CO₂ in their houses and that it was the most likely reason for which they sought healthcare.

Figure 7: Exposure related health seeking behaviour of residents by healthcare facility, August 2013 to June 2014



(N=25)

5 Risk Management

5.1 Immediate Risk Management

The IMT recommended measures to NHS Lothian and Midlothian Council to minimise the acute risk to residents, and ensure that the situation remained under close surveillance. The recommended measures in 8.1.1 and 8.1.2 below aimed at raising awareness and increasing index of suspicion amongst GPs, informing and advising residents and monitoring CO₂ in the houses to guide individual management.

5.1.1 Providing information

- The local GPs were alerted to the incident and provided with current guidance on the management of patients who suffer CO₂ poisoning.³⁴ They were told to contact the HPT if they identified cases.
- The residents were provided with appropriate information to make them aware of the situation and of the action to take if alarms in their houses went off. The leaflet to the residents contained additional information on signs of ill health and symptoms associated with CO₂ (**Appendix 9**).

5.1.2 Putting in place alarm response and evacuation arrangements

- A dedicated 24-hour response team was established with the means to evacuate and rehouse residents if needed.
- Midlothian Council staffs were provided with written guidance on how to respond to alarm call outs and the arrangements to evacuate residents to alternative accommodation if the alarms persisted.

5.2 Protection of Residents by Carbon Dioxide Monitoring

Carbon dioxide monitoring involved installing continuous monitors in all potentially affected houses. Alarms were also installed in the houses and set to go off when the CO₂ levels reached 0.2%. The house occupants were advised to call a 24-hour response team when the alarms went off and to immediately ventilate their houses for safety. The house occupant characteristics and circumstances of alarm call out were recorded and analysed.

5.2.1 Carbon dioxide gas monitoring

Initial monitoring of mines gases was carried out by the Coal Authority but after they withdrew from the incident, Midlothian Council contracted consultants, Fairhurst, to

undertake internal monitoring of the properties to ascertain if there were elevated levels of mines gases including CO₂.² Initial monitoring was conducted in the wall cavities, through the external brickwork at or near ground level on all sides of the existing ground floor properties within Newbyres Crescent and Gore Avenue, excluding the assisted living properties on Gore Avenue and the Newbyres Village Care Home.² Details of all the monitoring phases are contained in **Appendix 11**.

From the cavity wall monitoring, Fairhurst established that 11 properties showed concentrations of CO₂ above 0.1%. Eight exceeded a level of 0.2%, with six of these properties also exceeding 0.5%, the long-term exposure limits set by the HSE for workplace settings.² One property recorded a maximum of 4% in the wall cavity. On the 21 March 2014, it was decided that the two occupied properties shown to be most affected should be decanted and monitoring was to continue in all other ground floor properties for one month until CO₂ alarms could be installed in all properties at the site.

Monitoring was thereafter undertaken in the high-risk areas of the properties i.e. where service penetrations existed, with the aim of establishing if the mine gas observed in the wall cavity entered the living areas. At this time monitoring was being conducted for a range of gases including methane, Volatile Organic Compounds (VOCs), hydrogen sulphide, carbon monoxide and carbon dioxide since these gases tend to be part of mine gases.^{24, 25} Midlothian Council installed monitors in the unventilated cupboards with utility entry points, in properties in Newbyres Crescent and Gore Avenue and in the linen cupboard in the Newbyres Village Care Home.³⁵

The IMT requested Midlothian Council to undertake an assessment to establish whether ground gas entry might be occurring at the Newbyres Village Care Home.³⁵ The assessment by Fairhurst concluded that a range of gas protection measures existed at the Newbyres Village Care Home. These included:

- a continuous membrane covering the whole floor area and spanning the building cavity
- propriety top hat sealing of utilities entries penetrating the floor slab, and
- a cast reinforced concrete floor slab with a ventilation layer of crushed aggregates under the floor slab.

If installed correctly (there was no evidence to the contrary) the Newbyres Village Care Home was considered to have been sufficiently protected from CO₂ from the perceived source. Concentrations of CO₂ were not elevated above 'normal' concentrations during the observation period.³⁵

Out of the initial 46 properties tested, 41 houses and the Newbyres Village Care Home did not show elevated levels of CO₂. The results from the monitors confirmed that the primary ground gas constituent of concern was CO₂ and identified four properties with elevated concentrations, ranging from 0.6% to 8.4%. The lower limit of detection of the monitors used was 0.5% for CO₂; this is likely to have contributed to the small number of houses where elevated carbon dioxide was identified at this stage.

Having identified CO₂ as the only gas of concern, the IMT recommended the use of a more sensitive meter with a CO₂ lower limit of detection of 0.1% for the remaining 16 house properties that required detailed monitoring. These showed concentrations of CO₂ in 15 of the 16 house properties at levels exceeding 0.2%. Five of those house properties also exceeded the long term exposure limit of 0.5% set by the Health and Safety Executive (HSE) for workplaces, with two of those also exceeding the short-term exposure limit (15 minute reference period) of 1.5%.⁵ Monitoring the Care home with the more sensitive meter did not detect any elevated levels of CO₂.

The monitoring by both the Coal Authority and Fairhurst showed that there were relationships between the level of CO₂ in the houses and atmospheric pressure.² An atmospheric pressure monitor was also deployed and a fall in atmospheric pressure was observed to correspond to elevated concentrations of CO₂. The highest concentrations of CO₂ were recorded when the atmospheric pressure was lowest and had fallen rapidly.²

Fairhurst observed that there was clustering of the highest concentrations of CO₂ measured within properties around the original site investigation boreholes.²

5.2.2 Carbon dioxide alarms

In addition to the monitoring of CO₂ in the houses, the IMT recommended that alarms were installed to alert residents when levels rose.

In April 2014 Midlothian Council installed CO₂ alarms in all occupied residential properties on the site. The council set the alarm activation level at 0.38%.² The IMT reviewed the health effects of CO₂ and recommended that to protect public health the CO₂ alarm activation level be reduced to 0.2%. However, given the potential for 24-hour exposure, alarms were set to indicate levels above 0.2% to warn residents to take early action to reduce further exposure by ventilating their properties. Residents were evacuated when levels persisted above 0.5% CO₂ after ventilation of properties. The IMT decided that these precautionary intervention levels were justified under the circumstances.

Carbon dioxide alarms were fitted in all occupied houses (56 of the 64 affected houses), between 7 and 17 April 2014.² Three of the houses had been unoccupied at the start of the incident and a further five had been decanted by this time. The alarms were installed in areas perceived to be at highest risk for gas seepage and accumulation such as the storage cupboards which contained utility service entry points. The alarms remained in place until the residents were permanently rehoused in September 2015.

The IMT learned that in some properties alarms may not have been audible. The IMT recommended that all alarms were to be fitted with additional audible sounders, and once installed these were acoustically tested to ensure they could be heard by occupants throughout the property at all times. The alarm sounders were placed in the living areas where residents were more likely to spend prolonged periods of time, and therefore were most at risk. The IMT assisted Midlothian Council to develop an alarm response protocol setting out the action required by the householders and the local authority staff. Specialised alert facilities were installed for disabled residents as appropriate.

Following the installation of the alarms, the protocol outlining action to be taken was distributed and discussed with the tenants. This protocol included the immediate reporting of any activation of the alarm to the Midlothian Council Contact Centre, immediate ventilation of properties by opening internal and external doors and windows and also occupants removing themselves to a safe area outside the building. Where CO₂ levels remained elevated (at or above 0.5%) and did not fall following venting the tenants were moved to temporary bed and breakfast accommodation.

5.2.3 Analysis of alarm call outs

A total of 67 CO₂ alarm activations were reported over the monitoring period from 24 properties. The average number of alarm activation reports per household was 1.2. The first activation was reported on 7 April 2014 and the last on 17 October 2014. Twenty (29.9%) activations were reported in May 2014 (**Figure 8**), with most (n=6) occurring on the 10 May 2014 (**Figure 9**). There were three peaks in alarm activations reporting between the 5 and 15 May 2014 (n=14), 14 and 23 June 2014 (n=12) and 10 and 17 August 2014 (n=8). From May to October the number of reports steadily decreased, with a slight increase in August (**Figure 9**). This trend is likely due to the number of occupied households decreasing by 42.9% between the first alarm activation report and the last (**Figure 9**). Of the 24 households who reported alarm activations 10 (41.7%)

reported two activations. The most activations reported by one household was 11, 16.1% of all alarm activation reports (**Table 3**).

Figure 8: Number of alarm activations reported by month

(N=67)

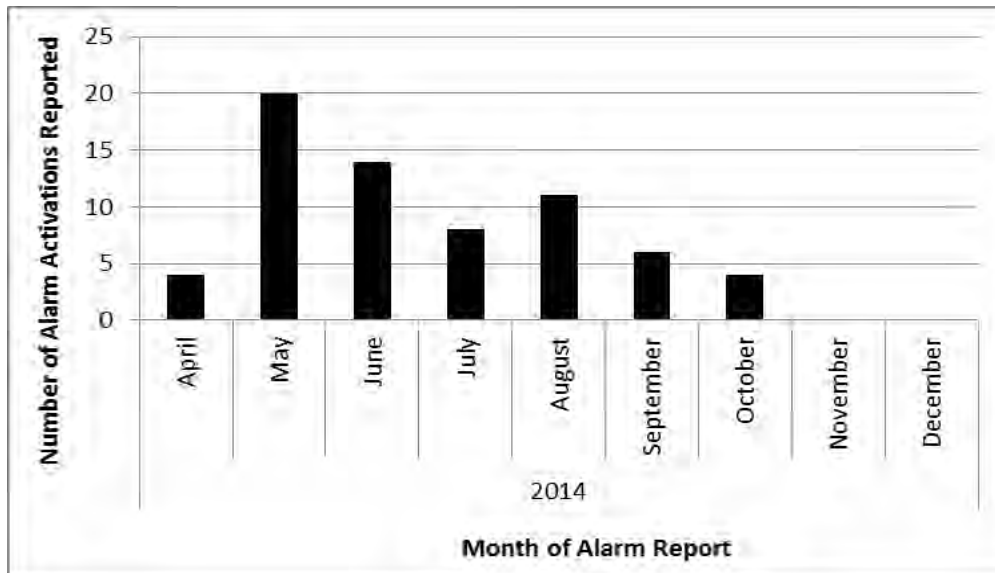


Figure 9: Number of alarm call outs by date of activations. Line indicates number of occupied households

(N=67 activations, N=56 Households)

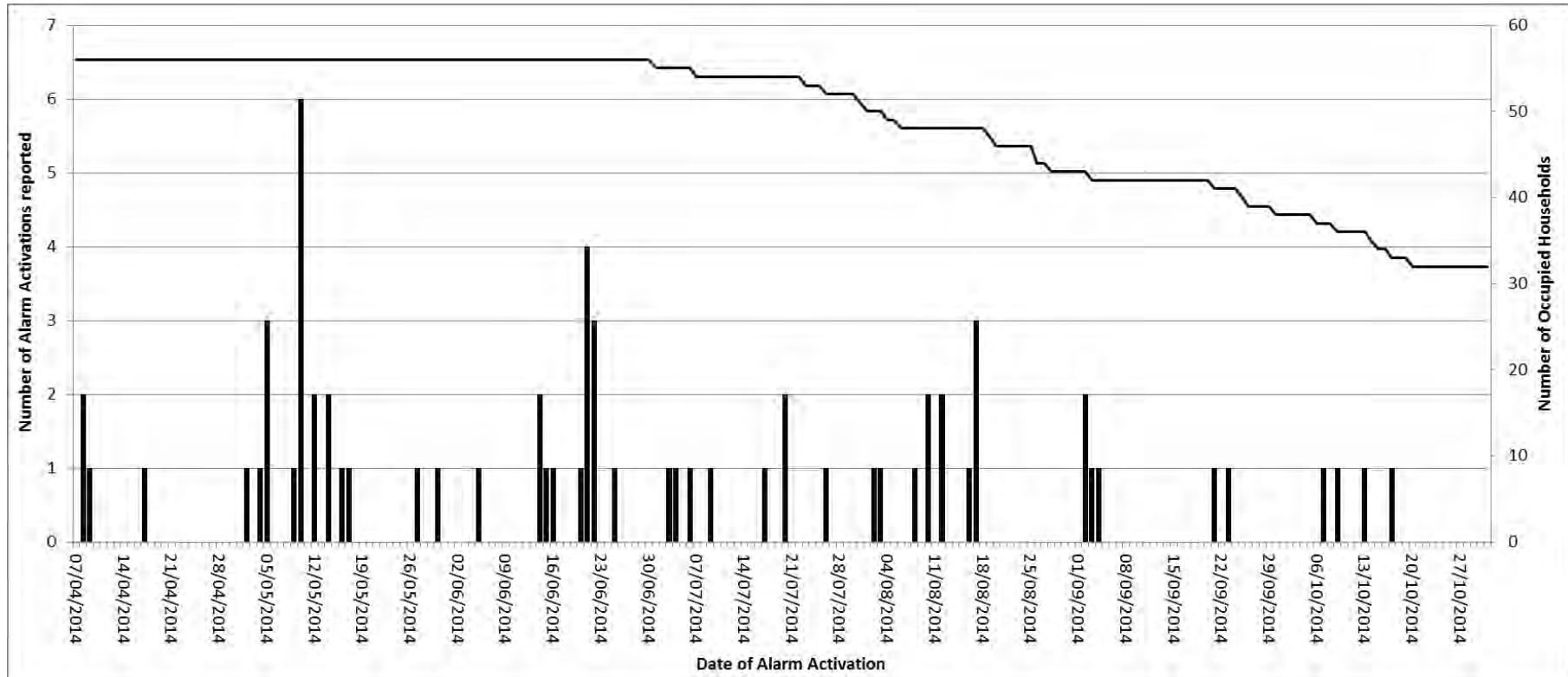


Table 3: Number of alarm activations per household

No. of Alarm Activations	No. of Households
0	32
1	6
2	10
3	4
4	0
5	1
6	1
7 or more	2
Total	56

All the 67 alarm activations reported by residents were followed up by council staff visits to the property in response to call outs. A total of 43 (64.2%) alarm activation response reports were completed (Table 4). For the rest of the call outs, reporting forms were not completed for a variety of reasons:

- Seven (10.4%) alarms occurred before use of the formal response report commenced.
- In five (7.5%) cases alarms were not reported by tenants until a council officer visited for another reason. This was either when the officer was responding to another alarm activation, or if they were in the area at the time of activation.
- In eight (11.9%) instances there was no call out response report but CO₂ concentration data was available, indicating that a visit was made, but no report was completed.

Table 4: Reasons for no alarm call out response report

Reason for no alarm call out response report	No. of alarm activations reported
Alarm call out response report available	43
No alarm call out response report available (breakdown below):	24
CO ₂ concentration data available only	8*
Reported before use of the alarm call out response report commenced	7
Alarm report did not go through contact centre	5
Faulty detector/alarm within stabilisation period	3
Activation occurred on same day as another, so response information given on previous report	1
Total	67

(* = 4 of which came from same address within same 36hr period)

5.2.4 Characteristics of affected of households

A total of 77 residents inhabited the 24 properties where alarm activations were reported, a mean of 3.2 per household. The mean for residents per household for all 56 alarmed houses was 2.6. Of these 77 residents, 48 (62.3%) were over the age of 16, with an average of two people over 16 per household. Twenty-nine of the 77 residents (37.7%) were under 16, with an average of 1.2 under 16s per household which reported alarm activation.

Another sign of elevated levels of CO₂ considered was the unusual behaviour of pets. Tiredness, weakness, fitting or unusual drowsiness in normally active pets may be an early sign of problems (**Appendix 4**). Of the 24 households which reported an alarm activation, 21 (87.5%) owned a pet (**Appendix 4**). The most common pet was a dog (n=14). Four households reported more than one pet. Of the 43 alarm activations where response reports were available, 36 (83.7%) occurred in households which had a pet. Four (11.1%) of them reported that their pets were ill or had a change in behaviour around the time when the alarm went off.

Table 5: Type of pet per household

Pet	Number of Households
Dog (%)	14 (66.7)
Cat (%)	10 (47.6)
Other (fish, guinea pig) (%)	4 (19.0)
Total	21

Out of the 67 alarm activation reports, 28 (41.8%) occurred in the morning. The next most common occurrence was in evening/early night with 13 (19.4%). The least number of alarm activation reports was during the day, 10 (14.9%). Most alarm activations occurred on a Saturday, 16 (23.9%), and second most often on a Sunday, 14 (20.9%). The most common time for an alarm activation report was Saturday morning, 11 (16.4%) (**Table 6**). This data suggests that alarm activation occurred more often when residents were present and active (morning and evening), or at times when residents were present in the property at the time of alarm. Alarms may have sounded when residents were out and no one was there to report it.

Of the 43 alarm activation reports where supplementary data was available, 37 (86%) reported that there was no particular activity just before the alarm sounded. Two (4.7%) reported that the house had been empty before alarm activations, two (4.7%) reported

an increase of people in the household before it sounded, and two reports (4.7%) did not have this type of information.

Table 6: Occurrence of alarm activation reports by weekday and time

Day	Time of Day					Total
	Morning (06:00-11:59)	Day (12:00-17:59)	Evening/early night (18:00-23:59)	Night (24:00-05:59)	Unknown time of day	
Monday	3	2	2	1	0	8 (11.9%)
Tuesday	2	2	2	2	1	9 (13.4%)
Wednesday	1	0	2	1	1	5 (7.5%)
Thursday	2	1	3	1	0	7 (10.5%)
Friday	2	1	1	2	2	8 (11.9%)
Saturday	11	2	1	2	0	16 (23.9%)
Sunday	7	2	2	3	0	14 (20.9%)
Total	28 (41.8%)	10 (14.9%)	13 (19.4%)	12 (17.9%)	4 (6.0%)	67

5.3 Intermediate Risk Management

The IMT recognised that whatever solutions were introduced to minimise or eliminate CO₂ exposure, substantial engineering work would be required and a plan for residents to leave their homes had to be developed. The IMT recommended that Midlothian Council and NHS Lothian should plan this together, using the expertise of the Care for People Group (CPG) and the Joint Health Improvement Partnership. The IMT viewed this as urgent and believed that it needed to be done as soon as practicable to limit the potential mental health effects on the residents. At the special Midlothian Council meeting held on 20th May 2014, the Director of Public Health and Health Policy highlighted the framework for managing public health incidents and the use of the expertise of the Care for People Group to care for the affected residents, both of which form part of the Scottish Government guidance for dealing with incidents of this type.²⁷

5.3.1 Care for People Group (CPG)

The complexity of the incident meant that the decision for a permanent solution had to be planned carefully. This inevitably generated uncertainty about the future settlement of the residents of Newbyres Crescent and Gore Avenue who were already experiencing disruption. A Care for People Group (CPG) was therefore established to take care of their physical, social and mental wellbeing and to maintain community cohesion.

The group was a sub-group of the overarching Midlothian CPG and was chaired by the head of service for Midlothian Council Adult and Social Care. In addition to reporting to the Midlothian CPG, the Newbyres Care for People Sub-group also provided updates to the IMT. Core membership included representatives from adult and children's social work services, environmental health, education, housing, health, welfare rights, communications, emergency planning and local councillors. NHS staff were available to provide information on mental health.

The group first convened on 22 April 2014 and initially met weekly. As the work to relocate residents progressed, these meetings became fortnightly and then monthly. Initially the group was largely involved with the emergency response. They assessed what would be required if the emergency evacuation of a large number of families was necessary and prepared for rest centre accommodation. Residents were given advice on rapid evacuation, including on the preparation of grab bags and notification to next of kin. The group's function changed to providing support for families on their longer-term relocation. It made sure that intervention was timely, with each individual's situation properly risk assessed and managed. The group operated a 24/7 on-call team to enable an immediate response to any alarm activations.

5.3.2 Decanting and rehousing of residents

Once Midlothian Council decided that evacuation and demolition of the development was the way forward, the CPG developed a prioritisation matrix (**Appendix 10**). The aim of the matrix was to assist the team to ensure that those at the highest risk were moved at the earliest opportunity whilst ensuring human health was protected. The CPG's task of relocating residents to suitable alternative permanent homes was undertaken at a pace that protected their health and minimised disruption but also took care of individual needs. The matrix prioritised the needs of children and families such as schools and healthcare needs in relations to proximity to health services.

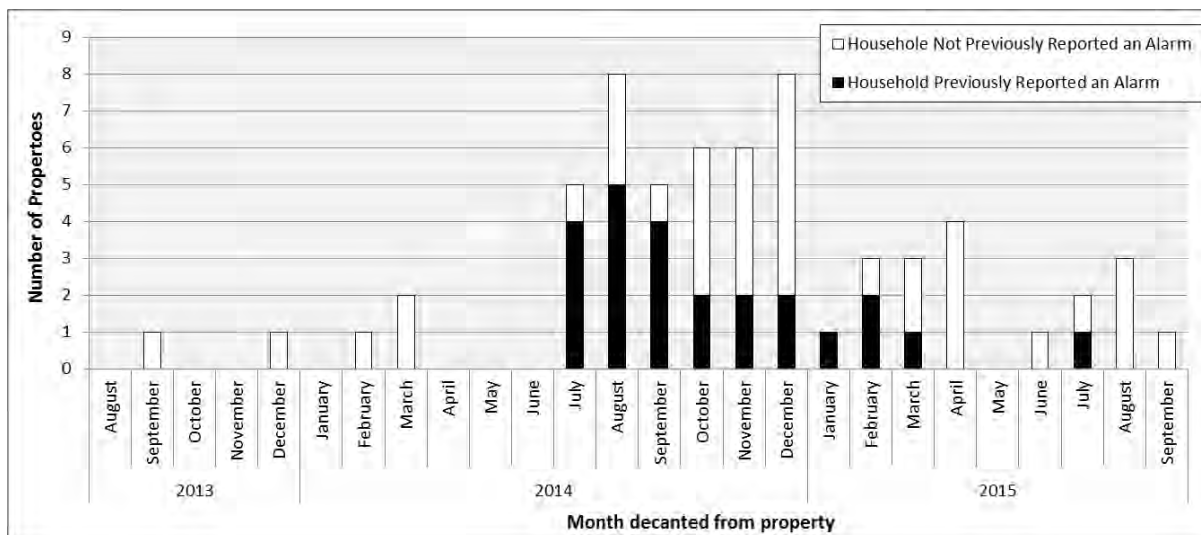
When the incident began on 7 September 2013 there were 61 occupied houses in the estate. Between 11 September 2013 and 7 April 2014, when alarms were fitted, five properties were decanted prior to the alarms being installed.

In the time between the alarms being fitted, and the last reported alarm activation on 17 October 2014, 23 (41.1%) properties had been rehoused (**Figure 10**). The highest proportion was rehoused between July and December 2014, 38 (67.8%).

Of the 64 properties two (3.1%) had been decanted in 2013, three were decanted and 38 rehoused in 2014 (64.1%) and 17 (26.6%) rehoused in 2015. The occupants of the last property were rehoused on 1 September 2015. There was one death from unrelated causes during this period.

Between July 2014 and September 2015, all residents of the 56 households were rehoused with 42.9% having previously reported alarm activation (**Figure 11**). Of the properties where residents were rehoused within six months of the alarms being fitted 72.2% (13/18) had previously reported alarm activation.

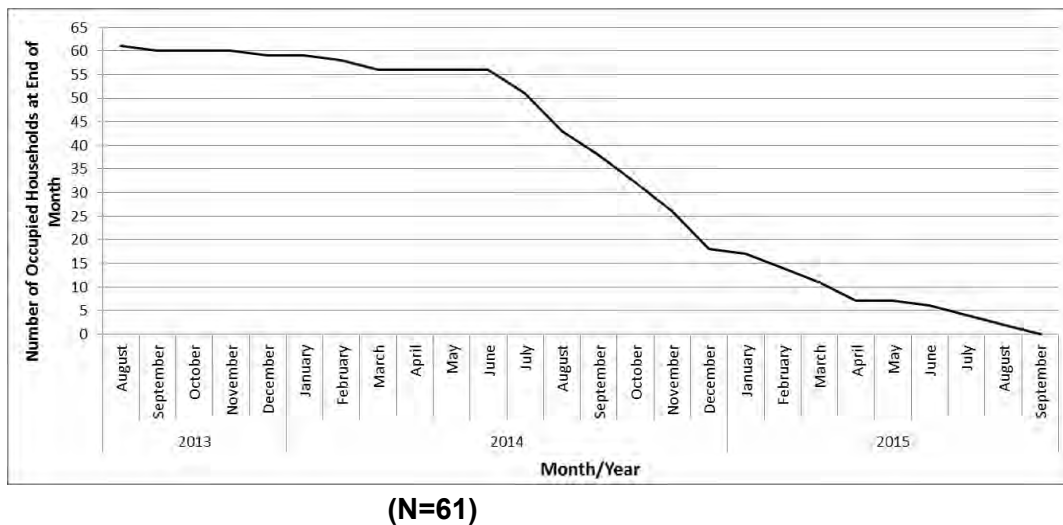
Figure 10: Households rehoused by alarm activation status by month



Note: CO₂ alarms were installed in April 2014.

(N=61)

Figure 11: Number of occupied residential properties over time



The Care for People Group sought to ensure fairness in the relocation of the residents. However, the pace at which households were re-housed also needed to take into account their wish or preparedness to move, coupled with the availability of housing stock. There were some householders whom it was preferred that they remained in their homes for longer because of their vulnerability and potential for adverse impact on health of a precipitate move. However, these householder(s) were also moved if elevated levels of CO₂ were found in their property.

5.4 Long Term Risk Management

The long term risk management involved a search for a solution that, once implemented, would permanently guarantee safety of the residents from mine gases. The options explored ranged from retrofitting housing design corrective measures that would keep out the gases to total demolition of the houses. Consideration was also given to the long term management of the site once remediation measures were implemented.

The options for the future of the site and the housing development were explored by Midlothian Council with advice from Fairhurst. Fairhurst gave two formal presentations to Midlothian Council with two main options which were demolition and rebuild or retrofitting of appropriate ground gas protection in the existing buildings.

At the IMT meeting held on 26 May 2014 Fairhurst explained the options. One of the ground gas protection options was a positive air blanket being fitted below two semi-detached properties. The other was a retrofit membrane to be sealed to the internal cavity wall and the cavity between these walls to be filled with high-density foam.

Fairhurst had pointed out that neither of the processes was warrantable and advised that both the air blanket and the membrane needed to be fitted. The gas protection measures would involve the internal stripping out of the bottom and ground floor of all properties, retrofitting of ground gas membranes, introduction of a positive airflow using electrically powered positive airflow pumping and effective sealing of all utilities entries in to the building followed by the reconstruction of the ground floors. The alternative option proposed by Fairhurst was demolition of all buildings, but pointed out that a cost benefit analysis was needed. Fairhurst advised that rebuilding on the site could take place if all appropriate technical guidance was followed, including the installation of a gas membrane that was sealed and welded.

The IMT expressed concern over the long term safety of the residents with regard to the retrofitting of ground gas protection option and requested Fairhurst to provide the evidence base supporting the effectiveness of the measures. Fairhurst confirmed that it had consulted a number of documents from the Building Research Establishment, Construction Industry Research and Information Association (CIRIA) and also British Standard BS845. They informed the IMT that although this was not a widely used technique, it had been used a number of times across the UK. Fairhurst pointed out that it had consulted a number of specialist sub contractors who would have guaranteed aspects of the remediation measure.

In addition to the advice from Fairhurst, the IMT took account of the Coal Authority view that any future development at the Gorebridge site was possible if gas protection measures were correctly put in place. The Coal Authority had pointed out that it was not uncommon to build at high-risk sites such as Newbyres Crescent and that there was evidence of successful building at such sites with proper gas membranes in place as well as equipment for air flow. With regard to the corrective measures, the Coal Authority suggested retrofit, however, they considered that in this context it did not have significant reliability as additional active ventilation could have been required with liability for maintenance falling on the local authority (IMT meeting with the Coal Authority).

After careful consideration of available information and evidence in literature, the IMT developed option appraisal criteria which it recommended to the council to use when determining the final solution (**Appendix 13**). These included the requirement that the long-term solution had to guarantee the permanent interruption of the source-pathway-receptor linkage that caused the problem. The solution had to be based on high level weighted evidence and take economic factors into account. The solution also had to be

of low technical and management dependency and was to be deliverable within an acceptably short timescale to avoid chronic distress to the residents. These recommendations were contained in the interim report presented to the council on 17 June 2014.

After consideration of these options, Fairhurst developed and presented the council with five final options with a cost analysis. The options were:

- Option 1: Retrofit a gas membrane solution in all 64 Houses.
- Option 2: Demolish and rebuild the houses incorporating gas membranes in all 64 properties.
- Option 3: Demolish only the five decanted houses and rebuild, plus retrofit gas membrane to the remainder of the houses.
- Option 4: Leave the existing five decanted properties unoccupied plus fit gas membrane to the remainder of the houses.
- Option 5: Demolish all 64 properties and market the site for development.

The council took account of the IMT's recommendations (**Appendix 13**) and assessed them against its own criteria, concluding that demolition and further consideration on future use of the land was preferable.

The IMT was informed that at the meeting of 17 June 2014, Midlothian Council considered the five options and agreed the recommendation to progress with Option 2 or Option 5, which agreed demolition of all 64 properties and further work on the future of the site, subject to legal opinion and taking full cognisance of the IMT recommendations.

5.5 Conclusion of investigations and incident declared over

Following the relocation of all residents to alternative accommodation in September 2015, the IMT concluded its investigation and contribution to the management of the incident. However, the IMT recognised that the hazardous gases were still present in the ground underneath the site and that the pathways were still patent i.e. that the site was potentially still a risk to public health. The IMT communicated the following recommendations to Midlothian Council for the long term protection of public health.

- Midlothian Council had to put in place a robust mechanism to limit public access to the site, and limit the potential for unauthorised entry to or occupation of the houses until they were demolished.

- For the long term, before any new development took place, the council should ensure that all statutory procedures were followed, a formal record of measures taken, evidence collected to show that appropriate technical advice, had been taken from the relevant bodies, and relevant technical standards met. This data should form the basis of a record of the further reclamation and remediation work undertaken. This would minimise the possibility of a recurrence of the problem, and limit the future threat to public health to the lowest possible level in line with current knowledge and guidance.
- The IMT recognised that the hazard could not be completely eliminated as the potential pathways for release of CO₂ to the surface were still intact (e.g. the boreholes and vibro stone columns as postulated in the expert technical report). The IMT therefore recommended that wide consultation should be made with relevant agencies including with Lothian NHS Board on any proposals to rebuild on that site.
- Depending on the nature of any rebuild (e.g. if there was a proposal to rebuild on the original concrete plinths that still rest on the original vibro stone columns) there may continue to be a significant risk of gas migration even if mitigating measures, such as installing a gas proof membrane, were adopted in new builds. The IMT strongly recommended that a long-term monitoring strategy for the site, and any houses built there, should be set out as part of any redevelopment plan. This would provide a means of generating objective evidence for public reassurance, confirming that there was no recurrence of gas migration into the properties. To provide adequate ongoing evidence and reassurance to future residents and public health authorities, such monitoring will be required on a long-term basis.

6 Risk Communication

6.1 Communication with Residents

Given the nature and sensitivity of the incident, accurate and timely communication with the residents and the general public was of paramount importance. Midlothian Council used a variety of communication methods to keep affected families and public updated on the developments in the situation. The communication approach used depended on the nature of the issues at the time.

Written updates were issued when communicating matters of a technical or reference nature. Examples of this were the protocol to follow when CO₂ alarms were activated, explanation on the radon testing programme and on the dates and times for open council meetings when the incident was to be discussed. Other written material circulated included hard copies of leaflets, updates (**Appendix 12**) and council reports. Throughout the incident twelve written communications were released.

Face-to-face communication with residents was considered essential, as it gave residents an opportunity to raise questions on any concerns they had about the incident and related interventions. Visits were arranged depending on the needs of the residents. The staff who visited the residents came from a variety of services depending on the nature of the enquiry. In some situations, representatives of partner agencies were co-opted into the visiting teams. For example when the major decision was made to relocate all residents, visits were made to all properties by teams of housing and environmental health staff to deliver the message personally. This provided an opportunity for the officers to answer any initial questions and to distribute and discuss any literature such as copies of the council paper. Midlothian Council opened an office on site. It was staffed mainly by Midlothian Council housing services and NHS staff. Occasionally, other advisers, including those for welfare rights and benefits, also attended. The local office face to face contact proved to be the most used means of communication. It responded to enquiries from an average of about 50% of the residents in any week when the properties were still occupied.

6.2 Communication with Public and Media

Throughout the event it was critical to ensure that accurate information was released to the public and the media in a timely manner by the relevant agency. There was sustained media interest with the incident being reported locally and nationally.^{37–39} This included enquires from the BBC, STV, Scottish national newspapers, housing and trade publications.

The council's communications team managed the information that went out to the public and consulted with the chair of the IMT and NHS Lothian communications team if the contents contained health issues. The IMT addressed aspects which were related directly to the health of residents. NHS Lothian's communications team was in close contact with Midlothian Council and the Scottish Government communications teams in relation to all significant developments and throughout the relocation of residents.

Press releases fell into two broad categories, the issuing of media releases and responding to particular enquiries. Eighteen press releases were issued by Midlothian Council. These covered issues such as identified gas levels, decisions to move residents from homes, the arrangements to do so and the decision to demolish all 64 properties. Midlothian Council received 51 press enquiries concerning the CO₂ in Newbyres Crescent, from sources including the local press and a variety of press agencies. Many of these were requests for interviews, seeking updates about gas levels, information about how and why the incident happened, the legal position and the rehousing of residents.

6.3 Press Interview with IMT Chair

The Midlothian Advertiser interviewed the chair of the IMT on the risk of the CO₂ to the residents, Midlothian Council's decision to demolish the 64 houses and the long term future of the site.

6.4 Social Media and the Internet

Midlothian Council, in addition to maintaining written and face to face communication with the residents, also established communication on social media via the Council's website. Midlothian Council media releases were shared on the local authority's website and social media channels including Facebook and Twitter.

6.5 Communication with Community Leaders

Community leaders and elected representatives, including Midlothian Council elected members and MSPs, MPs and MEPs, expressed significant interest in the incident and made enquiries of Midlothian Council and the health board. The community leaders were kept informed and updated by the local authority staff.

Midlothian Councillors received several reports at formal council meetings and seminars.³⁹ On 29 April 2014, Midlothian Council received a briefing by NHS Lothian Director of Public Health and Health Policy. This, and a subsequent report to a special Midlothian Council meeting on the 20 May 2014, confirmed the terms of the

investigation and the requirements for public health protection. Councillors were made aware of Scottish Government guidance on the management of public health incidents contained in the Public Health (Scotland) Act, 2008.²⁷ They were also made aware of the role of Care for People Groups (CGP) as outlined in the Scottish Government guidance, Preparing Scotland.⁴⁰

A further report, from the Midlothian Council Chief Executive, was received by Midlothian Council on the 17 June 2014 and the council considered the circumstances that contributed to the situation at Newbyres Crescent.

Midlothian Council staff issued a weekly briefing to the elected members for the relevant wards.

During 2014 the MSPs, MP and MEPs for the area were provided with ongoing information about the incident and in June that year they were offered a formal briefing.

6.6 Communication with Primary Care

NHS Lothian informed local general practitioners of the situation and provided them with guidance on how to manage patients who presented with symptoms suspected to have been caused by elevated levels of CO₂.

7 Evaluation of the Incident Management

The following areas were noted by the partner agencies as having worked well in this outbreak:

Organisational arrangements

- The IMT was formed speedily and prompt action was taken to investigate the incident and put in appropriate interventions.
- The setting up of the Care for People Group and its provision of comprehensive support to the residents through most of the incident until relocation to new homes was an exemplary and should be emulated for other major/complex incidents.
- There was good multi-agency team working and cooperation.

Risk assessment

- The key players worked together and contributed their expertise in the investigation. Overall the IMT ran well.
- Fairhurst (the council's consultants), the Coal Authority and other expert agencies met with the IMT (collectively and individually) and helped increase understanding of technical aspects of the situation.
- The investigations were comprehensive and covered every aspect of the incident, from history of land use to identifying the gas as CO₂ from the mines and the future of the site.

Risk management

- The comprehensive efforts made by the IMT and Midlothian Council to safeguard residents' health in a complex situation resulted in a good health outcome with no further ill health incidents after the initial cases.
- All residents of Gore Avenue and Newbyres Crescent were provided with suitable accommodation and everyone was kept safe.
- Appropriate control measures were applied throughout. These included identification of the potential source, monitoring, informing residents, readiness to intervene and provide emergency rehousing on a 24-hour basis.

Risk communications

- Giving proactive key messages to the residents and the public about the expected course of events was helpful.

- There was good multi-agency collaboration and communication.
- There was good communication between the Health Protection Team and local GPs.

8 Lessons Identified

8.1 Preventing and Managing Future Incidents

Where any property is planned for sites with a known mining legacy, a precautionary position should be adopted to reduce the possibility of mine gas ingress to the absolute minimum. Existing legislation and guidance does not automatically ensure a sufficiently precautionary approach to development on land with a known mining legacy.

8.2 Investigating Similar Future Incidents

A monitoring system and alarm call out procedure helped avoid significant harm to the residents and reduced anxiety.

Establishing the Care for People Group (CPG) was valuable. It focused on the needs of residents, providing the necessary contact and support during the incident and throughout the rehousing process.

The IMT noted that expert information from specialist institutions such as the Coal Authority, British Geological Surveys and independent, impartial specialist advice was very valuable. This allowed the IMT to have a comprehensive and thorough investigation. Midlothian Council funded the support provided by specialist advisors. Where such arrangements are not possible, alternative funding sources may be required.

It may not be easy to predict how an environmental public health incident will evolve. All agencies require robust plans for escalation to ensure that such incidents are notified and escalated to the NHS health board at the earliest opportunity.

8.3 Conduct and Membership of the IMT

NHS Lothian's HPT could not have provided all the resources to investigate and deliver the required advice on this incident. The technical support from IMT members and technical consultants employed by the council helped enable a full and thorough investigation.

Awareness is needed of possible conflicts of interests and conflicted loyalties for members with multiple roles as they could compromise an investigation. Ideally where a conflict of interest is identified for a member of the IMT, consideration should be given to identifying an external substitute. However in practice this could be extremely difficult.

In a complex multi-agency IMT investigation the roles of individual representatives may not be clear at all meetings. It is important that roles and responsibilities are clarified at every IMT meeting to ensure that members make an effective contribution and have an understanding of each agency's roles in the IMT. It may also not be necessary for all members to attend all meetings. In this incident, the creation of a core IMT with full members from statutory and regulatory agencies, with others invited as technical advisers or observers, was a useful model and helped the IMT to focus its activities. Clarity and responsibility for decisions should be established early in the incident.

All individuals within partner agencies may not have the same understanding of the guiding principles used by the IMT to investigate and manage an incident. It is important that representatives inform/confirm the guidance and principles that govern the operation of the IMT to their agencies as soon as possible. Where necessary, the chair of the IMT should work with members to ensure that parent agencies are clear about its operations.

Complex incidents which go on for a long time require dedicated professional administrative support and programme management to ensure the smooth running of the IMT. These include good coordination, accuracy in document management, quick turnaround time and follow up of actions.

The turnaround times requested for the IMT and/or partner agencies to contribute to media statements were sometimes too short to prepare accurate messages in response to a complex and evolving situation. The communication teams of lead agencies need to work together, and with the IMT, so that precautionary messages that protect the public can be prepared in advance, agreed messages in response to the situation are consistent and, where a single statement from all agencies will not suffice, the distinct roles and responsibilities of the IMT are understood.

9 Discussion

The intrusion of significant concentrations of carbon dioxide into houses in Gorebridge was associated with the migration of ground gases originating from underlying inactive coal mine workings and resulted in an unusual, complex and costly incident. A number of residents suffered symptoms of CO₂ toxicity and required hospital assessment.

The symptoms of excessive CO₂ exposure lack specificity and may be difficult to distinguish from other causes including viral infections. It is therefore possible that Newbyres residents were being exposed to elevated concentrations of CO₂ resulting in low grade morbidity that was attributed by the occupants to other causes and had not previously come to medical attention. It is possible that some residents in affected properties might have been exposed to elevated levels on a recurrent basis without being aware of it. Occupants may therefore have been put at risk of both acute and chronic effects of CO₂ toxicity.

Exposure to elevated CO₂ levels, in either acute or chronic exposure scenarios can be associated with acute and chronic health impacts. In acute exposures to moderately raised levels, CO₂ acts as a central nervous system (CNS) stimulant, and may cause increased respiration, elevated blood pressure and pulse rate. At increasing exposure levels it starts to act as a CNS depressant causing headache, drowsiness, mental confusion, reduced coordination, giddiness, weakness, nausea and at high exposure levels it will cause paralysis, convulsions, coma, pulmonary oedema and death.

People exposed to elevated CO₂ levels on an ongoing basis may suffer from chronic headache and breathlessness on exertion. Prolonged exposure to elevated concentrations can result in impacts on calcium and phosphorous metabolism leading to calcium deposition in soft tissues. Chronic CO₂ stimulation of the CNS respiratory centre may also cause physiological stress on the renal cortex.

Households suffered physical and psychological effects of exposure to excess CO₂. The situation gave rise to considerable stress and anxiety among the occupants of the housing estate, who were very worried about the potential impacts of exposure over a potentially prolonged period. In addition, the residents suffered the additional anxiety and trauma of being evacuated from their homes and the upheaval of being re-housed. Whether there are any long term implications of this event for the people involved is therefore unknown.

Local healthcare professionals were informed of the incident and provided with information on the signs and symptoms associated with CO₂ poisoning. In addition, they

were informed to contact the NHS board health protection team if they identified affected individuals. In terms of managing the needs of the residents, the establishment of the Care for People Group (CPG) was considered to have been an essential aspect that helped to ensure that residents were kept well informed and supported at all stages.

The incident investigation involved close multi-agency working with the primary aim of protecting the health of the residents. This involved conducting systematic investigations using the source-pathway-receptor model to undertake health risk assessment and to identify appropriate short and long term risk management options. The priority for the IMT was safeguarding the health of the residents. The short-term risk was managed by installing CO₂ monitors and alarms in all potentially affected houses.

The long-term risk was assessed and managed by investigating the history of the site and undertaking soil gas and other sampling to determine the scale of the problem. This involved obtaining copies of previous site investigations and background reports held by Midlothian Council. In addition, independent specialist expert advice was obtained to inform the IMT deliberations and decisions on gas sampling at the houses and gas monitoring for levels of CO₂ in the affected houses.

These investigations confirmed the presence of excess levels of CO₂ at various properties as well as being present in soil and detected in the borehole drilled into the abandoned mine workings. Radiocarbon analysis of gas samples from these places showed that the gases dated the same age. This provided the evidence to confirm that the source of gas was undoubtedly the underlying mine workings.

Carbon dioxide from mines can originate from a variety of sources and different types of mine. Disused mines pose a particular difficulty especially where mechanical ventilation and dewatering has ceased. Some coal seams are more likely to be oxidised than others depending on the chemical composition.

The mine gas detected in this case was almost entirely CO₂. However, mine gas can include methane, which as well as being an asphyxiant, could accumulate inside affected properties to create an explosion hazard. However no methane was detected in the houses in this incident. Likewise radon which was detected in two properties may be a component, with its attendant risk of lung cancer in association with long term exposure to elevated levels.

Gas movement is dependent on a variety of factors including temperature and density variations, displacement or pressurisation due to water levels rising and atmospheric

pressure variation. When environment provides a migration pathway into poorly ventilated and/or enclosed areas along with certain atmospheric conditions including low pressure, instances of CO₂ toxicity and asphyxiation have occur. Cases of morbidity and mortality associated with CO₂ in both domestic properties and other environmental exposures have been reported, including fatalities at disused mine entries and within working mine gas monitoring station (**Appendix 4**).

Results of monitoring carried out at the nearby Newbyres Village Care Home, situated next to the affected properties and built around the same time, did not show elevated levels of CO₂. The most likely reason for this difference was that the care home had gas protection measures installed at the time of construction.

The IMT included representatives from a variety of involved organisations, including SEPA. The Coal Authority, the UK departmental public body with the greatest knowledge and experience of mine gas incidents was also invited to provide information to the IMT. The Coal Authority became involved at a very early stage of the investigation when the initial problem was identified, before the NHS Lothian was officially involved. The Coal Authority has its own protocols for such investigations, which initially pre-ceded, then ran in parallel to the IMT investigation. A primary objective of the Coal Authority is to determine whether it has any liability with respect to the situation. Once the Coal Authority determines that it has no liability (as in this case) it is under no obligation to provide any further support to an IMT investigation. Operating within a multi-agency IMT is not normal practice for the Coal Authority and raised issues regarding what the IMT could reasonably expect of the Coal Authority, e.g. providing a detailed report of the Coal Authority investigation findings was not seen as routine Coal Authority practice. Given that the Coal Authority has a great deal of relevant expertise to offer, even if it determines that it has no direct liability in relation to the situation, nonetheless it would be helpful if the Coal Authority was able to remain fully engaged in an IMT investigation. It would therefore be useful to clarify the role of the Coal Authority in supporting public health focussed IMT investigations in future.

The Coal Authority also has a complex role in advising developers and in permitting activities that could potentially alter the risk of mine gas migration (such as grouting or ground stabilisation. However, the role of the coal authority in overseeing the mine gas risk assessment process and on commenting on the conclusions reached by developers for any specific site was less clear to the IMT. It would be helpful to clarify this aspect and explore whether the authority might have more of a role in quality assuring these

processes; e.g. to ensure that an appropriately precautionary approach is adopted by a developer to prevent the occurrence of such incidents.

The conclusions of both the Coal Authority and the specialist consultants commissioned by Midlothian Council were that the main source of the CO₂ was abandoned coal workings containing elevated levels of oxidising coal deposits. These generated CO₂, which migrated to the surface associated with changes in atmospheric pressure and influenced by groundwater levels. The most likely pathways for the CO₂ included unfilled mineshafts; investigation bore holes, ground preparation grouting and the use of vibro stone columns to support the houses. The lack of any specific gas migration protection measures built into the houses (e.g. no gas proof membranes) permitted the CO₂ to enter the properties unhindered.

With respect to identifying the options for long term gas risk management, there was a limited body of research evidence available on retrospective control measures. A variety of such measures have been used in the past to control mine gas migration in domestic settings. The type of measure adopted depended on the local geology and individual circumstances of the property. There was considerable uncertainty regarding the effectiveness of such retrospective mitigation measures, in terms of their ability to prevent future mine gas migration in the affected properties. The evidence from published literature suggested that successful interventions were highly dependent on site specific factors.

Given this limited evidence, it was difficult to estimate the effectiveness of any particular measure in preventing gas migration in this particularly incident. It was therefore not possible to specify a long term mitigating measure that was likely to have been completely successful in preventing an ongoing threat. The lack of evidence on proven effectiveness of proposed retrospective mitigation measures underpinned the decision made by Midlothian Council on demolition and site clearance as the preferred long term risk management solution for the Gorebridge estate problem.

The gas migration situation for radon is different in that there is evidence that retrospective mitigation measures for existing properties can reduce radon exposure to acceptable levels ⁴¹. The difference in effectiveness might be partly due to radon being released from rock strata more steadily and levels being more consistent in a property, whereas mine sourced CO₂ the levels can vary markedly and unpredictably with varying climatic and atmospheric pressure conditions.

Where the risk is thought to be sufficient, there is provision in current guidance to encourage the use of gas mitigation measures. However, the present system for risk assessment, based on guidance, permits a considerable degree of interpretation of the risk by property developers.

Investigation of the Gorebridge site's history, including surveys carried out by consultants before its development, confirmed that the risk of CO₂ migration from mine workings was assessed using existing guidance and procedures and was categorised as low risk. Consequently no mine gas mitigation measures, specifically no gas-proof membranes, were incorporated in the construction.

With respect to the reasons for the problem occurring at Gorebridge, in their response to Midlothian Council following their investigations in November 2013 (**Appendix 2**), the Coal Authority commented on the role of boreholes drilled at the site as part of the pre-development risk assessment as a possible pathway for enabling mine gas migration.

However, of particular note, the Coal Authority also stated:

“Further to this, gas membranes were not included in the design of the properties even though it was proven that shallow recorded coal workings were present beneath the estate. It is therefore the opinion of the Coal Authority that the designs of the property and treatment works were not suitable and sufficient given the risks identified”.

Whatever procedures were available at the time to ensure that the developer adopted an adequately precautionary gas migration mitigation regime, it appears that these failed. This clearly points to deficiencies in ensuring that adequate precautionary measures were taken to prevent mine gas migration as part of the site development process in Gorebridge. Based on the views expressed by the Coal Authority and having considered the evidence, the IMT concluded that the initial risk assessment in this case proved, in retrospect, to have been inappropriate.

However, it was not the function of the IMT to draw conclusions on where responsibility lay, in terms of agencies or individuals, for the failure to predict the risk accurately. The existing procedures and guidance intended to ensure that the risk of mine gas was adequately assessed and mitigated clearly failed to protect public health. This could have been due to one or more reasons.

The failure to predict the risk of gas migration correctly may have been due to an inadequate original assessment of the risk; possibly involving failings in the initial mine

gas monitoring process. There may also have been insufficient safeguards to ensure that the relevant procedures and guidance were followed correctly.

Alternatively, if the existing procedures were applied correctly in line with guidance but failed to predict the risk accurately, then this suggests that the existing assessment procedures were inadequate to protect public health and need to be reviewed.

The local authority has a role in relation to the mine gas assessment in the context of responsibilities outlined in relevant legislation. The Scottish Government has set out in the Statutory Guidance how their policy on Contaminated Land including ground gas issues, should be dealt with (Environmental Protection Act 1990: Part IIA Contaminated Land Statutory Guidance: Edition 2 Paper SE/2006/44 May 2006). This sets out the concept that any land for development should be “suitable for use”, (a more detailed explanation of this concept and the relevant guidance is set out in **Appendix 14**).

The local authority (as the Planning Authority) should satisfy itself that the potential for contamination has been properly assessed by the applicant, and the proposed development incorporates any necessary remediation based on the outcome of that assessment. This affords an opportunity for the planning authority to satisfy itself that the developer’s assessment of the risk and their proposals for remediation are appropriate under the specific circumstances (PAN 33). Local authorities may choose to obtain expert external advice in meeting the aims of the Statutory Guidance and PAN33.

However, there is limited opportunity to retrospectively revisit ground gas risk assessments and there is no opportunity, under the current regime, to assess future potential risk such as amplification of ground gas which may arise as a result of, e.g. rebound recovery of mines water following cessation of dewatering, rise in water table levels, or ground stabilisation on the application site or adjacent sites etc.

There is no guarantee that a developer’s ground gas risk assessment, which even if it is considered appropriate at time of assessment, will continue to represent an accurate assessment for all future local conditions. The present system is therefore not sufficiently precautionary to prevent a potential recurrence of the Gorebridge scenario. The risk assessment process is not “fail safe” and yet the risk of failure in terms of the potential harm to public health is unacceptable and the costs of remediation works are unsustainably wasteful. This suggests that the legislative processes and statutory guidance needs to be reviewed.

The failure in the Gorebridge case to predict the risk of gas migration accurately also raises questions about assessments carried out in similar circumstances elsewhere in Scotland in the recent past. There are already preliminary indications that this incident will not remain an isolated event in the Gorebridge area itself. This suggests, at the very least, that there is the potential for other recent building developments in known former mining areas elsewhere in Scotland to be at risk of similar gas migration problems.

Scotland has many old mine workings that have posed a potential risk of exposure to mine gas for the occupants of properties built on top of or near them for generations. However, the lack of comparable incidents recorded prior to the recent events in Gorebridge suggests that CO₂ migration of this scale has not been noted previously as a significant issue. That said however, the absence of significant incidents recorded in Scotland prior to Gorebridge by the Coal Authority or other relevant public agencies, does not preclude the possibility that there has been a problem elsewhere that has simply not come to notice.

Possible reasons why this problem emerged in Gorebridge relatively recently, have been discussed in the consultant's technical reports to Midlothian Council and in this report. Aside from the possible failings in the assessment procedures and/or in their application in this case, it is conceivable that additional factors may have systematically increased the risk of mine gas migration (e.g. due to changes in the preferred methods of building construction). It is possible, for example, that the former traditional design and construction of housing property in Scotland (e.g. involving the use of elevated suspended ground flooring on top of a ventilated solum) may have been a highly effective mitigation mechanism preventing mine gas from migrating into properties. The introduction of alternative design and construction methods (especially for housing) in Scotland (e.g. involving the use of a solid ground floor slab without a ventilated solum underneath) may unwittingly have contributed to increasing the risk of mine gas migration, especially where no other specific gas mitigation measures are incorporated.

However other factors may also have contributed to the failure of the initial mine gas risk assessment to predict the events in this case. The risk of CO₂ migration may have changed after the risk assessment procedures were completed due to reasons not considered at the time of the pre-development risk assessment. A risk assessment at one point in time may be rendered invalid due to dynamic change in mine gas production and / or gas movement over the long term. It is not clear to what extent the present risk assessment processes take account of such factors and allows for the possibility that risk levels could increase substantially over a period of many years.

Factors associated with precipitating change in mine gas migration risk over time may not be sufficiently well understood or anticipated by developers and local authority planning and other departments. The level of risk assessed at one point in time pre-development may therefore be a poor predictor of the levels of mine gas likely to be present years later, especially in areas of sequential building development.

An additional factor affecting mine gas migration is the influence of groundwater levels. Rising water tables are a well recognised factor likely to increase the risk that mine gas will be forced to the surface. Abandonment of mining activities is normally followed by cessation of active efforts to control ground water levels in mine workings. Over time, groundwater levels rebound to pre-mining levels, at which point more active measures to control flow may again be taken. Not all abandoned workings are monitored actively, hence the rate of rebound may not be known, making prediction of the impact of ground water levels on mine gas migration over time additionally difficult. This is another reason to adopt a highly precautionary approach to mine gas risk assessment.

In future, a further source of uncertainty may be changes in precipitation levels due to climate change in Scotland.^{47,48,49,50,51} Over the longer term, once groundwater levels in mined areas has fully rebounded and stabilised, any increase in precipitation due to climate change that feeds through to increases in groundwater levels may also impact on mine gas migration.^{52,53} In the longer term, changing rainfall patterns predicted due to climate change is likely to become a relatively more significant factor influencing mine gas migration risk.

Climate change predictions suggest changing rainfall patterns in Scotland,^{47,48} and is another reason why a highly precautionary approach to mitigation of this risk is necessary. More episodes of severe weather are also predicted as a feature of climate change, including severe storms associated with deep low pressure systems^{49,51}; a phenomenon also known to exacerbate mine gas migration.

In addition to macro-environmental influences due to climate change, other more local factors that are not obvious at the time of the initial risk assessment may influence the gas migration risk. Other (contemporaneous or subsequent) local development involving substantial ground works may alter the dynamics of mine water flows and gas migration patterns. In the Gorebridge case, prior to the first identified instance of gas exposure among residents, substantial grouting had been carried out as ground stabilisation for the new Borders railway line relatively recently. This was postulated to have been a possible factor in encouraging increased mine gas flows in Gorebridge. However, this was not later considered to be the most relevant factor in this particular incident.

From a public health perspective, irrespective of the underlying reasons for the Gorebridge scenario, this incident raises some fundamental questions regarding the general adequacy of the current mine gas risk assessment process and its accompanying guidance; its application by developers, their consultants and other agents and in particular its recognition of the potential for significant changes to mine gas migration risk over time.

Based on the evidence available to the IMT, it is reasonable to assume that mine gas migration may be a hazard potentially affecting similar housing sites built near old mine workings across central Scotland in recent times, where circumstances may have also altered the mine gas migration dynamics since their construction. This will be particularly true where the initial pre-development mine gas risk assessment did not identify a risk requiring gas mitigation measures to be incorporated into the property construction.

It is also entirely possible that occupants of properties, built in mine gas risk areas where no specific gas mitigation measures have been adopted during their construction, may have been (or may currently be) subject to elevated levels of CO₂ exposure intermittently or chronically, without their knowledge. Such individuals may experience low level symptoms that they are unlikely to bring to their GPs attention. Further consideration will need to be given to these issues in terms of what would constitute a proportionate response to such concerns.

It was also clear to the IMT from this incident that, once buildings have been constructed, it is very difficult to install retrospective remediation measures to prevent gas migration and that these cannot be guaranteed to be effective. Consequently, in order to avoid a potentially more serious and potentially fatal incident, as well as to prevent the need for another potentially drastic and costly remediation solution in future, the IMT concluded that a much more precautionary approach to mine gas risk mitigation in Scotland is justified and now required.

The IMT therefore considered that there is a strong case to change the risk assessment process such that in future it should automatically assume there will be a future, long term risk of mine gas migration. Consequently there should be an automatic mandatory default decision to adopt effective mitigation measures in order to future-proof developments from such an uncertain future risk. This should include the use of gas-proof membranes and/or equally effective measures in the construction of new building development on or near known former mine workings. This requirement is particularly needed in situations where any ground stabilisation or other interference in the soil sub-

structures, associated with the site development itself or with nearby locations (contemporaneously or in future) might introduce new pathways for gas migration.

In view of the number of important issues identified as a result of this incident investigation, the IMT came to the conclusion that there is now a pressing need for a comprehensive review of the current mine gas mitigation risk assessment process for known former mine area development in Scotland.

Furthermore the IMT concluded that the issues raised by the incident are of sufficient concern in public health terms, to justify a systematic investigation by an independent expert group, charged with a remit to consider the entire situation regarding mine gas migration assessment and its future prevention in Scotland. A detailed remit for an independent expert group is therefore proposed in the recommendations section, together with a series of questions that the IMT consider need to be addressed.

10 Conclusion

This incident was caused by the seepage of geological CO₂ into houses in a recently built Midlothian Council housing estate. Sixty four properties with 165 residents (adults and children) were affected. The incident identified a significant risk to the health of these residents with some properties registering significantly elevated CO₂ levels. Some residents spontaneously sought healthcare due to symptoms plausibly linked to CO₂ exposure. The potential for more serious morbidity or even mortality necessitated prompt public health intervention.

While excessive exposure to CO₂ is known to have health effects, due consideration had to be given to the potential risk associated with other mine gases such as methane, hydrogen sulphide, carbon monoxide and radon, particularly as radon and its products of decay increase the risk of lung cancer.^{25, 31}

The uncertainty caused by the incident, its investigation and lengthy decision process had the potential to cause the residents concern and anxiety. One of the most important lessons from this incident was the setting up of a Care for People Group which kept in contact with the residents by phone, written update and a local office. Readily accessible service providers and regular communication gave residents current information about the incident and guidance on getting help. These addressed concerns at a community and individual level.

A range of possible retrospective remedial actions were identified but no published evidence was identified to suggest that any of these potentially complex and costly solutions could be guaranteed to successfully prevent migration of mine gases with any degree of certainty in the long term.

Demolition of the properties was therefore considered by Midlothian Council to be the only reliable action to assure public health protection in the long term. Consequently the entire estate was demolished

The IMT investigation was complicated, lengthy, and highly resource intensive involving a large number of public sector organisations supported by external expert advisors who proved essential to assist the IMT with the technically challenging aspects of the investigation. Access to such high level specialist expertise was a critical factor in enabling the IMT to conclude its investigation.

Some aspects of the investigation were very costly. Payments for many of these were absorbed by the Local Authority or resolved on the basis of negotiation between IMT

participants. There are however, continuing uncertainties regarding which agency is responsible for funding such investigations and for funding external specialist expertise not available from public sector or regulatory agencies.

The Coal Authority has potentially important independent role in the investigation of such incidents and it has access to knowledge and expertise that is essential to an IMT investigation of this type. Opportunities to clarify and enhance the role of the authority in such IMT investigations should be explored.

The evidence convincingly points to the CO₂ being of geological origin. It also indicated that its migration into the houses was associated with predisposing weather conditions of low pressure, high winds and rainfall. Routes by which the gas reached the ground surface beneath the houses included through fractured sandstone rock strata, mine entries, deep boreholes, house foundations and the vibro stone columns underpinning the foundations and the service entry conduits into the houses. Gas migration was also facilitated by the lack of any gas penetration prevention measures in the construction of the properties, specifically there were no gas-proof membranes incorporated in the floor-slab construction.

The IMT concluded that the risks associated with mine sourced CO₂ may have been exacerbated by changes to the typical construction methods used for homes in Scotland; specifically the use of a solid (unventilated) concrete floor slab, rather than the traditional practice of constructing a vented solum underneath the ground floor, which would mitigate the risk of mine gas (and of radon) migration. Further research on this aspect is needed to inform national policy.

In addition to acknowledged failings in the original pre-development mine gas risk assessment and the increased potential for migration associated with all the ground interventions at the site during the construction phase, multiple other factors were identified that may have contributed to the situation at Gorebridge. These included more recent nearby interventions associated with the development of the Borders railway line, involving the grouting of potentially interlinked old mine workings and possible displacement of ground water and gas. There was no direct evidence to confirm if this was in fact relevant.

At the time of the initial IMT investigation, the suggestion that changes in groundwater levels associated with the rebound of the water table following mine abandonment might have been a contributory factor in the situation at Gorebridge was a concern. Subsequently, as this report was being completed in 2017. The Coal Authority

confirmed that the groundwater levels in the relevant mine workings had in fact fully recovered by the time of the incident and were being managed by use of two discharge points to the south of the incident location.

In situations where groundwater levels have not recovered fully and continuing rise in groundwater levels will potentially continue to increase the risk of mine gas migration in ex-mining areas, until such times as the water table reaches equilibrium in each area. Added to this existing source of uncertainty in predicting mine gas risk, the unpredictable effects on ground water levels of future climate change associated with changes in rainfall patterns in Scotland will present another source of uncertainty in assessing the future risk of mine gas migration in individual areas.

It is possible that the events in Gorebridge were due to an exceptional set of circumstances, particular to the site and the specific housing development. Equally however, the potential may well exist for the same circumstances to arise elsewhere, involving a failure of the process to assess the risk of mine gas migration correctly and to take appropriately precautionary measures to prevent gas migration into properties. Consequently, the IMT concluded that the potential for a repeat of the Gorebridge scenario in future cannot be excluded.

The incident also highlights the potential for there being a more widespread but undisclosed problem with mine gas migration in relatively recent property developments in former mining areas across Scotland.

Of note, at the time of completing this report (in 2017), another very similar scenario is under investigation also in Gorebridge involving another relatively recently completed housing development but at a distinctly separate location. This confirms the view of the IMT that the present regime for preventing mine gas migration and the consequent risks to public health needs to be comprehensively reviewed to minimise, as far as is practically possible, the risk of further such incidents.

The mine gas risk assessment guidance used at the time of the Newbyres Road development (in 2006) has been superseded by updated guidance, which if followed appropriately may help to reduce the risk of a similar scenario occurring. However, unless the revised guidance has eliminated the possibility for an inadequately precautionary approach to be adopted, this alone is unlikely to prevent a recurrence of

the problem. An assessment of this aspect is however beyond the remit of the IMT. This would require an independent expert review.

The IMT concluded that the existing mine gas migration assessment and mitigation regime in Scotland is flawed in a number of key respects:

- it is very difficult to accurately predict the risk of mine gas migration, based on a single pre-development assessment, meaning that it is unlikely to be adequately representative of a worst case scenario in terms of climatic variables including severe low atmospheric pressure events, high rainfall and extreme winds, which may all encourage gas migration.
- there may be a lack of understanding among developers of the potential to increase the risk of gas migration if remedial action is taken to improve ground and building foundation stability, via the use of ground penetrating processes such as mine grouting or vibro stone column insertion.
- the risk assessment process does not appear to emphasise sufficiently the potential impact of significant other ground works in the vicinity of a development at some future point on the risk of gas migration.
- there is a lack of emphasis in the risk assessment process on the potential of wider factors to increase the risk of gas migration over the long term in examining areas due to macro-climatic and environmental change, involving e.g. rebound causing rising ground water levels and events associated with future predicted climate change (changing rainfall patterns, and more severe extreme weather).
- The current system for planning authority scrutiny of a mine gas risk assessment, under the contaminated land regulatory regime, cannot guarantee that even if an initial assessment is appropriate at the time, that it will remain appropriate in future when environmental and other factors may create an increased risk of gas migration.

The IMT consequently concluded that the present mine gas risk assessment and mitigation process does not emphasise strongly enough the need to adopt a precautionary approach when building on at-risk sites eg those with shallow mine workings; to avoid building methods that could exacerbate the risk of gas migration, rather than to mitigate it; and does not adequately recognise the potential for a significant increase in the risk of gas migration due to broader environmental change.

The capacity of the present risk assessment process to adequately anticipate the possibility of such changes to the risk of gas migration over time, especially due to changing environmental and other circumstances is also open to serious question.

The IMT concluded from the evidence available that mine gas migration is likely to become an increasing problem in future due to wider factors influencing dynamic change in mine gas flows, especially over the long term.

It was also clear to the IMT that once buildings have been constructed it is very difficult to install retrospective remediation measures to prevent gas migration and that these cannot be guaranteed to be effective. Consequently, in order to avoid a potentially more serious and potentially fatal incident, as well as to prevent the need for another potentially drastic and costly remediation solution in future, the IMT concluded that a much more precautionary approach to mine gas risk mitigation in Scotland is justified and is now urgently required.

The IMT concluded that there is a strong health protection case for adopting mandatory measures to prevent mine gas migration in properties built on or near old mine workings in Scotland.

In 2017, during completion of this report, The Coal Authority advised that it had become a Statutory Consultee to Scottish Local Authorities in October 2010. This post-dated the granting of planning permission for the estate involved in the incident. The Coal Authority also advised that following this change, it adopted a Risk Based Approach to assessing whether there are coal mine hazards likely to affect a new development. The Coal Authority now classifies coalfields as “low” or “high” risk. A high risk coalfield is defined as one where there are hazards considered likely to affect a new development. The Coal Authority will now therefore screen a planning application; designate it as a high or low risk area; if high risk, The Coal Authority will advise the relevant council that a mine gas risk assessment is required; the council should request this from the planning applicant and then review the risk assessment once received. The Coal Authority will not themselves routinely review such risk assessments.

The Coal Authority categorisation mining areas therefore appears to provide a convenient basis for identifying those areas where mandatory gas mitigation measures, could be adopted to replace the still largely discretionary decision process for determining the need for mine gas mitigating measures.

The IMT recognises that these conclusions and proposals are far reaching and will have implications for the Scottish Government as well as the building and development industry. The IMT appreciates that the Scottish Government will wish to consider the report findings and recommendations and to determine what further work will be necessary to investigate the situation in greater depth, particularly from an independent expert technical perspective.

It should be borne in mind however, that this was an entirely preventable incident that would not have been possible had there been a fail proof mine gas risk assessment process in place. The opportunities for error inherent in the present process, coupled with an inability to accurately predict the influence of all the factors that might significantly increase the risk of gas migration in future, mean that future incidents of this type cannot be excluded under the present system. Further incidents are likely to occur until the systems inherent failings are fully addressed. A comprehensive and independent review of the present mine gas risk assessment process and mitigation regime is therefore urgently required.

11 Recommendations

The IMT has identified a number of recommendations as a result of this incident, relating to local IMT management issues, to existing national policy and guidance on the investigation, management, remediation and reclamation of coal mining sites, as well as issues requiring further research. The recommendations relate both to the Gorebridge incident, to the wider implications in terms of the potential for future incidents as well as the need to reconsider current government policy. The agencies to which recommendations predominantly apply are listed.

The Gorebridge Incident and Site

1. **A robust mechanism should be implemented to limit public access to the site at Gorebridge and to limit the potential for unauthorised occupation of the affected houses until the houses are demolished.**

Once demolition is complete the area should be monitored to ensure public safety.

Action: Midlothian Council (N.B. demolition was completed in early 2016).

2. **Before any redevelopment, efforts should be made to ensure that there is no ongoing threat to public health associated with a recurrence of the mine gas migration problem.**

Midlothian Council should ensure that all statutory procedures are fully observed and should take cognisance of relevant technical standards. Relevant stakeholders, such as NHS Lothian should be consulted regarding future plans for the site.

Action: Midlothian Council.

3. **A long term monitoring strategy for any houses built on the site in future should be set out as part of the redevelopment plan, to provide objective evidence for public reassurance, and to confirm that there is no gas migration into any new properties.**

Such monitoring will be required on a long term basis.

Action: Midlothian Council.

Management of Future Incidents

4. **Agencies should notify each other of any relevant potential public health incident at the earliest suspicion.**

This is particularly important given the unpredictable nature of environmental public health (EPH) incidents.

Action: all relevant agencies involved in managing EPH incidents (NHS boards, local authorities, SEPA, FSS etc).

5. **IMT representatives should inform their parent agencies of the principles that govern the operation of an IMT as defined in Scottish guidance on managing public health incidents.**

Where necessary the chair or the IMT should work with the members to ensure that the parent agencies have a clear understanding of the role and remit of the IMT. Clarity and collective responsibility for decisions made within the IMT should be established early in the incident. This is particularly important with respect to agencies that are not routinely involved in IMT situations.

Action: NHS boards (Chairs of IMTs) and IMT partners.

6. **Roles and responsibilities of each IMT member should be clarified at each IMT meeting to ensure that members understand each agency's roles.**

Members must also be empowered by their parent agency to make an effective contribution to the group. Members must also ensure that they seek appropriate specialist support for the IMT from within their own agency where highly technical issues require this.

Action: NHS boards (Chairs of IMTs) and IMT partners.

7. **Joint training and exercising by partners and familiarisation with each other's methods of work is recommended to improve the effective working of IMTs.**

This should stress that good communication, openness and transparency are essential.

Action: NHS boards (Chairs of IMTs) and IMT partners.

8. **Consistent and good quality administrative support is required for an IMT especially in complex incidents (such as this), which may need to be managed over a long time period.**

Adequate support is required to ensure effective inter-agency coordination, accuracy in document management, rapid turnaround time of meeting notes and confirmation of follow up of actions.

Action: NHS boards (Chairs of IMTs).

9. **The communication teams of all agencies represented on an IMT need to work closely with each other to ensure consistency in message content and in the timely release of messages for the public.**

Action: IMT partners from all relevant agencies involved in managing Environmental Public Health incidents (NHS boards, local authorities, SEPA, FSS etc.).

10. **The need for a Care for People Group (or equivalent) should be considered during any such incident, to provide a focus for coordinating advice and action on the needs of affected people.**

Such a group should be linked to but separate from the IMT in line with Preparing Scotland Guidance.

Action: NHS boards and local authorities

11. **Arrangements for funding highly specialist impartial expert scientific and technical advice that is beyond the competence and expertise of the public sector agencies represented on the IMT needs to be considered further, with a view to providing clear guidance to IMTs in future.**

Complex IMT scenarios may require highly specialist advice, often from external commercial consultancies. Responsibility for funding such additional independent and impartial specialist external support to an IMT is unclear and is not adequately addressed in existing Scottish guidance on managing public health incidents.

Action: Scottish Government.

National Policy and Guidance on Mine Gas Migration Risk

- 12. With respect to the Coal Authority, in addition to fulfilling its statutory responsibilities, the potential role of the Coal Authority to assist public health led IMT investigations into future mine gas incidents should be reviewed. A mechanism, should be established to facilitate the active participation of the Coal Authority as an IMT member, irrespective of the Coal Authority's own liability such as specifying individual as provided for in the Scottish Managing Public Health Incident guidance.**

The Coal Authority has an independent statutory role in relation to investigating mine gas incidents. The Coal Authority investigation is however, focussed significantly on establishing where liability for the gas release lies; whether it is an issue that the Coal Authority itself has to accept liability for and take the responsibility for remediation, or whether liability lies elsewhere, in which case the Coal Authority ceases to have an active role. The Coal Authority has no particular obligation to support a parallel public health led IMT investigation. Given the expertise of the Coal Authority, it would be preferable if it was an active participant in an IMT investigation, with a remit to provide independent technical support and advice.

Action: UK Department for Business, Energy and Industrial Strategy.

- 13. The potential for the Coal Authority to adopt a more active role in quality assuring the adequacy of pre-development mine gas risk assessments and ensuring the adoption of adequately precautionary gas migration mitigation measures, should be explored.**

The Coal Authority was of the view in this scenario that, based on information available pre-development, the original assessment and mine gas mitigation plan for the Gorebridge site was inadequate. Had the Coal Authority view been available at the time of the original pre-development site assessment, it is conceivable that the situation that came to light years later could have been prevented. Ideally therefore, from a Public Health perspective, the expertise of the Coal Authority should be available at the pre-development stage to ensure that the correct measures are adopted.

Action: The Coal Authority

14. **Relevant Scottish Government directorates should be made aware of this incident, its implications and the potential scale and significance of the IMT findings.**

In particular there needs to be an appreciation of the potential threat to existing and future communities living in proximity to old mine workings and an acknowledgement of the need to review the adequacy of the current strategy to protect public health from this risk in future.

Action: Scottish Government.

15. **The potential for increases in mine gas migration risk linked to water table rise should be flagged to relevant Scottish Government Directorates as a concern in terms of both the ongoing natural water table rebound phenomenon in former mining areas and in terms of the potential consequences of future climate change.**

This issue should be considered as part of the Scottish Climate Change Risk Assessment process.

Action: Scottish Government.

16. **Developers, land use consultants and planning authorities should be made aware of the content of this report.**

They should also be advised of the urgent need to increase their awareness and understanding of the potential risks associated with mine gas migration (now and in the future) in high risk areas when conducting environmental assessments for future land use, especially if housing development is proposed.

Action: relevant Scottish Government Directorates to advise developers, consultancies, local authority planning and environmental health departments.

17. **Local Authorities (LAs) in Scotland reviewing proposals for the development of land with a history of former mining activity should review the adequacy of any accompanying mine gas risk assessment with added care. LAs should determine if an assessment has considered the potential risk of gas migration in the short, medium and the longer term future.**

In particular authorities should consider carefully whether the assessment takes adequate account of uncertainties in determining the risk of mine gas migration

due to the multiple potential factors identified in this report (e.g. the impact of any proposed interventions to improve ground stability, grouting of old mine workings, future developments in the immediate vicinity that could affect mine gas displacement and changes in water table levels etc).

A local authority may conclude on reviewing an assessment, that the future effect of such uncertainty factors on the risk has not been considered adequately or that the developer's recommendation on the need for gas mitigation measures is not adequately precautionary to protect the health of occupants from changing circumstances. In such cases, before allowing the development to proceed and to future proof the risk assessment, the authority should give serious consideration to its options for requiring the compulsory inclusion of mine gas mitigation measures, such as the installation of gas proof membranes and /or suitably effective alternatives.

Action: All local authorities.

18. **The existing Scottish Government arrangements for licensing access to British Geological Survey (BGS) mapping data should be amended so that these are included in the One Scotland Mapping Agreement or an equivalent provision. *Enhanced access should be available to support investigation of public health incidents by public sector bodies in Scotland.* Improved access to these datasets is needed to improve the capacity of local authorities and other public sector agencies to more easily independently evaluate the adequacy of mine gas risk assessments carried out by developers in their areas.**

The British Geological Survey (BGS) has produced maps showing areas of Scotland at potential risk of methane and carbon dioxide gas hazards from Natural Sources and Mining. These are based on the properties of the underlying geological formations. The maps were produced originally at large scale (based on 1:625 000 mapped geology) in 1995.⁵⁶ However, they were updated using more detailed 1:50 000 geological mapping information in 2011.⁵⁷ The maps and accompanying reports are currently available under licence fee from the BGS GeoHazard product range:

<http://www.bgs.ac.uk/products/geohazards/methane.html>

Current Building Regulations Guidance specifies that assessment of natural methane and CO₂ risk is a requirement for all local authorities.^{58,59,60,61} However,

Local Authorities do not have ready free access to detailed BGS geological mapping data on these risks. This is in contrast to the situation with respect to other geological hazards where local authorities currently have free access to BGS datasets on radon and hydrogeology under Scottish Government licensing arrangements.

Action: Scottish Government.

19. **To protect the health of existing or future occupants of a property where persistent mine gas has been identified as a problem, there is need for a mechanism to require the owner to take appropriate action which may include demolition or closure of the property if it is considered that remediation works will not guarantee the future protection of public health.**

Where demolition or closure of a residential property is considered to be the only appropriate option to protect public health, statutory powers will be required for enforcement. Consideration should therefore be given for the provision of statutory action, under the Housing (Scotland) Act legislation, to allow the serving of a Closing Order or Demolition Notice/Order. The powers could come from amendment of the definition of the Tolerable Standard to include the statement, '*a house should be free from recurrent periodic or persistently elevated levels of ground gas*'.

Action: Scottish Government

20. **Mine gas mitigation measures should be made mandatory in all new residential and similar developments, in all areas of Scotland designated by the Coal Authority as former mining areas, irrespective of their designation as either as low or high risk.**

The IMT concluded that mandatory use of mitigation measures in new build developments is the only effective way to minimise the risk of a recurrence of the problems identified in the Gorebridge incident.

The IMT is of the view that if there is any element of discretion left in the process for deciding whether or not a development should incorporate mine gas mitigation measures in the initial construction, then the risk of a repeat of a Gorebridge type incident will continue to exist. From a public health perspective, such a risk is not acceptable.

Evidence provided by the Coal Authority in the final stages of this report's completion, confirmed that at the time of the original planning of the Gorebridge development, there was sufficient evidence to demonstrate a need for gas mitigating measures based on the possibility of a risk from shallow coal resources. Despite this, the process extant at the time failed to ensure that appropriate mine gas mitigation measures were taken by the developer.

Even if existing guidance is revised, the only way to guarantee that similar errors will not occur in future, as a result of failure by developers to follow guidance appropriately, is to remove the discretion in the decision regarding the need for mitigation measures. Mandatory adoption of effective mitigation measures is therefore seen by the IMT as the only way to reduce this risk to an acceptable level, consistent with a precautionary public health approach.

The process initiated in 2010, whereby the Coal Authority now designates former mining areas as either high or low risk coalfields, requires that a specific mine gas risk assessment be carried out (by the developer) as part of the planning approval process. It will be necessary to carry out a mine gas risk assessment, as required by the Coal Authority, in order to determine whether the site is completely unsuited to residential or similar development.

However, even this process cannot guarantee that a developer will make an adequate or a correct assessment of the existing risk. More importantly, circumstances may change over time, meaning that an initial pre-development risk assessment cannot predict the potential risk of mine gas migration in future.

The risk of mine gas migration can change due to unpredictable and uncontrollable factors, meaning that even a correct initial assessment may be invalidated over time. If the underlying risk factors change, retrospective remedial action will need to be taken to resolve any gas migration. This is likely to be difficult, disruptive, and potentially costly. Unless demolition and rebuilding is carried out, at present there is inadequate evidence to confirm that any other retrospective remedial measures will be able to guarantee to resolve the problem over the long term.

On this basis, from a public health perspective, it would be advisable to adopt a proportionate approach to prevention. The IMT considers that protection of public safety requires the highest level of effective mitigation measures to be adopted as standard practice in all domestic development, at the initial development phase.

This would represent the most straightforward solution to this problem and would be an appropriately precautionary approach.

Further detailed consideration will be needed to provide clear guidance to local authorities and developers on implementing such a new policy.

Action: Scottish Government.

Research Needs

Further research is needed to investigate specific issues identified in this incident.

21. **An assessment is required to determine the impact that natural rebound of groundwater levels is having in ex-mining areas in Scotland in terms of the effect on altering the risk of mine gas migration.**

Once mining activity ceases and active control of water tables to prevent mine flooding stops, groundwater levels rebound to pre mining development levels. The time taken to reach a new equilibrium varies. The risk of mine gas migration may alter as water table levels recover. This is not a factor routinely considered in the existing mine gas risk assessment process.

Action: Scottish Government.

22. **An assessment is required to determine the impact of predicted increases in rainfall and severe weather events, associated with climate change, on the risks of mine gas migration.**

The current mine gas risk assessment process does not take account of the predicted impacts of climate change on factors which heavily influence the risk of mine gas migration.

Action: Scottish Government.

23. **A systematic review is required of the evidence in relation to the options for and efficacy of retrospective mitigation measures to control the ingress of mine gas, including CO₂, to existing developments (properties).**

The Gorebridge incident investigation identified a lack of evidence on the effectiveness of potential retrospective interventions to control mine gas ingress (specifically CO₂) in existing properties. A more extensive review of evidence is required. Retrospective mitigation measures are used to control Radon gas levels in radon risk areas. However, it cannot be assumed that measures used for radon

gas control are equally applicable to the control of mine gas sourced CO₂. There was no specific evidence identified regarding the application of such methods to control CO₂ ingress into existing properties. The characteristics and factors influencing rates of emission of carbon dioxide gas and radon gas ingress to properties from ground sources may differ. A comprehensive review is therefore required to identify and to critically appraise what evidence exists.

24. Specific research studies are required and should be funded to investigate the utility and efficacy of retrospective measures to control CO₂ ingress and levels in CO₂ affected properties in Scotland.

Research should be carried to investigate which, if any, retrospective remediation options (other than demolition) are effective in controlling CO₂ ingress to property in mine gas risk areas, to supplement the existing evidence base and to reflect experience specific to Scotland. This should be supported by practical experiments to trial the effectiveness of retrospective remedial options in controlling mine gas in affected properties already present in Scotland.

Action: Scottish Government

25. Research should be conducted in former mining areas across Scotland to determine if mine gas migration is occurring in housing developments similar to that constructed in Gorebridge, where no mine gas mitigation measures have been incorporated in their construction.

A survey should be carried out to estimate the prevalence of mine gas intrusion into residential property built in areas designated by The Coal Authority as at (low or high) risk and where no mine gas mitigation measures were used in their construction (e.g. a ventilated underfloor solum or a gas proof membrane).

The Gorebridge incident could be an exceptional event. Alternatively, it might be a sentinel case indicating the possibility that mine gas intrusion into relatively newly built housing is a more widespread issue that has to date been undetected. It is possible that the circumstances that led to the events at Gorebridge are not unique and may have occurred elsewhere in Scotland. The signs and symptoms of chronic low level excess exposure to CO₂ are non-specific and may be easily attributed to other causes. Hence, long term exposure may easily go undetected. Long term exposure to elevated levels may however give rise to chronic adverse health impacts.

To determine if there is evidence of a more widespread problem, a systematic survey of a representative sample of at risk property across former mining areas in

Scotland would be required. Further consideration would be required to specify the detailed aims, objectives and methods required for such a survey.

Action: Scottish Government

Independent Expert Review of Mine Gas Risk Assessment and Mitigation in Scotland:

26. Scottish Government should consider establishing an independent expert group to review the processes and guidance for mine gas risk assessment and mitigation in Scotland.

After much consideration and consultation, the IMT became convinced that the simplest and most precautionary solution to prevent future recurrence of this problem would be to make mine gas migration mitigation measures mandatory in ex-mining areas of Scotland (as per recommendation 20). However, The IMT is aware that this and the other recommendations relating to the mine gas risk assessment regime are extensive, far reaching and if implemented could have significant implications. The IMT recognises that Government may wish to take further advice on these recommendations. If that is the Government view, the IMT would then recommend that an independent expert group should be established with a remit to conduct a comprehensive review of the Scottish mine gas migration risk assessment process and associated guidance.

Action: Scottish Government

Such an independent expert group should:

- Include members with technical expertise on all relevant issues and should include representation from experts in health protection who are registered specialists in public health. These expert members should be independent, with any potential conflicts of interest investigated formally.
- Review the findings of this IMT report alongside the findings of the independent expert technical reports commissioned by Midlothian Council into this incident.
- Investigate the potential scale of future similar problems of gas migration into existing properties built in former mining areas in Scotland where no gas mitigation measures were incorporated in the construction of new property, especially residential property.

- Gather appropriate additional evidence from relevant public agencies, academic sources and professional bodies and commission specific new research as required.

Questions that a review should address include the following:

- Is the current mine gas risk assessment process adequate to correctly determine the level of risk, especially in relation to the requirements for assessing mine gas levels at sub-surface depths likely to be representative of gas migration potential from underground mine sources?
- Is the current risk assessment process fit for purpose particularly in terms of taking account of future potential changes in mine gas dynamics and migration risk factors (e.g. due to ground stabilisation measures, additional developments etc) that could lead to an increased risk of gas migration into properties over the long term?
- Is there sufficient emphasis in the current mine gas risk assessment process on the potential for other interventions affecting the soils or substructures underpinning any building development, to alter the risk of mine gas migration and consequently to render any pre-development assessment redundant and inadequately precautionary to protect public health?
- Are the current criteria used for deciding what constitutes a sufficiently precautionary approach to mitigation appropriate; particularly where there is known to be a potential risk of mine gas migration? Does the process adequately emphasise the need to take account of construction methods that may add to that risk (e.g. the use of vibro stone underpinnings or solid slab floors that are not separately vented to the outside atmosphere)?
- In determining the need for mitigation measures, is the current scope for interpretation of the guidance open to developers at present appropriate?
- Are construction methods that do not involve creating a ventilated solum beneath the ground floor of a property, inherently more liable to permit the transmission of mine gases to the inside of these properties compared to a traditional ventilated solum construction type?
- Is the drive to improve the energy efficiency of modern properties by increasing the levels of insulation and ensuring they are less prone to uncontrolled air movement (draughts) and are consequently more air tight, a potential factor

contributing to the retention of mine gas emissions that manage to penetrate a property?

- Does there need to be an investigation into the potential for situations similar to the Gorebridge incident scenario occurring elsewhere in Scotland due to either inappropriate initial mine gas risk assessments (where no mitigation measures such as installation of gas-proof membranes was carried out in previous property developments) or where changed circumstances have resulted in an increased risk of mine gas migration occurring post initial risk assessment?
- What guidance can be given to local authorities/ NHS boards confronted by concerned residents living in such potentially affected areas on handling questions relating to mine gas risk?
- Would the simplest and most appropriately precautionary solution to the problems highlighted by the Gorebridge incident be to require mandatory gas risk mitigation measures in all new residential and similar developments in areas of Scotland defined by the Coal Authority as former coalfields?

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Appendix 1: Coal Authority Investigation Summary Report



The Coal
Authority

Claim Number: P-015688

Address: 87-87 Newbyres Crescent, Gorebridge, Midlothian, EH23 4UF

Date: 2nd September 2013

On 11th September 2013 the Authority was contacted by Midlothian Council to report that tenants of a 4 year old semi-detached council owned property had become overcome by gas and were taken to hospital as a result. The Council indicated that the services to the property had been checked and found to be safe and that further investigation had revealed low oxygen levels within both of the semi-detached properties. On the Authority's first visit to the properties carbon dioxide alarms were activated as soon as they were plugged in. The downstairs toilet and under stairs cupboard were identified as the main problem areas in the properties. The Council had evacuated both properties and the Authority recommended that they should not be occupied until the issue was remediated.

- 11-09-2013 Incident received by the Coal Authority from [REDACTED] at Midlothian Council.
- 11-09-2013 Mines Rescue Service attended the incident to undertake a gas investigation at the properties using an Impact Pro gas monitor and found low oxygen levels (10%) in the ground floor rooms of both properties, with the worst affected areas being around service entry points. Mines Rescue Service also checked the neighbouring properties, 85 and 91 Newbyres Crescent, and found normal atmospheres in both, 20.9% oxygen and no carbon dioxide recorded.
- 11-09-2013 Coal Authority Regional Project Manager [REDACTED] attended the incident and also undertook an initial gas survey using a MSA Altair 4X gas monitor which acts as a personal alarm and gives instantaneous readings. He met with Midlothian Council representative [REDACTED] and the occupants of the property.
- 11-09-2013 Following these visits and conversations between Midlothian Council, The Coal Authority and the occupants, a decision was taken to evacuate the properties. Midlothian Council arranged for two families to stay at a local hotel.
- 12-09-2013 [REDACTED] installed an LMSxi data logger at 89 Newbyres Crescent in the cupboard under the stairs. The data logger took samples of the atmosphere once every 15mins to be downloaded at a later date.

- 17-09-2013 The LMSxi data logger was collected from 89 Newbyres Crescent. An LMSxi data logger was installed in the cupboard under the stairs at 87 Newbyres Crescent. The data logger took a sample of the atmosphere once every 15mins.
- 02-10-2013 [REDACTED] (Regional Project Manager) [REDACTED] (Project Manager Gas Specialist) [REDACTED] (Project Support Officer) and [REDACTED] (Balfour Beatty) attended the property to undertake a thorough investigation. Extract from site visit notes below:

On entering 89 Newbyres Crescent there was no evidence of elevated gas levels in the general body of the property; however the tenant had been there for some time before us ventilating the property. There were no elevated gas levels in the downstairs toilet or in the under stairs store cupboard as have been previously recorded.

87 Newbyres Crescent was opened up while we were inspecting the property next door. The front door was opened and allowed to ventilate. We entered the property and we opened the door to the downstairs toilet which is directly in front of the front door. 8% CO₂ was detected at floor level. We then walked through the hall and through into the lounge. The LMS showed up to 12% CO₂ in the general body of the atmosphere within the lounge. Therefore we exited the property and opened the rear doors to continue ventilating the building.

In the under stairs cupboard CO₂ levels were around 9% and when tubing was placed through the service entry points the CO₂ levels were up at 13%. Balfour Beatty removed a portion of chipboard flooring from the kitchen floor and the CO₂ levels below the chipboard were about 19%. About 300mm below the chipboard was the concrete base. A hole was drilled straight through this and through the insulation beneath into the sand blinding above the hardcore. Through this hole CO₂ concentrations were measured at 21%. No other gases were encountered during the investigation at the properties. The hole in the kitchen floor was bunged so it could be used for further monitoring and the chipboard replaced.

A hole was then drilled at the rear right hand elevation of the property to allow for gas monitoring within the cavity. CO₂ levels within the cavity at this point reached 23%. The cavity was also drilled at the front of this property and CO₂ levels were at 13%. A hole was also drilled into the left hand elevation of number 89 and showed 12% CO₂. Given these concentrations it was thought that a hole should also be drilled into the cavity of 85 Newbyres Crescent. This hole showed no evidence of gas ingress into the properties.

Spike tests were also undertaken in the ground surrounding the two properties. Spike tests at the front of number 87 showed max 0.2% CO₂. Spike tests around number 89 showed no evidence of CO₂ although the ground was quite hard around the property and it was particularly hard to get deep probe holes. However one, shallow, probe hole at the rear right hand corner of 87 Newbyres Crescent showed 12% CO₂ (see External Gas Investigation plan below).

It appears that the highest concentrations of CO₂ are occurring at the rear right hand corner of 87 Newbyres Crescent, gathering between the floor of both properties and finding the easiest route through the floor into the properties. This route seems to be through the holes where the services break through the concrete slab, and up through the cavity. The gas gathering in this store cupboard and ground toilet floor is compounded by the fact neither of these rooms have any ventilation.

- 02-10-2013 LMSxi removed from the cupboard at 87 Newbyres Crescent to be downloaded. This was replaced with another LMSxi and a second monitor was installed in the kitchen of 87 Newbyres Crescent.
- 08-10-2013 A single borehole was drilled to intercept the shallowest worked coal seam at c.13m. Spot readings using LMSxi gas monitor recorded 18.7% CO₂ and 10.9% O₂, similar to readings taken in the property on the same day and indicating that the mine workings were the source of the gas.
- 15-10-2013 [REDACTED] removed the two LMSxi data loggers from 87 Newbyres Crescent to be downloaded. The memory on both data loggers had been filled on the 12-10-2013 and so stopped recording samples.
- 15-10-2013 [REDACTED] took spot readings at the monitoring borehole to the rear of 87 Newbyres Crescent. 25.1% CO₂, 4.6% O₂ was recorded.
- 01-11-13 Completion letter sent to [REDACTED] Midlothian Council via email.
- 06-02-2014 Coal Authority was informed by Midlothian Council that they would be undertaking gas monitoring at all of the properties on the estate. The Coal Authority offered assistance with this but were informed that they had already engaged Mines Rescue Service to undertake this monitoring.
- 18-11-2013 Email of full details of gas investigation and sampling results sent to [REDACTED] Midlothian Council.

Equipment Used During the Investigation

- Impact Pro Portable Multi Gas Detector – gases detected include oxygen, methane, hydrogen sulphide and carbon monoxide. Primarily used by the Coal Authority for personal protection and spot readings.
- LMSxi Landfill Gas Analyser – gases detected include oxygen, methane, carbon dioxide, nitrogen, hydrogen sulphide and carbon monoxide, and also monitors atmospheric pressure. Primarily used by the Coal Authority for continuous data logging.
- MSA Altair 4X Multigas Detector – gases detected include oxygen, methane, hydrogen sulphide and carbon monoxide. Primarily used by the Coal Authority for personal protection and spot readings.

Mining Information

There are two recorded mine entries on the housing estate, nearly 100m from the affected properties. One of these shafts was treated during the development of the estate and the other could not be located. There are no recorded workings directly beneath the property and recorded workings in the vicinity are over 100m deep. Previous site investigations by Mason Evans () Geo-Environmental consultants on behalf of Midlothian Council have found abandoned mine workings beneath the site in the Great Seam where voids, soft and broken ground were encountered. This seam is thought to be between 16 and 17.5m deep. Other seams were encountered but were intact. Superficial deposits generally comprise boulder clay overlain by clay and topsoil. Boulder clay acts as a barrier to gas migration. There are no recorded faults or fissures within the vicinity of the properties.

Desktop Investigation

Our Permissions records show that an extensive site investigation was undertaken by Mason Evans Geo-Environmental Consultants in 2007, prior to construction of the housing development. Following the site investigation the shallowest worked coal seam was subsequently grouted to stabilise the workings. When the Coal Authority drilled the gas monitoring borehole into this seam no grout was encountered.

A report undertaken by Blyth and Blyth Consulting in April 2006 also outlines that an earlier ground investigation was undertaken on the site. Both of these site investigations and treatment works show a number of boreholes were drilled beneath the affected properties. Low levels of CO₂ were recorded during the site investigations although gas monitoring appears to have been fairly limited. Gas membranes were not included in the construction of the properties. The Interpretive Report on the ground investigation commented on the possibility of mine gas migrating into buildings via cracks in floor slabs or service entries.

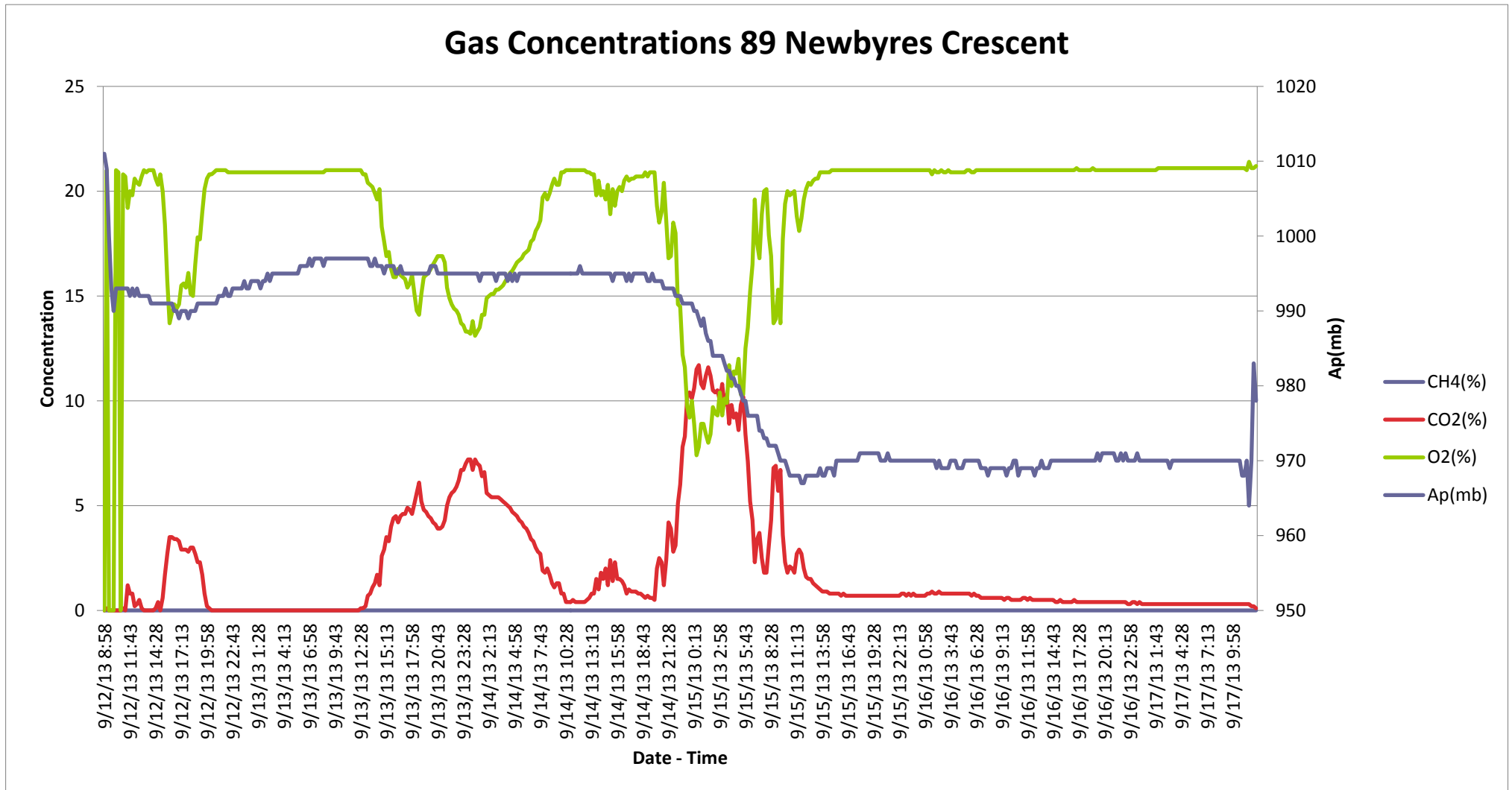
Planning Permission for the estate pre dates the Authority's risk based planning approach and thus the site was not identified in a 'high risk mining area' and the Planning requirements associated with it.

The mine water level in the area is controlled by two discharge points c.1000m south of the incident location. The discharge points keep the mine water level in this area fairly stable around 25m-30m below ground level at the point of the incident. The discharge point is visited on a three monthly basis by contractors on behalf of the Coal Authority.

There was a previous incident involving mine gas which occurred at Hunterfield, off Hunterfield Road and Barleyknowe Lane, in which a young boy fell into a shallow ground collapse and was overcome by carbon dioxide. A coal seam was found at 2.9m below ground level and this collapse, along with a number of others within the same field, was packed with imported clean stone and backfilled with previously removed material. A layer of geotextile was pinned in place over the collapsed areas prior to reinstatement of the top soil.

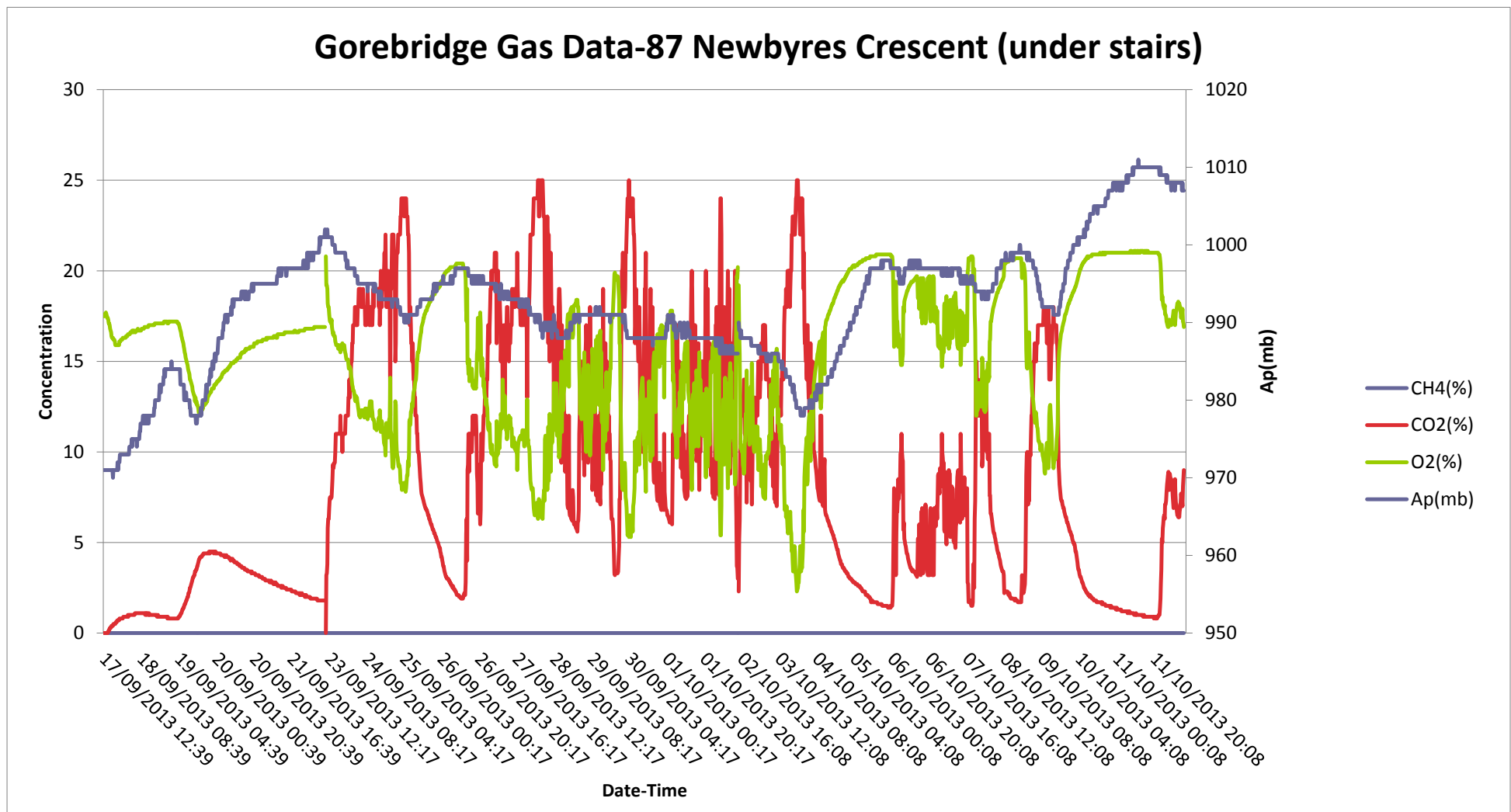
External Gas Investigation





The graph shows that the oxygen levels decrease as the carbon dioxide level rise. The carbon dioxide levels reached 11.7% during this monitoring point and oxygen was 7.4% at its lowest. There is some correlation between fall in atmospheric pressure and elevated levels of carbon dioxide although this relationship is not well defined.

The graph shows again that oxygen levels decrease as carbon dioxide rises. The maximum recorded level of carbon dioxide during this monitoring period is 25%. The lowest recorded level of oxygen was at 2.3%. The graph also shows a clear correlation between falling atmospheric pressure and increasing concentration of carbon dioxide as would be expected from gases being released from underground.



Appendix 2: Letter from Coal Authority to Midlothian Council



The Coal
Authority



INVESTOR IN PEOPLE

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Our Reference: P-015688

1st November 2013

FAO [REDACTED]

Dear [REDACTED]

Reported Mine Gas Hazard at 87-89 Newbyres Crescent, Gorebridge, Midlothian

I refer to the enquiry made to the Coal Authority on 11th September 2013 and our subsequent visits and conversations.

As you are aware an extensive desktop investigation and site visits have been undertaken to establish the cause of elevated levels of carbon dioxide found within 87 and 98 Newbyres Crescent. Gas monitoring at the properties have revealed peaks of up to 25% carbon dioxide and as such we recommended that the properties should not be occupied until this has been remediated. It is clear from site visits that carbon dioxide is migrating through the ground and collecting beneath the concrete slab at the base of the properties. The gas is then most likely finding the path of least resistance, through service ducts and through the cavity wall, into the buildings.

A single borehole has been drilled into the shallowest worked coal seam and confirms that carbon dioxide at similar concentrations can be found within this seam, and is therefore the most likely source of the gas. However the pathway by which the gas is reaching the surface is still unclear.

According to information provided to our permissions department an extensive site investigation was undertaken by Mason Evans Geo-Environmental Consultants in 2007, prior to construction of the housing development. Following this site investigation the shallowest worked coal seam, Great Seam, was subsequently grouted to stabilise the workings. When the Coal Authority drilled a gas monitoring borehole into this seam no grout was encountered. A report undertaken by Blyth and Blyth Consulting in April 2006 outlines that an earlier ground investigation was also undertaken on the site. Both of these site investigations and treatment works show that a number of boreholes were drilled beneath the properties.

It is the opinion of the Coal Authority that for mine gas to be migrating to the surface in concentrations similar to that found in the coal seam the most likely pathway would be through a 'man made' source. Given that a number of boreholes were drilled beneath the properties it is likely that one of these was not sealed and has allowed mine gas to reach the surface. Further to this

gas membranes were not included in the design of the properties even though it was proven that shallow recorded coal workings were present beneath the estate. It is therefore the opinion of the Coal Authority that the designs of the property and treatment works were not suitable and sufficient given the risks identified.

As such, the Coal Authority cannot accept liability for the gas problems being experienced within the properties. Please do not hesitate to contact me if you require any further information or assistance on this matter.

Yours sincerely



Project Manager (Gas Specialist)

Appendix 3: A list of members of IMT and other IMT participants

Richard Othieno	Consultant in Public Health Medicine (chair)	NHS Lothian
Duncan McCormick	Consultant in Public Health Medicine	NHS Lothian
Louise Wellington	Health Protection Nurse	NHS Lothian
Lauraine Duncan	Health Protection Nurse	NHS Lothian
Andrew Elliott	Emergency Planning Officer	NHS Lothian
Gemma Gallacher	Personal Assistant (note taker)	NHS Lothian
Jennifer Irvine	Personal Assistant (note taker)	NHS Lothian
Simita Kumar	Personal Assistant (note taker)	NHS Lothian
Carol Harris	Communications Manager	NHS Lothian
Kirsty Morrison	Surveillance Officer	NHS Lothian
Colin Ramsay	Consultant Epidemiologist	Health Protection Scotland
Carole McRae	Epidemiologist	Health Protection Scotland
Jacqueline Campbell	Head of Health Protection Team	Scottish Government
Duncan McCormick	Senior Medical Officer	Scottish Government
Simon Cuthbert-Kerr	Senior Policy Lead	Scottish Government
Donald Henderson	Head of Public Health Division	Scottish Government
Scott Sutherland	Lead Policy Officer	Scottish Government
Annette Stuart	Policy Officer	Scottish Government
Edel Ryan	Environmental Health Manager	Midlothian Council
Lilianne Lauder	Principal Environmental Health Officer	Midlothian Council
Ross Buchanan	Principal Environmental Health Officer	Midlothian Council
Kevin Anderson	Head of Customer & Housing Services	Midlothian Council
Simon Cole	Unit Manager Edinburgh & Lothians Operations Team	SEPA
Iain Cruikshank	Area Manager Operations East (South)	SEPA
Mark Wills	Technical Manager	Fairhurst
Andrew Kram	Technical Manager	Fairhurst

Appendix 4: Literature review on the health impact from CO₂ from coal mines

Introduction

Following a recent incident at Gorebridge, Midlothian, where carbon dioxide (CO₂) gas from coal mines affected a number of domestic properties, we have undertaken a literature search to explore the available evidence of health impact from carbon dioxide in relation to coal mines both in the wider environment and, more specifically, in the domestic setting. Occupational exposure has not been investigated specifically; however occasional incidents have been highlighted where relevant.

Carbon dioxide is an odourless gas found naturally in the atmosphere at around 0.03% and is vital to a number of natural processes including plant respiration. It is further used for many domestic and commercial purposes and, as such, is controlled by legislation.¹

Oxidation of organic materials such as coal or landfill, combustion of organic materials, and respiration can result in raised concentrations. The reaction of acid water with carbonate rock (e.g. limestone) also produces CO₂. The majority of CO₂ emissions from natural sources in the UK come from coal-bearing strata particularly disused coal mines.

Usually, CO₂ disperses safely into the atmosphere. However, if it migrates along tracks or pathways such as cracks in floors or construction joints and accumulates in enclosed and poorly ventilated spaces, it becomes toxic and asphyxiating.² Carbon dioxide is denser than air and therefore lies low, near the ground, so basements, cupboards and areas under stairs are common spaces for CO₂ to accumulate and build up high concentrations.

There are relatively few recorded incidents in the UK, suggesting a minor hazard of local significance; however a broader search on the health impact of carbon dioxide from coal mines demonstrates issues across the world.²

Carbon dioxide standards and health effects

In the UK, carbon dioxide is a recognised hazard in the workplace with workplace exposure limits (WELs) set under the Control of Substances Hazardous to Health Regulations 2002 (COSHH). The WELs take account of an average exposure over a defined time period.¹ The approved limits listed in the Health and Safety Executive EH40/2005 Workplace Exposure Limits are:

- Long-term exposure limit (8-hr reference period) of 5000 ppm (0.5%)³
- Short-term exposure limit (15 minute reference period) of 15000 ppm (1.5%)³

Carbon dioxide can pose a threat to life through asphyxiation as it can displace oxygen in the air to dangerously low levels. At levels of only 15% in air however CO₂ poses an immediate threat to life through toxicological effects on the body. Inhalation of raised CO₂ levels causes increased blood acidity resulting in adverse effects on the respiratory, cardiovascular and central nervous systems.¹ Symptoms vary depending on the concentration and length of exposure.

Table 7: Symptoms following a range of carbon dioxide exposures^{1;4}

Concentration	Duration	Symptoms
around 3%	1 hour	headache
4-5%	few minutes	headache, dizziness and difficulty breathing
7-10%	several minutes-1 hour	headache, increased heart rate, shortness of breath, dizziness, sweating, rapid breathing and near or full loss of consciousness
10-15%	1 minute-several minutes	dizziness, drowsiness, severe muscle twitching and unconsciousness
>15%	< 1 minute	loss of consciousness
30%	within minutes	death

The Health and Safety Executive have developed a framework for the assessment of exposure in relation to concentration and duration. This shows significant danger to humans inhaling CO₂ above concentrations of 7% in air and that small changes in concentration can elicit rapid increases in toxicity.¹

Carbon dioxide sources in coal mining

Methane and carbon dioxide are produced during the coalification process, some of which is held in the coal in an adsorbed state. Gas is only released either near geological disturbances such as faults or due to mining. Whilst working mines have their gas emissions carefully regulated, areas of shallow mine workings have many disused mines and these pose a greater risk of uncontrolled methane and carbon dioxide emissions.²

Following closure of a mine there are procedures undertaken to reduce the risk of surface gas emissions, however gas will continue to be released and therefore accumulate, particularly if dewatering and ventilation is stopped. Water levels will influence the migration of gases through the coal mine and if water levels rise, seepages can occur at the surface through natural (e.g. faults) or artificial pathways (e.g. tunnels, adits, shafts etc) connecting to the surface. Migration of gas tends to be upwards along faults and fractures and is influenced by changes in pressure, temperature, concentration gradients and density effects. A reduction in atmospheric pressure will increase the flow of gas and groundwater changes will also affect migration. Freezing conditions or water logging will, on the other hand, temporarily prevent gas release.² Mineshafts provide a migration path from both shallow and deeper seams which is important with respect to rising water levels following closure of a mine.⁵ Even if shafts have been filled there may be permeable sections especially if surface debris has been used.⁵ The growing urbanisation has also sealed natural seepages requiring mine gas to migrate via alternative routes.⁶ Improving housing standards through factors such as central heating, home insulation and reduction in open fires and chimneys also play a role in increasing the number of occasions where mine gas is detected.⁶

Once released to the open air, carbon dioxide does not generally pose a problem as it dissipates. However, if it enters buildings along a migration pathway such as cracks in floors, sewage systems, construction joints, cavity walls, floor structures, wall claddings, ventilation

ducts or gaps around service pipes, it can accumulate in poorly ventilated enclosed spaces such as basements or cupboards. In the wider environment tunnels, caves etc. provide similar spaces for potential accumulation² This accumulation is toxic and if people are exposed to these high levels can be asphyxiating leading to health issues and fatalities.²

Whilst there is a strategy for monitoring and controlling methane and carbon dioxide in underground constructions including mines, there is no such strategy for surface building and other constructions unless there is a good reason to believe high gas levels exist.² Accumulation can occur undetected for lengthy periods, given the nature of carbon dioxide as it is colourless and odourless. The fact that the phenomenon is insidious and intermittent, depending on a variety of factors including weather conditions and ground water levels etc. further adds to the difficulties of detecting the hazard.⁵

Evidence on health impact

Large scale exposures to carbon dioxide

Exposure to large volumes of CO₂ at high pressure can occur during industrial processes but have also been reported following events in nature.

For example, in 1986, at Lake Nyos, Cameroon, around 1,700 people died, mostly in their sleep, and 3,500 livestock were killed with thousands more injured following an unexpected release of around one and a half million tonnes of CO₂ during a natural phenomenon known as “lake overturn”. Lake Nyos is one of only three lakes known to be naturally saturated with CO₂ because of a continuous leak of the gas from an underground magma chamber. Following high rainfall the CO₂ was displaced releasing a massive bubble of the gas which circulated in a cloud several tens of metres deep across the surrounding area.^{1,7,8} Other lakes such as Lake Kivu in Rwanda are known to be similarly at risk of becoming saturated with CO₂.⁷

Beaubien *et al.* refer to mortality in relation to CO₂ in geologically active areas, characterised by both seismic activity and volcanic structures.⁹ At least ten individuals in the central Italian region of Lazio have died over the last twenty years, one of whom was asphyxiated following a fall into an abandoned well. Thirty cows were also asphyxiated by carbon dioxide in a densely populated area near Rome in 1999.⁹ Following geochemical survey, mapping and geostatistical application, it was noted that some high risk areas with soil gas CO₂ concentrations of more than 70%, were heavily populated and recommendations were made for land use planners to consider this aspect in areas of possible risk when conducting environmental assessments.⁹

Other volcanic-related carbon dioxide incidents are listed by the International Volcanic Health Hazard Network, dating back to 1906. These demonstrate significant mortality and morbidity associated with a number of events across the world either through ground gas or soil gas emissions, e.g. around 150 deaths associated with a cloud of gas on a path in Indonesia in 1979 with 1,000 injuries.¹⁰

Salt mines can be affected by unexpected expulsions of carbon dioxide and salt referred to as “outbursts”. In the Werra district of central Germany, the potash salt mines have large pockets of carbon dioxide and these have been mined since the late 1800s for industrial production of CO₂.⁸

The Menzengraben mine in East Germany was particularly prone to outbursts with a series of serious outbursts prior to 1949 after which time blasting was forbidden if personnel were below ground. The 1953 outburst in Menzengraben was therefore less catastrophic than it could have been as all miners were above ground. Despite this, the outburst resulted in 20 minutes of forceful release of carbon dioxide, shattering the roof of the shaft and causing widespread

damage and spread of debris. Miners who were still in the vicinity sought refuge however three people were killed in the event. Two of the three deaths were directly attributable to carbon dioxide through asphyxiation; one at 100m distance in the canteen and another at 350m in low lying land nearby. Others suffered asphyxiation symptoms at 530m distance. Hedlund notes that in the case of this extreme CO₂ outburst, standard dispersion modelling would point to safe dilution with little risk to the surroundings, in contrast to the witnessed accounts from this outburst when an entire valley was filled with dangerously high CO₂ levels.^{4;8}

Carbon dioxide incidents in relation to mine workings in the wider environment

Unwin *et al.* note one of the earliest recorded deaths due to blackdamp (which is a mixture of carbon dioxide and oxygen deficient air) in 1662, by Galloway in his book “A history of coal mining in Great Britain” originally published in 1882 and again in 1969. Eight men and one woman are noted to have suffocated when walking into old workings in Dysart Colliery, Fife; these were thought to have been unventilated. Despite improvements in colliery ventilation, blackdamp remains an important hazard.¹¹

Whilst there are no official statistics on hazardous surface incidents following mine gas emissions, the Department of the Environment report around three mine gas emission incidents per year over the last decade.¹² This covers mine gas incidents where there has been “*an unexpected occurrence of mine gas at the surface in such circumstances that it constituted a hazard or potential hazard*”.¹²

Over the last 50 years around 25% of recorded mine gas emission incidents have involved ‘blackdamp’ and around 70% have involved ‘firedamp’; mainly methane.¹²

In overview, the Department of the Environment report; “Methane and Other Gases from Disused Coal Mines: The Planning Response Summary Report” (1996) highlights three fatalities as a result of blackdamp escaping to the surface, since the 1960s.¹³

On wider literature searching both within and outwith the UK, other cases, some anecdotal, have been noted as below.

The TOXNET database includes CO₂ toxicity information with reports on CO₂ toxicity amongst which there is a brief note highlighting four cases in England associated with coal mines “*from vapours arising from a pit filled with powdered coal*”, unfortunately further information is not detailed.¹⁴

In the 1960s, a serious mine gas incident occurred in the north west of England. Three children and a fireman were asphyxiated in a poorly sealed surface adit entrance, by blackdamp.¹²

Unwin *et al.* report a further two deaths in officials walking into old workings between 1971 and 1976 although further detail is not provided.¹¹

In Low Fell, north east England in 1979, a previously unrecorded and poorly capped mineshaft (2m diameter x100m depth) was noted in a garden, following house extension works, highlighting the need for caution when examining records and plans of old mine workings as the retention of old plans after mine closure only became mandatory after 1873 and the production of accurate mine plans obligatory after 1911. No methane, and little blackdamp, was found in the shaft in this instance.⁵

In 1995, a man and his dog died as a result of mine gas seeping from a disused mine entry within a factory building in Widdrington, in Northumberland.¹⁵ The Guardian Newspaper further reported the details of the event; the man was entering a makeshift stable in one of the small brick sheds on the edge of the site along with a small child and a dog, to feed the horse. He and

his dog were found dead very shortly after. As CO₂ is denser than oxygen it lies close to the ground and the dog was likely to have been overcome first. It is assumed that the man bent down to attend to the dog and was overcome himself.¹⁶ The child survived. It was thought that dewatering at an adjacent opencast site may have lowered water levels in the old workings enough to allow trapped gas to exit through the old drift.⁵

Another incident in 1995 highlighted the potential for remediation measures to break down, following the failure of a fan located in a Cramlington Primary School. The fan formed part of an active ventilation system for old mine workings and its failure resulted in police, mines rescue and environmental health officers being called out. No reports of impact on health were noted in this instance.^{15;17}

The 1995 Hansard transcript (digitised transcripts of parliamentary debate) discussing the mineworkings in Northumberland anecdotally notes an incident where a woman fell asleep on a low couch during a period when the blackdamp was well above average and reached couch level. Fortunately she was awakened by her family before any serious health impact.¹⁵

In 1998, a 22-year-old man suffocated in a trench where sewer pipes were being laid near Barnsley. He had gone to assist his father who had collapsed in the trench. The father was pulled out of the trench by workmates; however the 22-year-old man had collapsed by that time and died. It was later discovered that blackdamp had seeped in to the trench from a nearby disused colliery.¹⁶

Following a request for information from the Health and Safety Executive, some further cases were identified. One was reported under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR). This was a fatality in June 2006 at Daw Mill mine where an official died when he was exposed to an oxygen-deficient atmosphere underground – 42% methane, 3% O₂.^{18;19}

<http://www.tamworthherald.co.uk/managers-walk-free-case-dropped/story-12789316-detail/story.html> This death occurred underground however it provides illustration of occupational exposure and its potential impact.¹⁸

The HSE were able to recall anecdotally two further cases, however these had not been documented; one where a person was overcome whilst retrieving a football from a mine entrance; he fortunately survived and another where someone died whilst exploring an old mine shaft on a rope ladder and was overcome by CO₂. Sadly his companion was not able to pull him out.¹⁸

In 2006 four deaths were reported at the Sullivan Mine near Kimberley BC, Canada. The Sullivan mine was one of the world's largest underground mines producing lead zinc and iron. Over a period of 3 days in May 2006 four individuals died in a water monitoring station at the toe of the closed and partially reclaimed Number 1 Shaft Waste Dump (WD1). The station had been in use for several years to monitor flow and collect samples and was connected to a toe drain via a 400mm pipe.

The first death involved an environmental contractor who went into the monitoring station to sample the drainage for water quality. Two days later an employee of the mining company went to search for the contractor and died on entering the monitoring station. The third and fourth deaths involved ambulance service staff who had been summoned to assist. It was thought that these deaths were due to waste rock pore gas entering the monitoring station.²⁰ Initial investigations demonstrated low oxygen and high carbon dioxide levels in the monitoring station as the cause of death, hypothesised to be due to the connecting pipe between the drain and the

monitoring station.²¹ Following investigation however, it was found that a variety of factors had contributed to the low oxygen and high CO₂ levels in the station including the presence of reactive sulphides and carbonates in the waste rock, changes in air flow in relation to temperature change, the segregation of waste rock by particle size resulting in highly permeable zones facilitating dump respiration and concentrating flow, the covered toe drain and pipe concentrating the gas into the monitoring station and the station shack which provided confinement of the pore gas.^{20, 21}

It is clear from the incidents reported above that carbon dioxide has caused morbidity and mortality in a variety of settings when conditions are such that a migration pathway connects mine gases to enclosed or poorly ventilated spaces.

Significant incidents caused by oxygen deficient atmospheres attributed to mine gas

UK, Robinson (2000)

Robinson reports a number of mine gas surface incidents in domestic properties in the north east of England since the 1950s. These have not been specifically attributed to high levels of carbon dioxide however they are caused by oxygen deficient mine gas or blackdamp.⁵

1979, County Durham

Investigation of road settlement within a council estate revealed the presence of two abandoned shafts. Random testing for mine gas in a nearby house demonstrated low oxygen levels that dropped below 14% at times. The family were temporarily rehoused. The family had frequently complained of ill health during their four year residency. It was discovered that the house had been built above the stopping used to seal off a surface drift to an abandoned mine.⁵

1980, Cramlington

Families in two adjacent semi-detached properties had complained of breathlessness and feeling faint and unwell which prompted an investigation. This revealed low oxygen levels; around 11% in confined spaces such as cupboards and 15% in the ground floor rooms. Oxygen levels were affected by drops in atmospheric pressure. At this time, the mines were still working and being pumped out such that rising water levels were not contributing to the problem. Remediation initially included improved ventilation in the under floor spaces and cleaning and enlarging of airbricks, however these measures were unsuccessful. Other unsuccessful remediation measures included removal of the suspended floor, insertion of a bonded impervious plastic membrane with particular care to avoid leakage paths and injections of bentonite below the concrete foundations through boreholes. On further investigation eight properties along three streets were found to have problems with more sites thought possible. The houses were installed with oxygen meters and alarms. It was noted that adjacent houses were not necessarily affected depending on whether the protective bed of clay underneath the foundations was intact. In the areas where clay had been removed during construction of foundations or trenched for the provision of services, gas had a migration path up through the permeable strata into the house. It was not easy or in many cases possible to replace this barrier through substitution with bentonite. The final solution was to install a ventilation system underneath the properties to automatically extract the air from the shallow mine workings at times of low atmospheric pressure.⁵

1987, Seaton Sluice, Northumberland

Emergency services were called out by council officials following a rapid fall in atmospheric pressure to a very low level in 1987. This fall had resulted in an oxygen deficient atmosphere

affecting a number of private properties. Ventilation engineers tested all houses in the estate revealing 15 affected properties, however oxygen levels improved rapidly following an increase in atmospheric pressure. Investigation of mine plans identified the presence of old mine-workings underneath the estate. A ventilation scheme was developed with boreholes from the surface which allowed gas to be released at some pressure. It was hypothesised that the combination of rising water levels following cessation of pumping and low atmospheric pressure coupled with the local geology of fractured sandstone and the absence of the usual layer of boulder clay resulted in the original problem. Remediation measures were however only thought to be adequate in the short term as further pressurisation was likely following rising water levels in the deeper mine workings connected to Seaton Sluice.⁵

1993, Pegswood, Northumberland

Evacuation was necessary in a number of homes during December 1993, when falling atmospheric pressure resulted in problems with blackdamp. Gas was thought to have come from the underlying shallow mine. This had been closed for 30 years but was connected to a larger colliery that had closed more recently. It was thought that the surface fan in the larger colliery had provided ventilation to a large area of surrounding old workings. The fan stoppage and reduction in pumping were thought to be the reason for the blackdamp emissions. Mitigation measures included installation of a vent stack and a monitoring station near the houses to reduce the impact of gas emissions during low atmospheric pressure.⁵

1995, Widdrington Station, Northumberland

Occupants of a privately owned house experienced symptoms following exposure to blackdamp. The house had previously been the fanhouse of a closed colliery and the bathroom was directly above an imperfectly filled upcast shaft. Remedial work included, grouting in and around the shaft and inclusion of a vent pipe from the mine workings to the atmosphere.⁵

Mitigation of mine gases

No consistently effective technique was noted. Issues included, difficulties in locating old mine workings due to the lack of older or accurate plans and local geology (intact clay layers provide a seal but cannot be relied on to be intact following housing development). Grouting underneath properties and sealing service entries may help some cases but underfloor ventilation may also be needed. Where more comprehensive measures are required, automatic ventilation of the old mineworkings themselves has been found to be beneficial.

Carbon dioxide in homes built on or near coal mines

The intrusion of carbon dioxide (CO₂) into homes constructed on or adjacent to disused coal mines has been identified as a serious threat to residents in a number of reported studies from both the UK and USA.

UK, Hendrick and Sizer (1992)

In 1992, Hendrick and Sizer reported a case study of a 42-year-old female who purchased a home in 1987 in a former mining area of Newcastle upon Tyne, where the mine had closed in the early 1940s.²² Upon moving into the property, both the woman and her helpers started to report symptoms including dizziness, nausea and headaches, all of which passed as they moved to fresh air. In the following six months, the woman reported similar symptoms on a further 15 occasions and a programme of monitoring was initiated at the property.²²

The maximum recorded level of carbon dioxide within the property was 7.05%. Oxygen levels recorded at various points within the property were as follows: 8-9% in a kitchen cupboard

under the sink (where service pipes accessed the building), 12% in other confined (downstairs) areas and 16-19% within some living areas. Spikes in carbon dioxide concentrations during the initial incident and on several subsequent occasions were found to be associated with periods of bad weather and, in particular, rapid drops in atmospheric pressure.²²

In an attempt to divert carbon dioxide from the property, a shallow venting shaft was sunk into soil around the property, however this was found to be ineffective. New shafts were sunk into the mine itself in order to ventilate the area mechanically and the authors reported that air flow rates achieved through the mine appeared adequate to dissipate ongoing gas production and prevent elevated carbon dioxide levels within the property.²²

USA, Ehler (2002)

In August 2000, four individuals from three homes in Lawrence County USA had experienced difficulties in breathing and anxiety associated with high levels of CO₂ and low levels of O₂ in their homes. One family attended hospital with flu-like symptoms. Whilst each of the properties had different site conditions, one was on and the other two adjacent to a strip mine.²³

The property overlying the reclaimed strip mine was a three year old, large brick ranch style house with a full basement. Bedrooms were located in the basement. The family had complained of shortness of breath and anxiety often in association with an oncoming storm. The owners of this property had been proactive by firstly installing vents to the French drain system around the house foundation, adding an air exchange system to replace the air through the HVAC (heating, ventilation and air conditioning) system and finally installing a sub-slab ventilation system. Each of these individual measures achieved only minor improvements.²³

The second new brick ranch house (two years old), had a full basement and was located within 200 feet of the strip mine. The site had been used as a spoil stockpile. The family had to visit hospital on one occasion but their symptoms had mostly resolved by the time they reached the hospital. No remediation work had been carried out at this point.²³

The third house was over 100 years old had been recently remodelled. The older section however, still had a stone foundation and an earthen basement floor. The owners reported that gas appliances were frequently extinguished before or during storms.²³

Monitoring was carried out for over a year in these three houses at ten minute intervals for 28 days at a time. Atmospheric levels of CO₂ from 12-25% were measured in air entering the basement during periods of low pressure with correspondingly low levels of O₂ (near 10%), for periods lasting over 12 hours.²³

A final attempt to reduce the CO₂ levels in the properties resulted in a tenfold decrease in CO₂ levels following the introduction of a positive pressure radon system.²³

In the first property, the system installed for radon was noted to be designed for low concentrations of gas with a slow supply which was not in keeping with the CO₂ emissions. The radon system was therefore modified to a positive pressure radon system with a resultant tenfold reduction in CO₂ recordings.²³

Positive pressure sub-slab ventilation was added to the two other properties, alongside work to seal the earthen floor and the concrete block at the third property. This then provided similar results.²³ Laughrey *et al.* report further detail on the remediation work at the Lawrence County site:

- filling concrete foundation bricks with special grout mix to reduce the gas permeability of the basement

- vapour barriers and the installation of a basement subfloor impermeable to gas
- installation of vents
- installation of a fan system to create positive pressure beneath the homes

Collectively these measures reduced CO₂ levels to normal atmospheric levels including during periods of low pressure.²⁴

A variety of possible sources were identified as the source of gas entering the property including; organic matter and carbonate in strip mining spoil, an abandoned deep coal mine, reactions from the acid mine drainage (AMD) or the spoil/glacial till or an abandoned oil field.²⁵ Stable carbon isotopic analysis was utilised during these site specific investigations and concluded that the source of CO₂ contamination was related to past surface mining activity, following a “*significant source of carbonate material in the glacial till at the site*”.²³

This highlighted the potential risk from gas emissions following AMD neutralisation reactions in homes built on or nearby to reclaimed surface coal mines.^{25, 26}

USA, Kreiss et al. (2003)

Kreiss *et al.* reported on the investigation of elevated carbon dioxide levels in a home in West Virginia, USA.²⁷ The two-storey new-build property was occupied in 2001 by a couple, both aged 42, who were both smokers but in good general health. Shortly after they moved in, the woman reportedly experienced episodes of dizziness, shortness of breath and fatigue, whilst the man reported episodes of mild confusion, headache and blurry vision. All of these episodes occurred while the occupants were working in the basement of the property and always resolved once they moved back upstairs. In 2003, the woman reported to a hospital emergency department on two consecutive days with shortness of breath, fast heart rate and panic. A subsequent diagnosis of asthma and cardiomyopathy was made, although symptoms associated with exposure to the basement continued to occur despite the use of prescribed medication for these newly-diagnosed conditions.²⁷

Subsequent investigations at the property identified carbon dioxide levels as high as 9.5% in a crawlspace adjacent to the basement, with concentrations greater than the upper limit of detection of the standard carbon dioxide monitor (1%) recorded in the upper levels of the property. Oxygen levels as low as 14% were also recorded in the crawlspace area.²⁷

Renovations were made to the crawlspace in the basement to redirect carbon dioxide away from, and limit ingress of the gas into, the property and the authors reported a reduction in carbon dioxide concentrations and increase in oxygen concentrations within the basement of the property.²⁷

USA, Laughrey and Baldassare (2003)

Laughrey and Baldassare investigated further cases of CO₂ migration in seven different homes, three of which appear to be the same Lawrence County homes reported by Ehler (above).²⁴

Of the four remaining houses, one report of CO₂ toxicity symptoms came from a family living in Derry, Pennsylvania in 2002. The two daughters had bedrooms in the basement and awoke on several occasions with increased heart rate, difficulty breathing and chest tightness. Their father experienced similar symptoms on entering the basement. The home was evacuated by the environmental department and investigated further, revealing CO₂ levels of more than 10% and O₂ levels less than 10%. On occasions the CO₂ levels exceeded 20% at two monitoring locations. The house was located on steep bedrock in an area which had been both deep and

surface mined. An area uphill continued to be actively mined. Sandstone cropped out in the crawl space behind the basement and was fractured.²⁴

Stable isotope geochemistry revealed that the active mine pit floor was the likely source of CO₂. CO₂ levels were further exacerbated following rainfall due to the “reaction of acidic surface/ground water with the limestone amended to the active surface mine site”.²⁴ The installation of an open trench at the down-gradient edge of the mine site provided mitigation in eliminating CO₂ migration into the home and was shown to be highly effective. No specific comment was made on the impact during periods of reduced atmospheric pressure.²⁴

Three other sites with domestic properties in Western Pennsylvania were investigated each with high CO₂ and low O₂ concentrations. At a property on Site 1, levels of CO₂ at 3.52% and O₂ as low as 16% were measured in the basement. Carbon dioxide levels of 16% occurred in monitoring wells around the house during periods of low pressure. The source of CO₂ was thought to be from strip mine spoil however the exact mechanism remained unclear. In another home on the second site, continuous monitoring revealed CO₂ levels exceeding 25% at times. Oxygen levels were also low. This property was located on the spoil of a reclaimed surface mine; the spoil had previously had alkaline mixture added. A deep mine was also located to the west of the home. The third property on the final site was noted to have raised levels of CO₂ (14.7%) and low O₂ (6.8%) in the basement. Carbon dioxide levels were reduced at the top of the basement stairs but high levels were still recorded at 0.13-3.48% on different days. This home was also constructed on a reclaimed surface mine. Health impacts were not reported in the paper.

Stable carbon isotopic analysis revealed the source to be the AMD reaction with carbonate minerals in the spoil in the latter two houses with the source for the first house remaining unclear however the strip mine spoil was suspected to be the origin of the raised CO₂.²⁴

Remediation measures were undertaken similar to those listed by Ehler and were reported to be successful in reducing CO₂ concentrations to safe levels.²⁴

The report notes that CO₂ migration into homes was noted to come from both abandoned, reclaimed surface mines and active surface mines where the alkaline was added to maintain water quality.²⁴

USA, Robinson (2006)

The United States Geological Survey (USGS) reported on the occurrence of carbon dioxide in a property constructed on reclaimed surface coal mines in Indiana, USA. Problems associated with three homes were identified in 2006 and, whilst mitigating action was found to be effective in reducing carbon dioxide concentrations to acceptable levels in two of the properties, these remained ineffective at the other property. Depending on environmental conditions, this property was, at times, considered uninhabitable.²⁸

The maximum recorded daily concentration of carbon dioxide measured at the property was approximately 2%. The authors reported that spikes in carbon dioxide levels were found to be most closely linked to rapid drops in atmospheric pressure and heavy rainfall.

The authors evaluated the effectiveness of three potential mitigating methodologies at the property: block-wall depressurisation (drilling through wall block and using a fan to draw gases from within the block wall and exhaust evacuated air externally), block-wall and sub-slab depressurisation (drilling through both the wall block and through slabs in the basement and using fans to draw gases from both within the block wall and also from the soils beneath the

slabs) and block-wall and sub-slab pressurisation (use of fans to place positive pressure on both the block wall and soils to attempt to prevent soil gases from entering the property). None of these mitigation measures were able to achieve a safe (i.e. acceptable carbon dioxide level) environment during periods where meteorological conditions caused a rapid drop in atmospheric pressure with accompanying rainfall.

France, Lagny (2015)

The author referred to episodes of carbon dioxide emissions from former underground mines, both iron and coal, that were noted in the French area of Lorraine when some inhabitants noted faulty gas cookers and boilers in cellars. Others experienced symptoms consistent with CO₂ toxicity with some losing consciousness. Concentrations of up to 8% CO₂ and low O₂ levels (down to 7% volume were noted in the basements of some houses, generally occurring during a drop in atmospheric pressure). The exact date of the incident was unknown however it was thought to be sometime around the late 1990s. No information on mitigation measures was given.²⁹ The original paper was not able to be obtained therefore no details were available on how many properties were investigated or how; therefore this study has been included for information only.

Summary of mitigation measures

Gas levels detected

Of the ten properties investigated in these five studies (excluding the reference to issues by Lagny in France), a range of carbon dioxide concentrations are reported within the affected properties. As would be expected, nine of the 10 properties were reported to have higher concentrations of CO₂ in lower, poorly-ventilated areas. Elevated carbon dioxide concentrations were associated with reduced oxygen levels in all ten of the properties. Seven of the ten properties reported spikes in carbon dioxide levels during rapid drops in atmospheric pressure, or periods of heavy rainfall.

Effectiveness of mitigating measures

Several mitigation measures were put in place at each of the properties, with varying degrees of success.

In the study by Hendrick and Sizer, the initial attempted intervention was to dig a shallow shaft in the soil adjacent to the property, in the hope that gases would vent at this point, diverting away from the property itself. This measure was unsuccessful in reducing carbon dioxide levels within the property. Subsequent action by the National Coal Board, sinking new shafts into the mines and using mechanical ventilation to dilute and dissipate ongoing mine gas production, appeared successful in reducing carbon dioxide levels within the property.²²

Kreiss *et al.* did not provide detail of the “renovations” that were carried out within the affected property to redirect and limit carbon dioxide infiltration into the basement, although they reported that these renovations led to a reduction of carbon dioxide within the property. The authors made recommendations that sealing of cracks, use of subsurface ventilation and ensuring maintenance of positive pressure within new buildings built over such ground should be considered as part of any future building codes to protect public health.²⁷

The USGS study by Robinson reported on three different mitigation approaches at the affected property, including both pressurisation and depressurisation of the walls and/or sub-floor areas. The authors reported that none of these techniques was sufficient to prevent carbon dioxide migration into the property when atmospheric conditions were conducive to intrusion, i.e. during periods of rapid drop in atmospheric pressure or heavy rainfall. The authors also highlighted the

limitations in extrapolating these findings to other properties due to the likely impact of many site-specific factors on any attempted mitigation, including foundation characteristics, physical and geochemical properties of the site and proximity of the water table to the property.²⁸

The properties investigated by Ehler included two properties that were new-builds with tight foundations, lending themselves better to mitigation measures. The third house was over 100 years old and required extra work to seal the floor and concrete block. The positive pressure sub slab ventilation system constructed in all three houses alongside work to seal an earthen floor in the older property allowed fresh air to be pumped into the gravel sub base to displace the CO₂, resulting in a tenfold reduction in CO₂, with levels maintained at normal atmospheric levels including during periods of low atmospheric pressure.²³

Remediation measures in the four properties in the Laughrey *at al.* study included excavation of an open trench in one property and similar measures including sub slab positive pressure ventilation system as per the Ehler study in the other three properties. These were also reported to be successful.²⁴ Whilst these studies have reported some success, however, it is important to note the variation in geology, housing conditions or age, and variation in the comprehensiveness of the remediation measures employed.

Therefore, in the studies identified, a great deal of uncertainty has been shown to exist around the effectiveness of any attempted mitigation measures employed to prevent CO₂ migration into properties. The potential impact of so many site-specific factors also reduces the ability to estimate the likely effectiveness of any one technique in preventing ongoing gas migration, and therefore reduces the confidence that could be placed in the likelihood that any mitigating measure would be completely successful in preventing any ongoing threat of CO₂ intrusion to residents in affected properties.

The findings of this literature review support the views in the Department of the Environment 1996 report that remedial measures in existing developments have had mixed success; passive venting of mine adits is not always effective under varying atmospheric pressure conditions unless located close to the affected area, and retrofitting of gas protection through seals to floors and service entries have not had much success. Remedial measures in existing developments are recognised to be unreliable.³⁰

*“It is generally recognised that effective gas precautionary measures for developments are achieved by attention to structural details, which cannot be readily addressed post-construction.”*³⁰

Uncertainty regarding mitigation means that CO₂ remediation is in contrast to the relatively more established regimes and guidelines for dealing with radon (another mine related gas), in existing properties.

There is extensive guidance for planning new developments incorporating a variety of protection measures in the design, to minimise the ingress of radon but it is far more problematic to deal with existing housing requiring remediation.

In existing housing, methods to reduce radon concentrations are less easy to install and depend on the type of floor and reduction factor required however a number of different remedial measures are available including; a radon sump, improved under floor ventilation (natural or mechanical depending on the radon level) or a powered input ventilation to the house. These can be supplemented by improved house ventilation and sealing of all cracks.³¹

Discussion and Conclusion

It is clear from the incidents reported above that CO₂ has caused mortality and morbidity in a variety of settings when conditions are such that a migration pathway connects mine gases to enclosed or poorly ventilated spaces where people are present.

Carbon dioxide is present in the air and is harmless at normal concentrations. Carbon dioxide from mines can originate from a variety of sources and different types of mine. Disused mines pose a particular difficulty especially where mechanical ventilation and dewatering has ceased and some coal seams are more likely to be oxidised than others depending on the chemical composition.

Gas movement is dependent on a variety of factors including temperature and density variations, displacement or pressurisation due to water levels rising and atmospheric pressure variation. When conditions provide a migration pathway into poorly ventilated and/or enclosed areas along with certain atmospheric conditions including low pressure, instances of toxicity and asphyxiation have occurred. A number of cases of morbidity and mortality associated with CO₂ both in domestic properties and the wider environment have been evidenced. These include fatalities around disused mine entries and in a working mine monitoring station.

In the studies identified a variety of mitigation measures have been put in place in the domestic setting. There has been much variation in the type of mitigation employed, dependent on the local geology and individual circumstances of the property. A great deal of uncertainty has been shown to exist around the effectiveness of any attempted mitigation measures employed to prevent mine gas or CO₂ migration into properties.

Whilst CO₂ has been noted to have important health effects, due consideration of other mine gases such as methane, hydrogen sulphide, carbon monoxide and radon should also be considered, particularly when radon and its products of decay have been shown to increase the risk of lung cancer.^{30, 31}

Given the need to take site-specific factors into account on each occasion, it is difficult to estimate the effectiveness of a single measure in preventing gas migration with any confidence. It is therefore not possible to identify a mitigating measure that would be completely successful in preventing any ongoing threat of CO₂ intrusion to residents in existing, affected properties.

Whilst guidance exists for planning new housing development with protection measures designed into the build from the beginning, it is far more problematic to put effective remediation measures in place in existing housing, post-construction.

Land use planners and planning authorities should consider the risk of coal gas migration in high risk areas when conducting environmental assessments for future land use, especially if areas of housing are proposed.

There is no conclusive evidence that remediation is always successful.

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Appendix one

Search strategy

The aim of this report was to investigate the available evidence on morbidity and mortality in relation to carbon dioxide (CO₂) released from coal mines following the incident at Gorebridge when individuals were affected by high levels of CO₂ in their homes and required hospital attention. This resulted in the demolition of a number of houses as there had been inadequate gas protection in the original construction.

A literature review was undertaken to:

- explore the health impact of CO₂ exposure in relation to old mine workings (domestic or other settings not associated with mine workers)
- investigate the effectiveness of mitigation strategies and

- identify any evidence of consistency in approach and effectiveness particularly within the domestic setting

The search strategy is detailed below in Table 2. Six papers were identified for screening and on searching bibliographies a further 12 relevant articles were identified, providing a more thorough coverage.

A request was made to the Coal Authority (UK) for information on health impacts associated with elevated levels of CO₂; however this did not reveal further cases. Specific records of health impact are not routinely recorded or held by the Coal Authority in particular as any such reports of cannot be validated as relevant or due to a direct association with any elevated levels of mine gas.

A request for information through the Health and Safety Executive revealed anecdotal cases not previously identified in the literature and these are discussed in the report.

Cases of either mortality or morbidity associated with CO₂ or blackdamp incidents in association with mines or old mine workings are identified below with associated impact on health. Whilst the search focussed on morbidity and mortality in association with CO₂ and mine workings it became clear that there are many noted examples of health impact from CO₂ associated with other natural sources. Some of these have been highlighted in the report to demonstrate the significant impact that large releases of CO₂ can have.

Rapid appraisal of evidence pro-forma			
Identified question			
What are the health impacts of carbon dioxide from coal mines both in domestic and non-domestic settings? Where carbon dioxide levels have been identified as high what mitigation methods have been utilised?			
Results of initial high level search			
Source searched	Search terms used	Findings of search	Comments
BGS	Carbon dioxide	Background information on mine gases from natural sources and coal mining in UK	
HSE	Carbon dioxide	Background information on CO ₂ standards and details of incidents including Lake Nyos	Further search on Lake Nyos incident revealed volcanic type incidents
HPS	Carbon dioxide +coal+ mine health	None relevant	
CDC	Carbon dioxide +coal+ mine health	General information on CO ₂ Health hazard evaluation report on CO ₂ incident in West Virginia	
WHO	Carbon dioxide +coal+ mine health	None relevant	
PHE	Carbon dioxide +coal+ mine health	None relevant	
Gov.uk	Carbon dioxide +coal+ mine health	None relevant	
SEPA	Carbon dioxide +coal+ mine health	None relevant	
DEFRA/DECC	Carbon dioxide +coal+ mine health	None relevant	

US EPA	Carbon dioxide +coal+ mine health	None relevant	
Does the initial search answer the identified question with sufficiently high quality information?	Yes/no If no, continue through next steps		
Specify search strategy			
Population	Exposure	Comparator	Outcomes
Human	Carbon dioxide from coal mines	(No carbon dioxide emissions near coal mines)	Health in general, asphyxiation
			Timings
			Settings of interest
			Population in domestic settings and wider
Inclusion criteria			
Up to 2016. English language			
Exclusion criteria			
<ul style="list-style-type: none"> Occupational exposure to carbon dioxide Miners Carbon dioxide and unconventional gas Carbon dioxide and global warming Greenhouse gases Air pollution Articles in a language other than English 			
Carry out search			
Search terms used			
Carbon dioxide, CO ₂ , Coal mine, Mine, Mine gas, Mining, Health			
List websites searched			
<p>Google, including Google Scholar –</p> <p>CO₂"carbon dioxide" "black damp" "mine gas" Coal Health</p> <p>CO₂"carbon dioxide" "black damp" "mine gas" "coal mine" Health</p> <p>CO₂"carbon dioxide" "black damp" "mine gas" "coal mines" Health</p> <p>The first 50 items on each search were examined</p> <ul style="list-style-type: none"> A breath of fresh air? https://www.bgs.ac.uk/downloads/start.cfm?id=219 The risk of gas leaks from disused mines Society The ... www.theguardian.com/society/2001/jan/31/guardiansocietysupplement The Occurrence and Mitigation of Carbon Dioxide in Homes ... pa.water.usgs.gov/projects/energy/stray_gas/.../2_410_Robinson.pdf <p>General Google search for identified cases not otherwise detailed in scientific literature revealed newspaper or online information on historical incidents</p>			
List databases searched			
OVID, Pubmed, Science Direct, Web of Science, GreenFILE, Toxnet, and Barbour Index			
Record search strategy used in databases (can be copied from database)			
Database: Ovid MEDLINE(R)			

Books@Ovid May 02, 2016, Journals@Ovid Full Text May 12, 2016, NHS Scotland Journals@Ovid, Embase 1974 to 2016 May 11, ERIC 1965 to February 2016, Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present, MIDIRS: Maternity and Infant Care

Search Strategy:

- 1 Carbon Dioxide or CO₂ / (644107)
- 2 Health/ (8191377)
- 3 Mine or mining or mine gas or coal mine / (132486)
- 4 1 and 2 and 3 / (1126)
- 5 Remove duplicates from 4-/- (989)

First 100 results screened , 0 relevant

Database: Pubmed

((“carbon dioxide”) AND (“mining”) AND (“health”))

34 results nil relevant

((“CO₂”) AND (“mine”) AND (“health”))

16 results , 1 relevant

((“carbon dioxide”) AND (“coal mine”) AND (“health”))

14 results, nil relevant

((“carbon dioxide”) AND (“mine gas”) AND (“health”))

15 results, nil relevant

Database: Science Direct

(“carbon dioxide” OR “CO₂” AND Health) and (“mine gas”, OR “coal mine” OR mine OR mining)

9,645 results, sorted by relevance, first 100 screened, 2 relevant

- [The extreme carbon dioxide outburst at the Menzengraben potash mine 7 July 1953](#)

Safety Science, Volume 50, Issue 3, March 2012, Pages 537-553

Frank Huess Hedlund

- [Delineating hazardous CO₂ fluxes from acid mine drainage](#)

By: Awuah-Offei, Kwame; Que, Sisi; Mathiba, Moagabo

ENVIRONMENTAL EARTH SCIENCES Volume: 75 Issue: 3 Article Number: 239 Published: FEB 2016

Database: Web of Science from All Databases)

Sorted by relevance: TOPIC: (carbon dioxide OR CO₂) AND TOPIC: (mine gas OR coal mine OR mine OR mining) ... [More](#) TOPIC: (carbon dioxide OR CO₂) AND TOPIC: (mine gas OR coal mine OR mine OR mining)

Timespan: All years.

Search language=Auto

Results: 1,195 First 100 screened – nil relevant

(from All Databases)

TOPIC: (carbon dioxide OR CO₂) AND TOPIC: (health) AND TOPIC: (mine OR coal mine OR mine gas OR mining) TOPIC: (carbon dioxide OR CO₂) AND TOPIC: (health) AND TOPIC: (mine OR coal mine OR mine gas OR mining)

Timespan: All years.

Search language=Auto

Results: 37 nil relevant

Database: Green file

((“Carbon dioxide” or “CO₂”) AND (mine OR “coal mine” OR mining OR “mine gas”))

Results -1097, First 100 screened- nil relevant

((“Carbon dioxide” or “CO₂”) AND (mine OR “coal mine” OR mining OR “mine gas”) AND (health))

Results -54- nil relevant

Database: Barbour

“Carbon dioxide” “coal mining” “health”

1 relevant METHANE AND OTHER GASES FROM DISUSED COAL MINES : THE PLANNING RESPONSE TECHNICAL REPORT

Toxnet

"carbon dioxide" "mine" "health"

10 results 1 relevant

1. [Carbon dioxide](#) 124-38-9

Key papers to be reviewed (following title and abstract sifting)		
Study/source	Summary of findings	Comments on quality of evidence
DOE: Methane and other gases from disused coal mines: the planning response technical report	Technical report detailing source and migration pathways for CO ₂ from coal mines into other settings. Background information. Noted other deaths from CO ₂ -one in Widdrington – further investigated via Google search.	Background information on CO ₂ in coal mines Technical information on planning and mitigation
Effects of gradual exposure to carbon dioxide gas on the blood pressure status of workers in coal mines if Kerman province, Iran Sadigheh Khodabandeh-Shahraki, Mansoureh Azizzadeh-Forouzi	Case control study in workers to examine long-term impact of chronic exposure to CO ₂ . Not really relevant	Health related but not relevant to short-term domestic exposure
The extreme carbon dioxide outburst at the Menzengraben potash mine 7 July 1953 Safety Science, Volume 50, Issue 3, March 2012, Pages 537-553. Frank Huess Hedlund	Extreme CO ₂ outburst incident in potash mine. Asphyxiation fatalities. Noted that dispersion modelling would have predicted safe dispersion.	Case history of large incident with CO ₂ fatalities. Search for paper revealed other relevant papers by same author Highlighted Lake Nyos incident
Conference paper: Past explosive outbursts of entrapped carbon dioxide in salt mines provide a new perspective on the hazards of carbon dioxide Hedlund, FH	Paper reporting past incidents of CO ₂ accidents in salt mine with impact beyond workers	Report of large CO ₂ incident outside domestic setting
Influence of elevation, soil temperature and soil moisture content on reclaimed mine land soil CO ₂ fluxes Mathiba, M. Awuah-Offei, K. Baldassare F.	Study to understand the extent to which CO ₂ fluxes on reclaimed spoil are affected by sample elevation soil temp and moisture. Noted high CO ₂ levels in areas around surface mine with some detail on CO ₂ investigation highlighted further papers detailing toxic CO ₂ in domestic and other settings	Further papers highlighted from bibliography Dawson 2009 Robinson 2010 Ehler 2002 Laughrey and Baldassare 2003
Delineating hazardous CO₂ fluxes from acid mine drainage By: Awuah-Offei, Kwame; Que, Sisi; Mathiba, Moagabo	How to investigate CO ₂ from acid mine drainage modelling. Notes future thresholds need to be delineated before useful. Paper not relevant in itself but indicates further papers detailing toxic CO ₂ in domestic and other settings	Not entirely relevant but highlighted further case report papers- Mathiba 2015 Ehler 2002 Laughrey and Baldassare 2003 Robinson 2010

ENVIRONMENTAL EARTH SCIENCES Volume: 75 Issue: 3 Article Number: 239, published, Feb 2016		
Dangerous atmosphere created by strip mine spoil Ehler W, 2002	Case report of exploratory investigation of high CO ₂ levels in 3 domestic properties each undergoing mitigation measures.	Case Report and investigative findings - domestic setting
Sullivan Mine Fatalities Incident, Technical investigation and findings. Phillip M, Hockley D, Dawson B, Kuit W, O'Kane M	Technical report of incident in monitoring station in waste rock dump or Sullivan mine – 4 fatalities- CO ₂ asphyxiation. Useful example of CO ₂ incident	Technical report - incident in wider environment
USGS Occurrence and attempted mitigation of carbon dioxide in a home constructed on reclaimed coal-mine spoil, Pike County Indiana, US geological survey scientific investigations report 2010-5157	Scientific investigations report detailing CO ₂ incident in domestic setting and attempted mitigation with subsequent impact.	Investigative report - domestic setting Highlighted further papers Ehler 2022 Hendrick and Sizer 1992 Laughrey and Baldassare, Ehler 2002 Rao K, Kreiss CY 2004
CDC, Brief report: Investigation of extremely elevated carbon dioxide levels - West Virginia. December 2003	Case report and investigations of CO ₂ exposure in domestic setting	Case report-domestic setting
Hendrick DJ, Sizer KE. “Breathing” coal mines and surface asphyxiation from stythe (blackdamp)	Case report of carbon dioxide incident in domestic setting in relation to changes in weather/atmospheric pressure	Case report - domestic setting
Laughrey and Baldassare 2003 Some applications of isotope geochemistry for determining sources of stray carbon dioxide gas	Discusses several sites in Appalachian coalfields where CO ₂ in domestic setting has caused a hazard. Details mitigation and effect thereof. Utilises isotope geochemistry to more accurately identify sources of CO ₂ and the utility of such in identifying specific sources on CO ₂ in buildings	Investigative report. Considers range of factors and sources using isotope analysis. Highlights further domestic CO ₂ incidents
Distribution of methane and carbon dioxide concentrations in the near-surface zone and their genetic characterization at the abandoned "Nowa Ruda" coal mine (Lower Silesian Coal Basin, SW Poland)	Evaluation of distribution of methane and CO ₂ in near surface zone along sampling lines and identify zones of anomalous high concentrations and identify factors in their mitigation	
HSE website – general hazards of CO ₂	Workplace hazard at high concentrations. Colourless/odourless at room temp and atmospheric pa.	Website, general information only

	<p>Not flammable.</p> <p>Inc concentration – headaches, dizziness, confusion, loc.</p> <p>Heavier than air – dangerous in confined spaces/cellars/sumps/tanks. Can accumulate in ground depressions.</p> <p>COSHH “substance hazardous to health”</p> <p>Workplace exposure limits: long-term (8 hour) 5000ppm, short-term (15 minutes) 15000ppm</p>	
<p>Transactions of the institution of Mining and metallurgy, section A: Mining technology 109(3):228-236 Nov 2000</p> <p>Mine gas hazards in the surface environment. Robinson</p>	<p>Details of incidents mine gas CO₂ has been emitted into domestic settings in North east England causing asphyxiation</p>	<p>Case reports with some mitigation detailed. Unclear if problematic mine gas solely CO₂ but blackdamp and low O₂ noted</p>

Appendix 5: Incident management team and sub groups meeting dates

Meeting	Chair	Date
Problem Assessment Group	Dr Lorna Willocks, NHS Lothian	26 March 2014
Problem Assessment Group	Dr Richard Othieno, NHS Lothian	02 April 2014
Incident Management Team	Dr Richard Othieno, NHS Lothian	15 April 2014
Incident Management Team	Dr Richard Othieno, NHS Lothian	17 April 2014
Incident Management Team	Dr Richard Othieno, NHS Lothian	02 May 2014
Core Incident Management Team	Dr Richard Othieno, NHS Lothian	02 May 2014
Teleconference with Rachel Norton from the Coal Authority	Dr Richard Othieno, NHS Lothian	13 May 2014
Meeting with Fairhurst	Dr Richard Othieno, NHS Lothian	20 May 2014
Core Incident Management Team	Dr Richard Othieno, NHS Lothian	23 May 2014
Incident Management Team	Dr Richard Othieno, NHS Lothian	26 May 2014
Incident Management Team	Dr Richard Othieno, NHS Lothian	09 July 2014
Incident Management Team	Dr Richard Othieno, NHS Lothian	22 August 2014
Incident Management Team	Dr Richard Othieno, NHS Lothian	08 December 2014
Incident Management Team	Dr Richard Othieno, NHS Lothian	05 October 2015
Incident Management Team	Dr Richard Othieno, NHS Lothian	03 December 2015
Incident Management Team	Dr Richard Othieno, NHS Lothian	04 February 2016
Incident Management Team	Dr Richard Othieno, NHS Lothian	26 February 2016
Incident Management Team	Dr Richard Othieno, NHS Lothian	22 March 2016

Appendix 6: SEPA report on the carbon dioxide gas sampling



Chemistry Department Report

CARBON DIOXIDE GAS SOURCE INVESTIGATION AT 87 & 89 NEWBYRES CRESCENT, GOREBRIDGE

Report: CHEM/2014/042

7th July 2014

	Name	Position	Signature	Date
Author	Ian Wager	Senior Specialist Scientist (Air)		7 th July 2014
Reviewer	John Redshaw	Principal Scientist		7 th July 2014
Authoriser	Janet Shepherd	Field Chemistry Unit Manager		15 th July 2014

Introduction

The air within several houses in Gore Avenue and Newbyres Crescent, Gorebridge has, through several monitoring investigations, been found to periodically contain dangerous concentrations of carbon dioxide. The two properties, of those monitored, found to contain the highest carbon dioxide levels are at 87 and 89 Newbyres Crescent.

This report details the sampling of air from within 87 and 89 Newbyres Crescent, and the subsequent radiocarbon analysis of the collected samples.

This work was undertaken in response to a request from Simon Cole (SEPA, Unit Manager, Edinburgh & Lothian Operations Team) in order to help ascertain whether the underlying coal mines were acting as a source of the carbon dioxide.

The sampling of in-house air was carried out by Ian Wager and Gareth Payne of SEPA, in the presence of [REDACTED] of Midlothian Council, on 5th May 2014.

The radiocarbon analysis was undertaken by the NERC Radiocarbon Facility, East Kilbride (appendix 3).

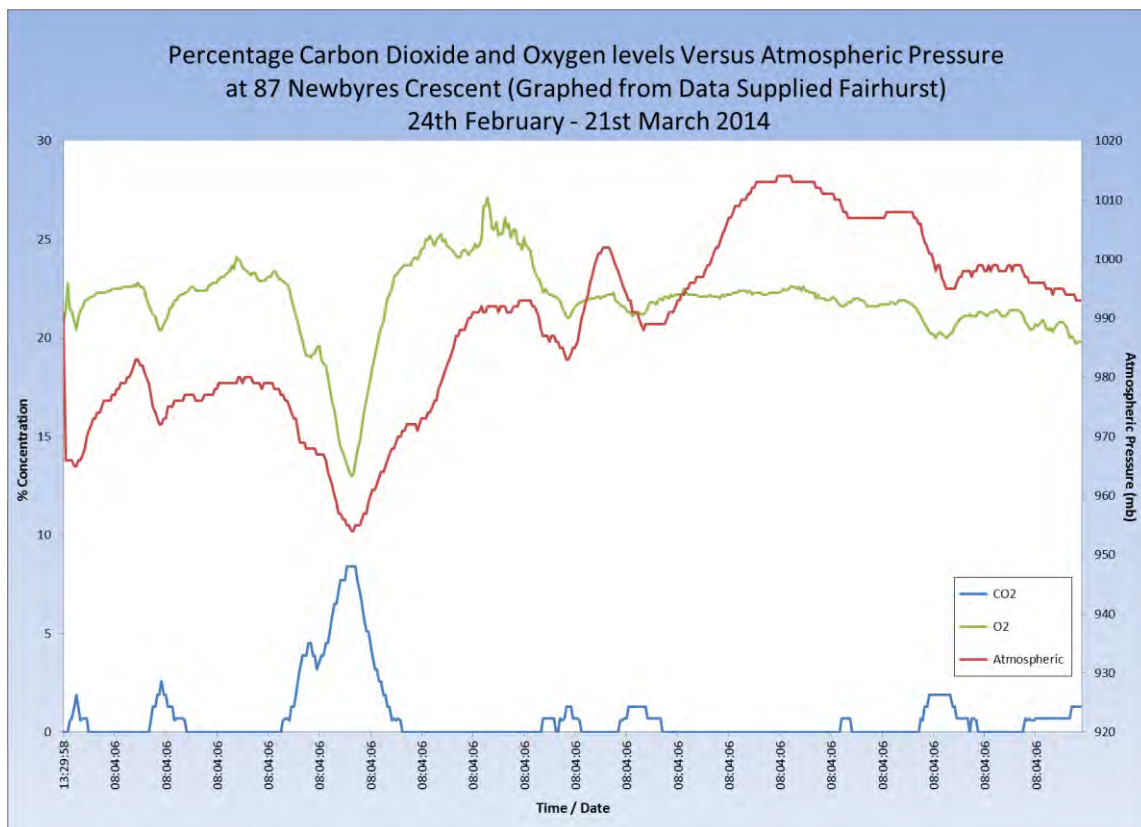
Background

SEPA understands that the consensus of opinion regarding the cause of the elevated levels of carbon dioxide within the houses is that carbon dioxide is migrating from coal mines which underlie the properties.

The suggested mechanism for carbon dioxide gas entry into the houses involves gas migration from the mines, during periods of dropping atmospheric pressure, through gas-migration pathways to the area immediately beneath the housing slabs. The service ducts entering the houses through the housing slabs may be providing a pathway for the gas to then enter the houses.

The consultants, Fairhurst have supplied SEPA with data from a monitoring exercise they carried out in February - March 2014, in which the air within the under-stairs cupboard of 87 Newbyres Crescent was monitored using a calibrated "Gas Clam" monitoring device. Figure 1 plots the measured carbon dioxide and oxygen concentrations with concurrent atmospheric pressure measurements.

Figure 1: Graph of atmospheric pressure, carbon dioxide concentration and oxygen concentration measured in the air within the under-stairs cupboard of 87 Newbyres Crescent in February-March 2014 (Data supplied by Fairhurst).



The graph shows a strong correlation between dropping atmospheric pressure and decreasing oxygen levels and increasing carbon dioxide levels.

Gas Sampling Method

Air was sampled at specific points within 87 and 89 Newbyres Crescent and from a borehole to the rear of no. 87 on 5th May 2014 during a period of dropping atmospheric pressure.

Sampling of the gas was completed using a Geotechnical GA5000 gas analyser (SEPA ref. FC1400) following the key principles of SEPA's in-house procedure, ES-NFC-WP-002, *"Determination of Oxygen, Methane and Carbon Dioxide in Landfill Gas Using a Landfill Gas Monitor"*.

Calibration checks were carried out on the landfill gas analyser before and after monitoring. This was done using a quality control check gas (SEPA ref. GAS043, Air Products ref. 040004139602), containing 5.029 % v/v methane, 10.093 % v/v carbon dioxide and 4.964 % v/v oxygen. The values measured by the GA5000 before and after monitoring were within ± 0.2 % v/v of the certified values demonstrating the accuracy of the gas concentration measurements reported by SEPA in Table 1.

The atmospheric pressure was measured before each sample was collected using a Fischer aneroid barometer (stock code TH055, SEPA ref. EBAR004). This barometer's accuracy was confirmed pre- and post-monitoring against a UKAS-calibrated Diplex precision aneroid barometer (SEPA ref. EBAR001), which is operated according to SEPA's in-house procedure ES-NFC-WP-021 *"Use and Verification of Field Barometers for Accredited Methods"*.

The following parameters were measured at each sampling point using the GA-5000 gas analyser and aneroid barometer:

- Methane (CH₄)
- Carbon Dioxide (CO₂)
- Oxygen (O₂)
- Carbon Monoxide (CO)
- Hydrogen Sulphide (H₂S)
- Atmospheric Pressure (AP)

In total, five air samples were taken, in accordance with SEPA's National Formal Sample Procedure, OBP 054.07. The first three samples were collected by staff located outside the properties. The latter two samples were taken inside 87 Newbyres Crescent and required staff to follow a safe procedure of work.

- Sample "BH87" - The air within the borehole to the rear of 87 Newbyres Crescent was sampled into a one litre flexfoil bag using the GA-5000. During the filling process the carbon dioxide concentration of the air being sampled was measured.
- Sample "87A" - The air within the living area of 87 Newbyres Crescent was sampled through the letter box using the GA-5000 fitted with a steel tube and flexible tubing extension. The tube was inserted through the letter box in order to reach down to floor level within the hallway of the house. The air was sampled into a one litre flexfoil bag.
- Sample "89A" - The air within the hallway of 89 Newbyres Crescent was sampled in the same manner as "87A".

The front and back doors of 87 Newbyres Crescent were then opened in order to ventilate the property following a safe procedure of entry. The property was ventilated for 20 minutes prior to entry, at which point the air within the back doorway of the house was analysed and found to contain 0.1 % v/v carbon dioxide and deemed safe to enter wearing a personal gas alarm.

- Sample “87B” - The flexible tubing was inserted under the under-stairs cupboard door of 87 Newbyres Crescent to sample the air within the cupboard.

The under-stairs cupboard door was then opened in order to ventilate the cupboard for 15 minutes, at which point the air in the doorway of the cupboard was analysed and found to contain 0.1 % v/v carbon dioxide and so was deemed safe to enter.

- Sample “87C” - The flexible tubing was inserted approximately 100 mm down through the gas pipe service duct. The air within the duct was sampled into a ten litre flexfoil bag (partially filled to a volume of approximately one litre).

Gas Sampling - Results and Discussion

Table 1 summarises the gas measurements taken during the collection of each air sample, with the exception of the background atmospheric reading which was taken prior to sampling in an open atmosphere away from the houses. All the readings were recorded using the GA5000 gas analyser, with the exception of the atmospheric pressure (AP), which was measured using an aneroid barometer (EBAR 004).

Table 1: Measured composition of sampled air and concurrent atmospheric pressure readings at 87 and 89 Newbyres Crescent on 5th May 2014

Sampling Point	Comment	Time	AP (mb)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CO (ppm)	H ₂ S (ppm)	Flow (l/h)
Atmospheric	Background atmosphere	11:57	987	< 0.3	< 0.3	20.9	1	< 1	-
BH87	Borehole to rear of no. 87	12:06	986.5	< 0.3	7.7	11.1	64	< 1	0.0
87A	Hallway in no. 87	12:29	986.5	< 0.3	4.8	15.9	< 1	< 1	-
89A	Hallway in no. 89	12:51	986.5	< 0.3	3.6	17.1	< 1	< 1	-
87B	Understairs cupboard in no. 87	13:34	986	< 0.3	4.2	16.9	< 1	< 1	-
87C	Gas pipe service duct in no. 87	14:05	985	< 0.3	6.3	13.8	< 1	< 1	-
Atmospheric	Background atmosphere	14:18	984	-	-	-	-	-	-

Notes: Methane is represented as CH₄, carbon dioxide as CO₂, oxygen as O₂, carbon monoxide as CO and hydrogen sulphide as H₂S. The GA-5000 has a limit of detection (LOD) of 0.3 % v/v for methane and carbon dioxide, therefore any result measured below this value have been reported as <0.3. The GA-5000 has a manufacture specified Minimum Reporting Value (MRV) of 1 ppm for carbon monoxide and hydrogen sulphide, therefore any results measured below this value have been reported as <1.

The following observations are based on the data summarised in Table 1.

The atmospheric pressure dropped from 987 mb to 984 mb between the hours of 11:57 and 14:18, and was observed to fall steadily throughout the sampling exercise.

Methane concentrations were below the GA5000 gas analyser’s limit of detection at all five sampling points.

The air within the hallways of no. 87 and 89 contained dangerously elevated levels of carbon dioxide and dangerously depleted levels of oxygen when compared to the Health and Safety Executive’s current Workplace Exposure Limits (WEL) (EH40/2005)¹. The WEL for carbon dioxide is 5000 ppm (0.5 %) over an 8 hour period (TWA) and 15000 ppm (1.5 %) over a 15 minute period.

As the buildings are homes, it would be more useful to have a longer term or continual exposure standard to compare against, however there is currently no such standard in the UK.

At standard temperature and pressure, the density of carbon dioxide is greater than that of air and can therefore accumulate in low lying areas. This was the reason for sampling the in-house air samples 87A and 89A at floor level.

The air at floor level in the hallway of no. 87 was analysed and found to contain 4.8 % v/v CO₂ and 15.9 % v/v O₂. The air in the hallway of no. 89 was analysed and found to contain 3.6 % v/v CO₂ and 17.1 % v/v O₂. The air within no. 87 therefore contained a higher concentration of carbon dioxide (CO₂).

Following ventilation of the house and under-stairs cupboard, the air within the service duct was measured and found to contain 6.3 % v/v CO₂ and 13.8 % v/v O₂. The higher carbon dioxide / lower oxygen concentrations within this service duct, relative to the hallway, are consistent with the hypothesis that the service duct may be a point of gas ingress into the building.

The drilling log (supplied by Fairhurst) for the borehole, sampled as “BH87”, indicates the presence of a void at a depth of 12.8 to 13.4 m. This void may indicate the presence of a collapsed coal mine. BH87 was sampled as it represented a possible source of carbon dioxide / mine gas.

BH87 was analysed and found to contain 7.7 % v/v CO₂ and 11.1 % v/v O₂. These levels are higher in carbon dioxide and lower in oxygen than the levels measured within the service duct. It is important to note however that the gas sample obtained may not have been representative of the gas present within the void. In addition 64 ppm carbon **monoxide (CO) was measured in** BH87 and as there was no carbon monoxide detected at any of the other monitoring points it may be that the gas within BH87 is isolated from that within the properties.

Three of the five collected samples were selected for radiocarbon analysis, in order to limit cost (see Table 2). The three samples selected for analysis were sampled from various points along the suggested gas migration pathway. Air was sampled from a possible source (gas monitoring borehole into underlying mine / void), the probable point of entry into the housing and from the living space within the housing.

Table 2: Summary of air samples collected from 87 and 89 Newbyres Crescent and selected for radiocarbon analysis

Sampling Point	Sampling Comment	Analysis Comment
BH87	Gas sampled on 5th May 2014	Submitted for radiocarbon analysis on 6th May 2014
87A	Gas sampled on 5th May 2014	Submitted for radiocarbon analysis on 6th May 2014
89A	Gas sampled on 5th May 2014	Not submitted
87B	Gas sampled on 5th May 2014	Not submitted
87C	Gas sampled on 5th May 2014	Submitted for radiocarbon analysis on 6th May 2014

The samples were delivered to the NERC Radiocarbon Facility in East Kilbride on 6th May 2014 for analysis.

Radiocarbon Analysis – Theory

The following discussion on the theory of radiocarbon analysis has been adapted from NERC Radiocarbon Facility report 15.6605.001 (Appendix 1) and from advice given by Dr Pauline Gulliver of the NERC Radiocarbon Facility.

Radiocarbon (¹⁴C) is a naturally occurring form of carbon, formed in the upper atmosphere and then transferred to global carbon pools *via* natural processes (e.g. plants take up ¹⁴C during photosynthesis). As ¹⁴C is radioactive the concentration present in a carbon pool falls once that carbon pool is isolated from the atmosphere and therefore the time of isolation can be established. The lower limit of detection for ¹⁴C is approximately 50,000 years before present (yBP). When carbon is found in either gaseous or dissolved forms there is always the possibility of carbon from different pools mixing. This will result in a mixed carbon pool with a ¹⁴C

concentration that depends on the concentration of carbon contributed from each pool and the initial ^{14}C present in each pool.

The ^{14}C enrichment of carbon dioxide present in gas samples can be used to help assess the source of carbon dioxide gas because:

- Geologically old carbon dioxide, derived for example from coal, will essentially contain no ^{14}C (i.e. it will have a % modern value of ca 0 and a radiocarbon age of > 50,000 years).
- Carbon dioxide derived from terrestrial organic matter grown in the last ca 60 years will have a ^{14}C enrichment of > 100 % modern, since it will contain radiocarbon produced during the atmospheric nuclear bomb tests of the 1950s and 1960s.
- Carbon dioxide with a ^{14}C concentration of between 0 % modern and 100 % modern, can be assigned a conventional radiocarbon age (defined as years before present or yBP) and may either reflect a source aged between ca 60 and ca 50,000 years or it may reflect a mixture of sources for carbon dioxide which could include geologically old and/or modern materials.
- Contemporary (2014 AD) atmospheric carbon dioxide makes up approximately 0.04 % of the total volume of earth's atmosphere and has a radiocarbon concentration of approximately 102 % modern carbon.

Radiocarbon Analysis - Results and Discussion

The results of the radiocarbon analysis are presented in Table 3.

Table 3: Isotopic carbon results reproduced from NERC Radiocarbon Facility Report PG/15.6605.001 (Appendix 2).

Sample Identifier	^{14}C Enrichment (% Modern $\pm 1\sigma$)	Conventional Radiocarbon Age (years BP $\pm 1\sigma$)
BH87	22.68 ± 0.13	$11,920 \pm 38$
87A	8.59 ± 0.11	$19,719 \pm 95$
87C	8.20 ± 0.11	$20,094 \pm 100$

The following observations have been adapted from the NERC report.

- All three samples were found to contain measurable concentrations of radiocarbon.
- It is possible that the carbon dioxide within each air sample was derived from a number of sources. This complicates the interpretation of the results.
- The radiocarbon (^{14}C) concentrations for samples 87A and 87C were statistically identical suggesting a similar source of carbon dioxide, with a radiocarbon concentration equivalent to an age of approximately 19,850 yBP. Carbon dioxide formed from soil organic matter in the UK is unlikely to be older than the timing of the last de-glaciation of

the British Isles, which occurred approximately 10,000-12,000 yBP. Therefore the carbon dioxide in 87A and 87C are highly unlikely to be solely due to soil carbon. The only way that the ^{14}C age of carbon dioxide derived from soil organic matter can be increased is by mixing with a source of carbon dioxide which is older in age.

- The radiocarbon concentration for sample BH87 was significantly higher than the other two samples, implying a different source of carbon dioxide or proportionally different multiple sources.
- It is probable that the gas in all samples is a mixture of carbon dioxide derived from multiple sources - geological, soil organic matter and atmospheric, with the carbon dioxide in BH87 containing a larger proportion of soil-derived carbon dioxide than 87A or 87C.
- If it is assumed that the carbon dioxide samples taken from within the house (87A and 87C) were from two separate sources, a geological source (i.e. 0 % modern carbon) and an average uncultivated UK soil source (i.e. 100.2 % modern carbon), the composition is estimated to be 92 % geological and 8 % soil derived.
- Considering a 'worst case scenario', assuming that the carbon dioxide samples were from a geological source and a soil source containing 50 % modern carbon (i.e. derived from organic material formed approximately 10,000 years ago), the composition is estimated to be 83 % geological and 17 % soil derived.

The following points may be drawn from the air sampling and analysis conducted by SEPA on 5th May 2014 and the subsequent radiocarbon analysis conducted by the NERC Radiocarbon Facility.

- The majority of the carbon dioxide gas sampled within 87 Newbyres Crescent on 5th May 2014 contained carbon from a geological or 'ancient' source (at least 83 % was estimated to be from a geological source). Coal contains geologically old carbon and therefore coal mines are considered to be a geological source of carbon dioxide.
- Determining unequivocally whether the carbon dioxide is migrating from the underlying coal mines into the housing would be very difficult. It would also require extensive investigation, potentially using several analytical techniques as well as a possible requirement to drill extra boreholes into the underlying mines to obtain samples for comparison. Given the current situation it would be unadvisable to drill further boreholes as they could provide further gas migration pathways.
- The high level of carbon dioxide measured within the hallway of 87 Newbyres Crescent (4.8 % v/v), is indicative of considerable carbon dioxide ingress into the house. This is particularly evident given that the house was boarded up and uninhabited at the time of sampling (i.e. contained no respired carbon dioxide due to inhabitants). Although there is no information relating to air flow in to the house, the quantity of carbon dioxide required to cause these elevated levels is likely to indicate a source of considerable magnitude consistent with the theory of gas migration from the coal mines.

Conclusions

The gas sampled from the living area within the houses at 87 and 89 Newbyres Crescent on 5th May 2014 contained dangerously high concentrations of carbon dioxide.

The air at floor level in the hallway of no. 87 was analysed and found to contain 4.8 % v/v carbon dioxide and 15.9 % v/v oxygen. Radiocarbon analysis of the sample, by the NERC Radiocarbon Facility, identified that the sample mainly contained carbon from a geological or ancient source.

The high volume of carbon dioxide gas required to cause such elevated levels within no. 87 and the fact that the carbon dioxide was found to be mainly geological in origin, supports the hypothesis that carbon dioxide gas is migrating from the underlying coal mines into the house at 87 Newbyres Crescent.

The higher carbon dioxide and lower oxygen concentrations measured within the service duct of no. 87 (6.3 % v/v carbon dioxide and 13.8 % v/v oxygen) relative to the hallway are also consistent with the hypothesis that the service duct may be a point of carbon dioxide ingress. This is further backed up by the fact that the carbon dioxide within the hallway and the service duct had statistically identical radiocarbon concentrations.

Acknowledgements

SEPA would like to acknowledge the expert advice provided by Dr Pauline Gulliver of the NERC Radiocarbon Facility, during the preparation of this document.

References

[1] Health and Safety Executive, *Guidance Note EH40: Occupational Exposure Limits* 2005

NERC Radiocarbon Facility Report PG/15.6605.001 (6 pages)

PG/15.6605.001

16th June 2014



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Dear [REDACTED]

Project No. 15.6605 Radiocarbon analysis of carbon dioxide in gas sample

I enclose the formal report for samples submitted under the above Project number. The report includes an assessment of the ^{14}C results and an appendix outlining the principles of the measurements applied. The samples were prepared to graphite at the NERC Radiocarbon Facility and passed to the SUERC AMS Facility for ^{14}C analysis.

In keeping with international practice the results are reported as conventional radiocarbon years BP (relative to AD 1950) and % modern ^{14}C , both expressed at the $\pm 1\sigma$ level for overall analytical confidence. Unless otherwise noted the results have been corrected to $\delta^{13}\text{C}_{\text{VPDB}}\text{‰} -25$ using the $\delta^{13}\text{C}$ values provided in the report. The $\delta^{13}\text{C}$ value was measured on a dual inlet stable isotope mass spectrometer (Thermo Fisher Delta V) and is representative of $\delta^{13}\text{C}$ in the original, pre-treated sample material. The quoted precision is the uncertainty of repeated measurements of the same CO_2 aliquot, ie machine error only. Please let me know if you have any questions concerning the numerical significance of the results and/or the experimental procedures used.

Interpretation of results:

In summary, the ^{14}C enrichment of carbon dioxide present in submitted gas samples can be used to help assess the source of the gas because:

1. Geologically old carbon dioxide, derived for example from coal, will essentially contain no ^{14}C (i.e. it will have a %modern value of ca 0 and a radiocarbon age of >50,000 years).
2. Carbon dioxide derived from terrestrial organic matter grown in the last ca 60 years will have a ^{14}C enrichment of >100 %modern, since it will contain radiocarbon produced during the atmospheric nuclear bomb tests of the 1950s and 1960s.
3. Carbon dioxide with a ^{14}C concentration of between 0 %modern and 100 %modern, can be assigned a conventional radiocarbon age (defined as years before present or yBP) and may either reflect a source aged between ca 60 and ca 50,000 years or it may reflect a mixture of sources for carbon dioxide which could include geologically old (i.e. >50,000 years old or 'ancient') and/or modern materials.
4. In the UK soil carbon is usually >25 % modern, and frequently >70 % modern¹ as most terrestrial organic material in UK soils has been deposited since the retreat of glaciers after the last ice age approx. 10,000 years ago. Carbon dioxide formed by degradation of organic matter reflects the radiocarbon concentration of the material from which it is formed.
5. Contemporary (2014 AD) atmospheric carbon dioxide makes up approximately 0.04 % of the total volume of earth's atmosphere and has a radiocarbon concentration of approx. 102 % modern carbon. If each sample was contaminated to the maximum extent with atmospheric carbon dioxide then 0.04% of the total volume of the submitted sample would be derived from atmospheric carbon dioxide. Using % carbon dioxide (% v/v) provided by SEPA and assuming maximum atmospheric contamination we estimate that each sample contains < 2 % atmospheric carbon dioxide.

15.6604.001

For the samples reported here it should be remembered that it is possible that the carbon dioxide may have been derived from a number of sources, which could complicate the interpretation.

A number of observations can be made from the results of the current analyses:

1. All samples have measurable radiocarbon concentrations.
2. Radiocarbon concentrations for samples 87A and 87C are identical at 95% confidence limits, suggesting a similar source of carbon dioxide to both sample sites (which has a radiocarbon concentration equivalent to an age of approximately 19,850 yBP).
3. Radiocarbon concentration for sample BH87 is significantly higher than the other two results, implying a different source of carbon dioxide to this location (or different proportions from multiple sources).
4. The results do not exclude the possibility that all three samples represent carbon dioxide derived from a mixture of sources. Indeed results indicating carbon dioxide is formed from organic material with a radiocarbon concentration of <50 % modern (i.e. derived from organic material formed >10,000 years ago) is unlikely. Based on this it is probable that the gas in all samples is a mixture of carbon dioxide derived from multiple sources - geological, soil organic matter and atmospheric, with the carbon dioxide in BH87 containing a larger proportion of soil-derived carbon dioxide than 87A or 87C. Differences in radiocarbon concentration between BH87 and 87A and 87C could well be due to differences in sampling locations which in turn has resulted in varying volumes of soil-derived carbon dioxide contributing to the total carbon dioxide found at each sampling location.
5. If it is assumed that samples are formed from a mix of carbon dioxide from two separate sources, where one of them is geological (i.e. 0 % modern carbon) and the other is soil derived then the % contribution of soil derived carbon dioxide will depend on the radiocarbon content of the soil organic matter in question. Soil organic matter typically ranges from approximately 150 % to 50 % modern. Calculation of % contribution of soil-derived carbon dioxide using an isotope mass balance equation and based on the extreme values of 150 and 50 % modern carbon as well as a calculation based on average uncultivated soil organic matter in the UK¹ of 100.2 % modern can be seen in the table below. N.B. this table provides estimated not actual values for the % contribution of each source considered. In addition % contribution estimates will change if for example the radiocarbon concentration of the soil-derived source changes and/or an additional source(s) of carbon dioxide are added into the isotope mass balance calculation.

Sample identifier	% geologic contribution	geologic CO ₂ (% modern)	% soil-derived contribution	soil CO ₂ (% modern)	mixed CO ₂ (% modern)
<i>Soil CO₂ assumed to be 150% modern</i>					
87A and 87C	94%	0	6%	150	8.4
BH87	85%	0	15%	150	22.7
<i>Soil CO₂ assumed to be 50% modern</i>					
87A and 87C	83%	0	17%	50	8.4
BH87	55%	0	45%	50	22.7
<i>Soil CO₂ assumed to be 100% modern (after Mills et al. 2014)</i>					
87A and 87C	92%	0	8%	100	8.4
BH87	77%	0	23%	100	22.7

Table 1. Estimated contribution of geologic and soil derived carbon dioxide to samples submitted for radiocarbon analysis based on estimated radiocarbon concentrations of soil organic matter of 150, 100 and 50 % modern (Carbon dioxide is represented by the chemical formula 'CO₂' in this table).

I hope that the above interpretation of the results is clear, but please let me know if you require further clarification or if I can be of further assistance.

Best wishes

Pauline Gulliver

15.6604.001

Dr Pauline Gulliver

1. RTE Mills, E Tipping, CL Bryant and BA Emmett. 2014 Long-term organic carbon turnover rates in natural and semi-natural topsoils. *Biogeochemistry*. DOI: 10.1007/s10533-013-9928-z.

15.6604.001

RADIOCARBON ANALYTICAL REPORT

Allocation No: 15.6605**Submitter:** [REDACTED]

SEPA

Project Title: ^{14}C and ^{13}C analysis of gas samples.**Sampling location:** Site location reserved by SEPA.**Sample composition:** CO_2 in gas samples.**Pre-treatment of raw samples:** Sample gas was divided into two sub-samples and carbon dioxide was cryogenically trapped and purified from one of these sub-samples. An aliquot of the sample carbon dioxide was converted to graphite by Fe/Zn reduction.**Results:**

Publication Code	Sample Identifier	^{14}C Enrichment (% Modern $\pm 1\sigma$)	Conventional Radiocarbon Age (years BP $\pm 1\sigma$)	$\delta^{13}\text{C}_{\text{VPDB}}\text{‰}$ ± 0.1
SUERC-52661	BH87	22.68 ± 0.13	$11,920 \pm 38$	-14.8
SUERC-52662	87A	8.59 ± 0.11	$19,719 \pm 95$	-12.5
SUERC-52663	87C	8.20 ± 0.11	$20,094 \pm 100$	-12.8

Dr Pauline Gulliver

19th June 2014

15.6604.001

Appendix to 15.6605.001

Principles of applied ^{13}C measurement:

Approximately 98.89% of carbon occurs in nature as ^{12}C and the remainder (apart from the trace of radiocarbon) is ^{13}C . The ratio of these two stable isotopes in natural materials varies slightly around the average values as a result of isotopic fractionation during physical, chemical and biological exchange of carbon.

^{13}C concentrations are most accurately compared via the enrichment concept i.e.,

$$\delta^{13}\text{C}_{\text{VPDB}}\text{‰} = [(R_{\text{sample}} - R_{\text{standard}}) / (R_{\text{standard}})] \times 10^3$$

where $\delta^{13}\text{C}$ is the parts per thousand or per mille (‰) difference between the $^{13}\text{C}/^{12}\text{C}$ ratio of the sample and that of a defined standard.

By convention, $\delta^{13}\text{C}$ values are always expressed as ‰_{VPDB} relative to an international standard. Standards that have been calibrated on the Vienna Pee Dee Belemnite (VPDB) scale are distributed by the US National Bureau of Standards (NBS) and/or the International Atomic Energy Agency (IAEA), Vienna and are used at the NERC Radiocarbon Facility.

Principles of applied ^{14}C measurement:

Radiocarbon (^{14}C) is a naturally occurring isotope of the element carbon. It occurs in only 10^{-12} abundance relative to the common isotope ^{12}C i.e., $^{14}\text{C}/^{12}\text{C} = 10^{-12}$.

Natural ^{14}C is imparted to plant tissue by the photosynthetic fixation of atmospheric carbon dioxide and enters animal tissue via the food chain. Thus the carbon in all living organisms is in isotopic equilibrium with the contemporary atmosphere. When a plant or animal dies the equilibrium situation no longer prevails and the ratio of radioactive (^{14}C) to stable ($^{12}\text{C} + ^{13}\text{C}$) carbon in the detrital material decreases progressively through time and in accordance with the 5,730 year half-life that characterises radiocarbon. This system forms the basis for the well-established radiocarbon dating method. However, after 50,000 years or so the residual concentration of ^{14}C in the detrital organic carbon and/or its direct derivative falls below detection limits. It is possible therefore to distinguish between carbonaceous gases such as carbon dioxide that have derived from recent and geologically old sources of carbon.

The internationally recognised standard used in the measurement and reporting of natural ^{14}C concentrations is oxalic acid certified and issued by the US National Bureau of Standards. By definition therefore, zero aged (modern = AD 1950) carbon is 100 %modern whereas material that is devoid of a detectable ^{14}C concentration is denoted as 0 %modern. Carbon from the post AD1956 atmosphere exhibits %modern values greater than 100 %modern due to the influence of nuclear weapons testing programmes. Peak values of ca 200 %modern occurred at European latitudes during ca 1963. Since then the 'bomb ^{14}C ' excess in the atmosphere has decreased progressively, mainly by its net transfer to the massive reservoir of oceanic carbon such that now (2014) there is an effective global uniformity in atmospheric ^{14}C concentration at ca 102 %modern.

Accuracy, precision and limit of detection:

15.6604.001

Analytical precision is an essential component of any natural ^{14}C measurement. The radiocarbon measurements carried out in this project are reported, as is convention, at the one sigma confidence limit for overall analytical precision.

It is important to distinguish between the quantified analytical precision and the overall confidence that incorporates any additional variance that might have been imparted during field sampling and/or sample storage. The non-quantifiable uncertainties can only be assessed from monitoring a series of repeats of independent preparations of a sample or samples that are assumed to represent a particular site context.

The ultimate limit of detection in natural ^{14}C measurement can be defined as being the ability to detect a true ^{14}C signal above the background noise level of the isotope detection system. In this case, the background has been quantified by ^{14}C analysis of graphite prepared from geologically old material (in this case carbon dioxide produced from anthracite and geologic calcite) in the quality control program.

15.6604.001

Appendix 7: Midlothian Council, Site 32, Newbyres Crescent, Gorebridge

MIDLOTHIAN COUNCIL

SITE 32

NEWBYRES CRESCENT, GOREBRIDGE
PROPOSED RESIDENTIAL DEVELOPMENT

SUPPLEMENTARY
INTERPRETATIVE REPORT ON GROUND INVESTIGATION

Client:

Midlothian Council

Consulting Engineer:

Blyth & Blyth Consulting
Westpoint

4 Redheughs Rigg

South Gyle

Edinburgh EH129DG

CONTRACT NO: 18943



Date of Issue: 31 July 2006

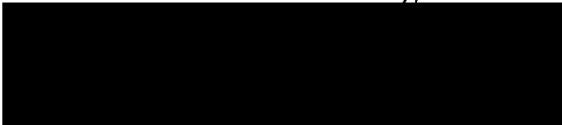

Report Issue: Final

Report Type: Interpretative

SITE 32
NEWBYRES CRESCENT, GOREBRIDGE

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File number:	P:\18943\Report\Supp_Report.doc
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	Project Engineering 31 July 2006 Geologist

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	Chief Geotechnical 31 July 2006 Engineer

For and on Behalf of Raeburn Drilling and Geotechnical Limited

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OUTSIDE THE SCOPE OF UKAS ACCREDITATION

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APPENDIX D: GEOCHEMICAL LABORATORY TESTING

Terra Tek Test Report: 811099

MIDLOTHIAN COUNCIL
SITE 32, NEWBYRES CRESCENT
GOREBRIDGE PROPOSED RESIDENTIAL DEVELOPMENT
SUPPLEMENTARY INTERPRETATIVE REPORT ON GROUND INVESTIGATION

Contract No 18943

31 July 2006

1. INTRODUCTION

It is proposed to construct a housing development on a site in Gorebridge, Midlothian. On the instructions of Blyth & Blyth Consulting, Consulting Engineers to Midlothian Council, a ground investigation was undertaken previously by Raeburn Drilling and Geotechnical Limited, the results of which are given in Report No.18943, dated 25 April, 2006.

However, an additional small plot of land located some 20m to the north-east has become available, and on further instructions from the Consulting Engineers, additional investigation has been undertaken to provide information on the ground conditions for foundation design and construction, and in relation to any geochemical contamination, soil gas issues and the mineral stability of this new area. These purposes were significant factors in determining the scope of the investigation. No responsibility can be taken for specific design proposals not detailed or advised at the time of compilation of this report. To avoid confusion, the two parts will hereafter be known as "original site" and "additional site".

Furthermore, a report from The Coal Authority has suggested that a mine shaft could be located on the original site. As part of the present investigation, an attempt has been made to position this shaft.

The comments given in this report and any opinions expressed are based on the ground conditions encountered during the site work and on the results of the laboratory testing. There may be, however, conditions pertaining to the site which have not been disclosed by the investigation and which therefore could not be taken into account.

The recommendations of this report are based on an interpretation of legislation, Codes of Practice, guidance notes and current research opinion. Revision of such, particularly in environmental matters, is developing rapidly. Although this report endeavours to anticipate any such changes that may arise within the foreseeable future, changes are liable to occur which may cause the report inadequately to address the position at that time. Further, the situation may be subject to varied interpretation by statutory authorities and others, for which Raeburn Drilling and Geotechnical Limited cannot be responsible.

2. LOCATION OF SITES

The original site lies on Newbyres Crescent in Gorebridge (approximate National Grid reference NT 345 616). It is bounded on the north-east by housing, on the north-west by Gore Avenue and on the south-west by housing, a church, a bowling green and a clubhouse building. Main Street and a car park for the clubhouse form the south-east boundary of the site.

The additional site lies approximately 20m to the north-east of the main site. It is bounded on the south, north and east by housing and on the west by Newbyres Crescent.

A plan showing the approximate location of the sites is given in Figure A1.

3. ENVIRONMENTAL SETTING OF SITE

3.1 General

A Stage 1 desk study of the former land use of the original site (Ref.1) was provided by the Consulting Engineers. The findings of that report formed the basis for the previous intrusive investigation. In addition, it provided an assessment of any potential environmental hazards from historical usage and possible pathways between potential sources and sensitive receptors such as the end users, groundwater and surface water. This desk study is relevant to the additional site and is used for an overview in this section, with some added information from the previous investigation report.

3.2 Description of Additional Site

At the time of reporting, the additional site essentially comprised grassed land, steeply sloping to the south-west. Bushes were present along the north and west boundaries and several small trees were located in the central area.

3.3 Historical Usage of Additional Site

An assessment of past editions of Ordnance Survey maps can provide an insight into the historical development of an area. These researches can often provide information relevant to the environmental conditions and consequently an indication of any potential contamination constraints related to its previous land uses. A summary of the historical appraisal of the study area follows.

The first edition Ordnance Survey map (1856) indicated that the area generally comprised open farm land. Properties named Newbyres Row were located some 100m to the south-west and south-east. Two wells were located approximately 70m to the north-east and 160m to the south-west, Whitehouse Quarry was shown approximately 740m north-west and Arniston Colliery was shown 800m to the west. Several old mine shafts were located near the sites.

No significant changes were apparent within the additional site boundaries or in close proximity by the time of the subsequent Ordnance Survey map of 1907. However, by 1957, significant development had occurred on the site and in the surrounding area. Newbyres Crescent was shown along the west boundary, with housing on and adjacent to the site. The mine shafts and wells were no longer shown.

The 1968 edition and the last available map edition of 2001 indicated little change to the additional site.

During a recent site walkover, it was noted that the residential properties within the additional site had been demolished and that the area is now grassed, although the adjacent housing is still present.

3.4 Geology of Additional Site

The previous investigation encountered topsoil and made ground overlying glacial till onto bedrock.

The made ground was essentially sandy gravelly clay and contained variable amounts of demolition debris, vegetation and ash and was present to depths up to 2.50m. The glacial till was generally cohesive comprising sandy gravelly clay with occasional cobbles and boulders, although granular bands were common. The consistency of the glacial clay was firm to stiff, although on occasion soft or occasionally very soft material was encountered.

The solid geology underlying the study area is indicated to comprise strata belonging to the Limestone Coal Group of Carboniferous age. The solid strata are recorded to consist of a cyclic sequence of sandstones, siltstones, mudstones, coals and seat clays with a prominent marine band.

The strata were found to dip south-westwards, at an inclination ranging from 5 degrees to 25 degrees and it was conjectured that faulting had disrupted the strata.

The geological map indicates that the Great Seam Coal outcrops some 30m to the south-west of the additional site, with the Siller Willie Coal and Coronation Coal conjectured to outcrop some 190m and 540m, respectively, to the north-east. However, the geology as encountered in the previous investigation differed somewhat from that shown on the geological plan. Nevertheless, the following general succession would be expected:

Table 1- Conjectured Sequence of Mineral Horizons:

Stratum	Average Thickness of Seam Including Strata Between Leaves (m)	Marker Horizons Between Seams
Mavis Coal	0.3 to 0.6	Brachiopods (Lingula)
Strata	9.0	
Great Seam Coal	1.8 to 2.3	
Strata	1.9	
Diamond Coal	0.6 to 1.0	
Strata	6.7	
Teenie Coal	0.6 to 1.6	
Strata	1.0	
Uooer Siller Willie Coal in leaves	0.4 to 2.4	
Strata	4.5	
Siller Willie Coal in leaves	1.1 to 2.7	
Strata	3.8	
Uooer Blackbird Coal in leaves	0.3 to 1.9	
Strata	2.6	
Blackbird Coal in leaves	0.5 to 1.7	
Strata	4.6	
Coronation Coal in leaves	1.6 to 2.2	Black Metals Marine
Strata	10.0	
Ball Coal	0.4 to 0.6	

3.5 Mining Conditions

Information supplied by the Consulting Engineers indicates that the additional site lies within an area that has recorded coal workings within 50m of the ground surface. It is known that the Great Seam Coal and Siller Willie Coal have been worked at several locations in the Gorebridge area. In addition, a Coal Authority report has indicated that the site is within an area where coal lies at shallow depth and may have been worked at some time in the past. The report also states that three seams of coal, not named, ranging in depths from 70m to 130m beneath the site, were worked up to 1930 and that any ground movement from these workings should now have ceased.

The previous investigation encountered evidence of shallow mine workings at a horizon interpreted as the Great Seam Coal beneath the south half of the original site. The north half of the original site was considered to be minerally stable due to faulting. It was conjectured that the additional site would be likely to be to the north of the faults and therefore be minerally stable.

Nevertheless, it was considered prudent to undertake an investigation to establish the nature and condition of any mineral seam within a critical depth beneath the additional site. This would involve the sinking of a borehole by rotary drilling methods to determine the solid geology and mining conditions.

In addition, a Coal Authority Report indicated that two abandoned mine shafts were located within the original site boundaries. The easterly mine shaft was located and its depth proved in the previous investigation. However, trial trench excavations did not encounter any evidence of the westerly shaft location. The Coal Authority indicated that the shaft had been positioned from 'local records'. It was noted that these can be sketchy and that the westerly shaft may in fact be an 'echo' of the easterly shaft location. Alternatively, it was tentatively suggested that it may be located beneath Newbyres Crescent, where it was not feasible to work during the previous investigation.

A series of probe holes should be carried out on Newbyres Crescent, once a road closure has been granted by the Local Authority, to investigate further the conjectured position of the more westerly mine shaft location.

3.6 Hydrogeology and Hydrology of Additional Site

The desk study indicates that the nearest watercourse is unnamed and lies some 250m to the south-west of the additional site. It flows in a south-westerly direction before joining the Gore Water at a position some 450m to the south-west. The Gore Water flows to the north-west towards the River South Esk.

The natural soils underlying the additional site are indicated to be glacial till and would be expected to be of low permeability. However, glacial till can vary from cohesive to granular in nature, with corresponding variation in permeability. In view of the topography and the location of the Gore Water, the direction of groundwater flow in the soil is expected to be to the south-west.

The solid strata underlying the additional site belong to the Limestone Coal Group, which consist of highly productive aquifers in which flow is dominantly in fissures and other discontinuities. Significant borehole yields have been obtained, particularly where the ground has been disturbed by mine workings.

3.7 Conceptual Site Model

The additional site, although currently unoccupied, had been developed in the early to mid-twentieth century for housing. The buildings have been demolished in the last few years, although the adjacent buildings are still standing. There is therefore likely to be made ground associated with the construction and demolition of the buildings. Made ground

may be present in any urban situation and could be contaminated, the nature of which would depend on its source, which is not known. Asbestos used as insulation or in roofing may be present in the made ground. However, no asbestos was encountered during the previous investigation.

Colliery spoil associated with the mining activities may be present within the site boundaries and may give rise to contamination such as metals, sulphates, petroleum hydrocarbons (TPHs) and polyaromatic hydrocarbons (PAHs). Elevated concentrations of nickel and sulphate were encountered in the soils during the previous investigation.

Gas generation due to the microbial breakdown of organic material might present a risk. Carbon dioxide is likely to predominate, particularly within the made ground deposits or any natural soils with significant quantities of organic material. As previously mentioned, mine workings may be present beneath the sites and mine gas may potentially be present. The mine gas, if present, may consist mainly of methane, which is the predominant gas produced during the conversion of plant matter to coal. Low levels of carbon dioxide were encountered during the monitoring of standpipes installed in the boreholes of the previous investigation.

Potential receptors include the human end-users, as well as construction workers, flora and fauna, the proposed buildings themselves, services, and the groundwater and surface water. Groundwater and surface water are both controlled waters and therefore protected by law.

Leachable and more mobile contaminants are likely to be present in the groundwater, with less mobile contaminants more likely to be present in the soils.

The results of geochemical analysis of water and leachate samples from the previous investigation found that the determinands were all below the UK Drinking Water Standards.

The proposed end-use is likely to include housing with gardens, so pathways involving the consumption of vegetables and of soil attached to the vegetables will apply. Pathways from any source to the human end-users defined include exposure to contaminated soil and dust through ingestion, dermal contact and inhalation. End-users are anticipated to be children and adults. The most sensitive end-users in this scenario are children.

The pathways of contamination described above into ground and surface water would be by leaching of contaminants by infiltrating surface water and porewater, and free product flow of hydrocarbons. Another potential pathway for contamination would be through the existing drainage systems within the site and surrounding area and mine entries within the site. Ground and surface water are both pathways and receptors for contamination.

In view of the distance to this nearest watercourse (some 250m to the south-west of the additional site), this surface water feature would be expected to be at relatively low risk from the leaching of contaminants from the soils.

The generation of soil or mine gas might result in migration into buildings via cracks in floor slabs or service entries and may affect construction workers through accumulation in excavations.

A preliminary qualitative risk assessment based on the conceptual site model was included in the desk study and the results of geochemical analysis of soil and water from the previous investigation has been summarised in the table below.

Table 2 - Preliminary Risk Analysis, based on Conceptual Site Model:

Source	Pathway	Receptor		Likelihood of Occurrence	Consequence of Occurrence	Risk
Toxic Metals (mining waste products, potentially made ground deposits)	Ingestion, Inhalation, Direct Contact	Humans	End User	Medium	Medium	Medium
			Construction Worker	Medium	Medium	Medium
			Children	Medium	Medium/High	Medium/High
		Services		Low	Medium	Low/Medium
Phytotoxic Metals (mining waste products, potentially made ground deposits)	Uptake by roots	Flora		Low	Medium	Low/Medium
Hydrocarbons (TPHs, PAHs) (potentially made ground deposits, mining waste products, spillages or leaks)	Ingestion, Inhalation, Direct Contact	Humans	End User	Low/Medium	Low/ Medium	Low/ Medium
			Construction Worker	Low/Medium	Low/Medium	Low/ Medium
			Children	Low/Medium	High	Medium
	Root Uptake	Flora		Low	Low	Low
	Inhibition of Concrete Setting	Buildings		Low	Low	Low
	Direct Contact	Services		Low/Medium	Medium	Low/ Medium
Sulphates and Corrosives (mining waste products, from spillages and leaks, potentially made ground deposits)	Direct Contact	Buildings		Low/Medium	Medium	Low/ Medium
		Services		Low	Medium	Low/ Medium
		Humans	End User	Low	Low	Low
			Construction Worker	Low	Low	Low
			Children	Low	Low	Low
Leachables and Mobile Hydrocarbons (mining waste products, from spillages and leaks, potentially made ground deposits)	Migration via permeable strata, ground-water or through drainage systems or mineshafts	Ground-water		Low/Medium	Medium	Low/ Medium
		Surface Water/ Aquatic Life		Low/Medium	Low	Low/ Medium
Asbestos (roofing or cladding, potentially made ground deposits)	Direct Contact, inhalation	Humans	End User	Low/Medium	High	Medium
			Construction Worker	Low/Medium	High	Medium
			Children	Low/Medium	High	Medium
Soil Gases (Organic material in made ground or natural soil deposits, mine gas)	Migration via permeable strata	Humans	End User	Low/Medium	Low/Medium	Low/ Medium
			Construction Worker	Low/Medium	Low/Medium	Medium
			Children	Low/Medium	Low/Medium	Low/ Medium
		Buildings (fire, explosion)		Low	High	Medium
		Flora		Low	Low	Low

It can be seen from the above that the environmental risks at the site are generally low to medium, locally medium and low.

A suite of contamination testing involving metals, sulphates, pH, TPHs, PAHs and asbestos should therefore be undertaken for the soils and ground-water at the additional site. Soil samples should be obtained from exploratory holes located in the proposed garden areas, as these will be the likely areas where the greatest exposure to end users of contaminants, if any, is likely to occur. Ground-water samples should be obtained from standpipe installations in the boreholes. In addition, monitoring of the gas concentrations should be undertaken from the boreholes.

4. GROUND INVESTIGATION

4.1 Additional Site Work

The additional site work was carried out during the period 29 May to 3 July, 2006, in accordance with the guidelines laid down in BS5930 (Ref. 2), BS10175 (Ref. 3) and in-house procedures. The results of the site work are given in Appendix B.

Two boreholes (Nos. 05 and 06) were sunk by cable percussion boring methods and a further borehole (No. R11) was sunk by rotary openhole and core drilling. In addition, a series of window sampler boreholes (Nos. 801 to 883) were carried out to locate the conjectured mine shaft position beneath Newbyres Crescent. The drilling crew wore safety harnesses attached to a secure point outwith the potential shaft area. The positions of all the boreholes are shown on the site plan (Fig. A2). The depths of the boreholes, the descriptions of the strata encountered and comments on the groundwater conditions are given in the borehole records (Figs. B1 to 886). The positions and depths of the boreholes were determined by and set out on site by Raeburn Drilling and Geotechnical Limited, in conjunction with the Consulting Engineers.

Disturbed and 100mm diameter tube samples were taken at the depths shown on the borehole records, and were despatched, together with the rock cores, to the laboratories at Hamilton and Birmingham for examination and testing. Each sample was uniquely identified and a transmittal note system used throughout sample transfer.

A nominal 50mm diameter standpipe was installed in borehole 06, details of which are given on the relevant record. Tests were subsequently carried out to determine the methane, carbon dioxide, oxygen and hydrogen sulphide contents of the gas in the standpipe. Water level readings were also taken in the instrument. The results of these tests are given in Figure B87.

Insufficient water was present in the standpipe in borehole 06 to allow a water sample to be taken.

Geochemical soil samples were taken directly into glass jars or tubs, using a carefully cleaned trowel. Geochemical samples were transported to the laboratory in cool boxes. The co-ordinates and ground levels at the borehole positions, given on the records, were surveyed to the National Grid and Ordnance Datum.

4.2 Laboratory Testing

Both the geotechnical and geochemical testing were carried out at laboratories holding UKAS Accreditation.

A geotechnical test schedule designed to assess the engineering properties of the soils encountered was submitted to and approved by the Consulting Engineers and the laboratory testing was carried out in accordance with BS1377 (Ref. 4). The results of the geotechnical testing are given in Appendix C and comprised the following:

Description of Test

Moisture Content Tests Liquid and Plastic Limit Tests

Particle Size Distribution Tests

Unconsolidated Undrained Triaxial Compression Tests California Bearing Ratio Tests

One-dimensional Consolidation Tests

Figures

C1 C1 C2

C3 and C4 CS and C6 C7

In addition, a geochemical test schedule was designed to gain information on the concentrations of any possible chemical contamination present in the soils encountered at the site. The test schedule was submitted to and approved by the Consulting Engineers. A total of three samples of soil were tested. This work was undertaken at the Birmingham laboratory of Terra Tek Limited, a wholly owned subsidiary company of Raeburn Drilling and Geotechnical. The results are given in Appendix D.

5. GROUND CONDITIONS ENCOUNTERED

The general stratification encountered at the additional site can broadly be summarised as follows: topsoil and/or made ground overlying glacial till onto bedrock.

Boreholes 05 and 06 encountered 0.30m and 0.40m, respectively, of topsoil. Borehole R11, located within the former building footprint, encountered made ground, described by the driller as clay fill, to a depth of 0.45m. The topsoil and made ground rested upon glacial till. Boreholes 05 and 06 met obstructions at depths of 1.45m and 4.50m, respectively, which

were penetrated to a further depth of 0.35m and 0.10m, respectively. The obstructions may represent bedrock, given that the rotary borehole R11 encountered rockhead at 3.15m.

The glacial till deposit was generally cohesive, consisting of sandy *gravelly* clay with occasional cobbles and boulders, as encountered in boreholes 06 and R11. However, in borehole 05, the till comprised silty sand and *gravel*, which contained pockets of sandy *gravelly* clay. The consistency of the cohesive till was stiff.

The rotary borehole penetrated bedrock to a maximum depth of 32.95m, with the rock encountered comprising mudstones, siltstones, sandstones and several coal seams. The dip of the rock could not be ascertained from one borehole but researches indicate that it is approximately to the south-west at a shallow angle. The seams were interpreted as being the Blackbird Coal, Coronation Coal and Ball Coal. No evidence of mine workings was encountered. The mining conditions are discussed in greater detail in Section 7.

Borehole R11 recorded a water strike at rockhead at a depth of 3.15m. Boreholes 05 and 06 did not encounter groundwater during the recent site investigation. However, the soils were comparatively impermeable and it is likely that the seepages did not have enough time to become established. During subsequent monitoring of the standpipe in borehole 06, recorded groundwater levels varied in depth from 4.56m to 4.59m.

Comparison of the results of the monitoring and ground water strikes suggest that equilibrium water levels at the site are likely to lie close to rockhead.

The boreholes for the conjectured mine shaft at the original site encountered topsoil (S01 to 810, S29 to 867 and 880 to 883) or road construction materials (S11 to 828 and 868 to 879) overlying glacial till. A thin layer of clay fill was present beneath the topsoil in boreholes (S29 to 867 and 880 to 883).

6. COMMENTS ON THE RESULTS OF THE INVESTIGATION IN RELATION TO THE DESIGN AND CONSTRUCTION

6.1 Construction Proposals for Additional Site

It is assumed that the construction proposals are for semi-detached housing.

6.2 Foundation Comments

Strip foundations placed in the natural glacial soil, beneath the topsoil or made ground, at a minimum depth of 0.75m below final ground level, may be designed to an allowable net bearing pressure of 100 kPa. This value should ensure the customary acceptable factor of safety of 3 against shear failure of the ground and with its adoption, the maximum total settlement associated with foundations up to about 1.20m wide should be less than 25mm.

Settlement in the granular soils will take place largely as the loadings are applied, whereas those in the clays that predominate will be more time dependent and will occur over a considerably longer period. Differential movements will be dependent on variations in the foundation widths and loading intensities, and on the stiffness of structures, as well as ground conditions.

Ground-water was recorded in the boreholes and standpipe at depths of 3.15m to 4.59m, during the recent site investigations. However, records taken during the site operations may not necessarily reflect typical or even equilibrium conditions. Whilst the levels at which groundwater may be encountered could exhibit seasonal or other variations, problems with regard to ground-water inflow to excavations for foundations or service connections are not envisaged.

Those flows that are due to surface run-off and seepages from excavation sides during periods of inclement weather should be dealt with adequately by normal open-sump pumping techniques. Care should be taken to ensure that pumping operations do not remove material from the surrounding ground, thus leading to instability.

To prevent the deterioration of prepared foundation formations in the presence of water, a blinding layer of concrete or the foundation concrete itself, should be placed as soon as practicable after completing the excavation.

Support will be required to the walls of vertically sided service excavations, which extend beneath a depth of about 1.2m.

6.3 Floor Slabs

Floating concrete ground floor slabs should be satisfactory provided the layer of topsoil and/or made ground is removed and the slabs are cast on a blanket of well- compacted granular fill.

6.4 Road Pavements

All topsoil or organic soil should be stripped from beneath the proposed pavements prior to the preparation of the formation.

Laboratory California bearing ratio tests (CBR) were carried out on a sample of cohesive soil and a sample of granular soil. The average results were 12.3 per cent for the clay and 26.9 per cent for the sand and gravel. Given that the clay soils are likely to predominate at the site, the higher results from the granular soil are not likely to be particularly relevant. Moreover, stiff clays with a low plasticity index usually have CBR values of the order of 2.5 per cent to 6 per cent so a value of 12.3 per cent would be regarded to be slightly on the high side. Hence, a cautious approach is advised and a CBR of 2.5 per cent is recommended. In these circumstances the Design Manual for Roads and Bridges (Ref. 6) recommends a minimum capping layer thickness of

approximately 400mm and a sub-base thickness of 150mm. However, if no capping were required then a sub-base thickness of 350mm could be used.

Care should be taken to prevent the deterioration of the prepared formations in the presence of water. Any softened or rutted material should be removed and replaced with well compacted imported granular fill.

Conventional road works drainage should be installed.

7. MINERAL STABILITY OF ADDITIONAL SITE

7.1 Mining Conditions

The mineral investigation was designed to establish the nature and condition of any mineral seams within critical depths beneath the additional site and assess their impact, if any, on the site stability. The previous investigation indicated that the strata beneath the original site had been disrupted by faulting. A conjectured fault trended east to west through the central north area, with another fault trending to the south-east from the first fault. Mine workings in a horizon interpreted as the Great Seam Coal were present in the area to the south of these faults. The Siller Willie Coal, Upper Blackbird Coal and Blackbird Coal were interpreted to outcrop across the original site, trending north-east to south-west, to the north of the faults.

The coal seams encountered in borehole R11 were interpreted as the Blackbird Coal, Coronation Coal and Ball Coal and are indicated in the table below. A marker horizon, a marine band ("Black Metals Marine Band"), identified at a depth of 18.45m in borehole R11 assisted in the stratigraphic correlation of the seams in the borehole.

Table 3 - Conjectured Sequence of Mineral Horizons:

Stratum	Average Thickness of Seam Including Strata lml	Marker Horizon Between Seams
Blackbird Coal	1.1	
Strata	4.1	
Coronation Coal	1.5	
Strata	9.4	Black Metals Marine Band
Ball Coal	0.5	

Correlation with the rotary boreholes from the previous investigation indicated a broad similarity between the lower section of strata encountered in borehole R04 and that encountered in borehole R11. Therefore, borehole R11 is conjectured to lie in the small north-east area bound by the conjectured faults.

No evidence of mine workings was encountered in these boreholes. The additional site is therefore considered to be mineral stable in relation to the shallow coal seams.

As indicated in the Coal Authority report, the risk of mineral stability with respect to any deeper seams should be negligible.

7.2 Mine Entries

Two mine shafts were indicated to lie within the north-western area of the original site. The Coal Authority would appear to have no record of remedial works being undertaken on the shafts. Furthermore, the Coal Authority indicated that plan records of the easterly shaft exist but that the westerly shaft has been positioned from "local records". It is worth noting that "local records" can be very sketchy and that it is possible that the close proximity of both shafts may have resulted in the easterly shaft being mis-positioned and shown again as the westerly shaft position. The easterly mine shaft was located and its depth proved in the previous investigation. However, the westerly mine shaft was not found. Its indicated position was adjacent to Newbyres Crescent and if it exists, it may well be that its actual location is below the road, where it was not feasible to investigate at the time.

A road closure was arranged with the Local Authority Roads Department to enable intrusive works on Newbyres Crescent to determine the location of the westerly mineshaft. The investigation involved carrying out a series of window sampling probe boreholes on a 1m grid pattern to find evidence of the possible mineshaft, such as an increased depth of made ground in a distinct area. The probes were started on the grass area to the south-east of the road, between the road and the previous trench excavation. During the drilling operations a local source indicated that the mineshaft may be located further to the south-east than the Coal Authority location. The grid was expanded to investigate this area.

No evidence of the mineshaft was indicated in any of the probe boreholes. The probing continued until the Consulting Engineers concluded that a significant area had been investigated.

Whilst the investigations did not find evidence of the westerly mine shaft, it does not preclude its existence. It may be located outwith the area investigated but is less likely to be so. Alternatively, its dimensions may be less than 1m by 1m and therefore has not been encountered during the 1m grid pattern of boreholes. It was suggested in the previous report that a geophysical survey could be carried out but these are not always conclusive. Furthermore, the mineshaft may even not exist, in which case no amount of investigative work would find it!

In conclusion, the mineshaft is unlikely to be in the area investigated. Nevertheless, it is recommended that vigilance be maintained during the site works if any suspect features are encountered in the locus of the area investigated that may indicate an unrecorded mine entry.

Furthermore, as in all mining areas, there could be unrecorded shafts at the site. While their presence is unlikely, again it is recommended that vigilance be maintained during all site works for features suspected of being unrecorded mine entries. It is recommended that the advice of a specialist, such as Raeburn Drilling and Geotechnical Limited, should be sought if any unexpected or suspect ground conditions are encountered.

8. GEOCHEMICAL CONSIDERATIONS

8.1 Methodology

For the purposes of assessing the geochemical condition of the site, it is now generally accepted that a risk-based approach should be adopted. A Conceptual Site Model should be built up from the results of a desk study, testing it and assessing the risk that a hazard is connected to a potential receptor by a pathway. The Conceptual Site Model is a requirement of BS10175 (Ref. 3).

Once pollutant linkage has been demonstrated, the risk to each receptor should be assessed. A tiered approach is advocated in most instances whereby generic guidelines are compared against an appropriate data set.

If concentrations in excess of these generic guidelines are found, further, more detailed, less conservative, site specific risk assessment should be carried out.

For the assessment of human health, the data set has been screened against soil guideline values derived from the CLEA Model (Refs. 7 and 8). Where applicable, screening has been carried out against site specific assessment criteria calculated using SNIFFER (Ref. 9).

In assessing the risk to ground and surface waters, the results of the analyses are compared with the drinking water standards (Refs. 10 and 11). Quantitative risk assessment for ground-water is carried out using either the Environment Agency

Remedial Targets spreadsheet or Consim (Refs. 12 and 13).

The risk to plant growth (i.e. phytotoxicity) has been assessed using the Sludge Regulations 1989 (Ref. 14) and the old ICRCL guidelines (Ref. 15).

Sulphate and acid attack on buried concrete should be evaluated with reference to BRE Special Digest 1 (Ref. 16).

Underground water supply pipes have been considered with reference to the guideline thresholds published by the Water Regulations Advisory Service (WRAS – Ref. 17).

The generation of methane and carbon dioxide gases is often associated with made ground or organic deposits. The risk associated with ground gas should be assessed in accordance with BRE Report 212 (Ref. 18). In addition, EH40/03 (Ref.19) sets exposure limits for construction workers in excavations.

8.2 End User Risk Analysis

The risk to human health from long term exposure to soils can be determined using any one of a number of models. In this instance, the Contaminated Land Exposure Assessment (CLEA) model has been used. Prior to using this and indeed any model, it is necessary to determine whether it is appropriate and identify aspects that would make the findings more or less conservative.

Both models use the criteria laid out in CLR 10. One such criterion defines land uses in the following categories: residential housing with and without gardens, allotments and commercial/industrial. CLEA generates soil guideline values (SGVs) for a variety of determinants using nationally recognised and published toxicological data, whilst both it and SNIFFER can generate site specific assessment criteria (SSACs). It is planned to build residential premises on the site, which is reasonably consistent with the model for residential housing with gardens. The most sensitive human receptor in this scenario is children.

The model also assumes that the data set is representative of an "averaging area". The averaging area is the area and volume of soil where exposure could occur. In this case, the top metre of the site as a whole has been taken as the averaging area.

The last stages in demonstrating that the data set is representative are calculation of the 95th percentile of the mean value and carrying out the maximum value test for each determinants, as described in CLR 7. Once calculated, it is the upper 95th percentile that is compared to the relevant SGV. The purpose of the maximum value test is to determine whether the various data sets fall within a normal population or whether the highest concentration is, in fact, an outlier, i.e. a hotspot.

Two soil samples from the additional site were analysed for a suite comprising arsenic, boron, cadmium, chromium, copper, lead, mercury, nickel, selenium, zinc, total petroleum hydrocarbons (TPH), water soluble sulphate and pH. One of these samples was also tested for speciated polynuclear aromatic hydrocarbons (PAH) and one was screened for asbestos.

Values of pH in the soils were measured at 6.2 and 8.8. The former is within the range for which the SGVs were derived, whilst the latter is outside the range. However, most metals are less available at higher pH values and so an assessment against the SGVs should be conservative.

The range of contamination for the heavy metals and petroleum hydrocarbons is summarised in the following table along with respective SGVs.

Table 4 - Comparison of Mean Value Results with SGVs for Residential With Productive Gardens:

Determinand	Minimum Concentration (mg/kg)	Maximum Concentration (mg/kg)	Upper 95th Percentile of the Mean Concentration (mg/kg)	SGV or Screening Value (mg/kg)
Arsenic	3.1	3.3	3.3	20
Cadmium	<1	<1	<1	1
Chromium	15	33	36	130
Lead	17	17	17	450
Mercury	<0.5	<0.5	<0.5	8
Selenium	<1	<1	<1	35
Nickel	23	38	40	50
TPH	1	10	11	50

The mean value test results indicate that the determinands should not present a long-term health risk.

Asbestos was not found in the sample screened and hence the risk from asbestos is considered to be low.

There is currently no nationally recognised guidance for the assessment of petroleum hydrocarbons. However, the Environment Agency in England has consulted on establishing a framework for doing so. It appears that an approach broadly along the lines of the TPHCWG is proposed. The Environment Agency recognises that markers,

such as TPH, can be used for an initial, first tier, screening assessment.

As an initial Tier 1 screen, the Dutch Target Value of 50mg/kg has been used. The 95th percentile of the mean TPH value is 11mg/kg, which is less than the Tier One assessment criterion. The hydrocarbon type, where recognised, was identified as mineral oil. As such the risk to human health from petroleum hydrocarbons is considered to be low.

Polyaromatic hydrocarbons (PAHs) are a group of compounds of varying toxicity that are either formed during incomplete combustion or by manufacture. Benzo(a)pyrene (BaP) is generally considered to be the most toxic of the group, but it is usually only a small percentage of the total. The levels of the individual PAHs, including BaP, were all below their detection limits. Therefore, the risk to human health is considered to be low with respect to PAH.

8.3 Plants

Nickel, copper, boron and zinc all exhibit phytotoxic properties, which is to say they are poisonous to plants at certain concentrations. It should be noted, however, that the CLEA Model only applies to human health.

Therefore, the Sludge (Use In Agriculture) Regulations (Ref. 14) guidelines have been utilised for an assessment with respect to phytotoxicity for nickel, copper and zinc.

The 95th percentiles for nickel, copper and zinc were 40mg/kg, 27mg/kg and 97mg/kg, respectively, which are all below the guideline values of 75mg/kg, 135mg/kg and 300mg/kg, respectively, for pH values greater than 6.0.

Accordingly, the risk to plants as a result of root uptake is considered to be low for nickel, copper and zinc.

It has been necessary to fall back on the old ICRL guidelines (Ref. 15) for an assessment with respect to the phytotoxicity of boron. The 95th percentile for boron (water soluble) of 1.1mg/kg is below the old ICRL trigger threshold of 3mg/kg.

Accordingly, the risk to plants as a result of root uptake is considered to be low for boron.

8.4 Groundwater

Insufficient water was present in the standpipe in borehole 06 to allow a water sample to be taken. Therefore, no assessment of ground-water could be made.

8.5 Buried Concrete and Services

The results of the chemical analysis on the samples of soil indicate pH values of 6.2 and 8.8. Water soluble sulphate contents in the prepared 2:1 water/soil extracts were measured as less than 0.10g/l.

In these conditions, the risk to underground concrete is considered low (Ref. 16).

The Water Regulations Advisory Service has issued guidance on the selection of water

supply pipes for brownfield sites. This includes a table of threshold guidelines for a variety of compounds. All the 95th percentiles of the mean concentrations fall below the concentrations quoted. Hence, the risk is considered low.

8.6 Ground Gas

The generation of methane or carbon dioxide gases is often associated with made ground, organic deposits or carbonaceous bedrock. Hydrogen sulphide can be associated with slag.

Methane is a flammable gas. It is explosive in air at a concentration above 5 per cent by volume (the so-called Lower Explosive Limit). BRE Report 212 considers gas protection measures should be implemented in buildings where the concentration of methane in the ground exceeds 1 per cent by volume.

Carbon dioxide is an asphyxiant gas. BRE Report 212 (Ref. 18) advises that gas protection measures should be considered in buildings where the concentration in the ground exceeds 1.5 per cent by volume and should be instituted where the concentration exceeds 5 per cent. With respect to construction workers, EH40/2005 (Ref. 19) sets a 15 minute exposure limit of 1.5 per cent by volume and an eight hour exposure limit of 0.5 per cent. Carbon dioxide is heavier than air and so can concentrate in open excavations.

Hydrogen sulphide is generally associated with fill materials containing slag. The gas is toxic to humans at low concentrations. The odour is recognisable at concentrations in excess of 16ppm and the 15 minute exposure level is set at 15ppm.

Gas monitoring in the standpipes installed in the boreholes was carried out on five occasions. No methane or hydrogen sulphide was recorded, but carbon dioxide concentrations ranging from 1.3 per cent to 2.0 per cent were measured. These concentrations were associated with a slight oxygen deficiency. The introduction of oxygen into a borehole can lead to elevated levels of carbon dioxide, but these concentrations quickly fall away. The overall trend of the results showed that the concentrations of carbon dioxide decreased with time. However, the gas monitoring visits were undertaken when the atmospheric pressure was high when gas generation tends to be lower. Nevertheless, measurements of the gas flow indicated that the borehole gas volume flow of carbon dioxide was very low.

The risk with respect to buildings is considered low. However, with respect to construction workers entering confined excavations the risk is considered low to medium.

8.7 Conclusions and Conceptual Site Model Validation

The conceptual site model predicted that the most likely source of contamination would be the made ground underlying the site, associated with the historical land uses. Made ground was not encountered in the soils boreholes. The preliminary risk assessment has been updated as follows:

Table 5 - Summary Risk Analysis, based on Results of Investigation:

Source	Pathway	Receptor		Contamination Present/Found	Consequence of Occurrence	Risk
Toxic Metals	Ingestion, Inhalation, Direct Contact	Humans	Construction Worker	No	Low/Medium	Low
			Children	No	Medium	Low
Phytotoxic Metals	Uptake by roots	Flora		No	Medium	Low
Organics	Ingestion, Inhalation, Direct Contact	Humans	Construction Worker	No	Low/Medium	Low
			Children	No	Medium	Low
	Root Uptake	Flora		No	Low	Low
	Inhibition of Concrete Setting	Buildings		No	Low	Low
	Direct Contact	Services		No	Medium	Low
Sulphates and Corrosives	Direct Contact	Buildings		No	Low/Medium	Low
		Services		No	Medium	Low
		Humans	Construction Worker	No	Low	Low
			Children	No	Low	Low
Leachables and Mobile Hydrocarbons	Migration via permeable strata or groundwater or surface water or drainage systems	Groundwater		No	Low/Medium	Low
		Surface Water/ Aquatic Life		No	Low/Medium	Low
Asbestos	Direct Contact	Humans	Construction Worker	No	Low/Medium	Low
			Children	No	Low	Low
Soil Gases	Migration via permeable strata	Humans	Construction Worker	Yes	Low/Medium	Low/Medium
			Children	No	Low/Medium	Low
		Buildings (fire, explosion)		No	High	Low
		Flora		No	Low	Low

No asbestos was found in the samples tested and the risk to human health (end- users and construction workers) has been assessed as low. However, should any asbestos be encountered during site operations, it is recommended that appropriate measures be adopted, which conform to the statutory requirements of the COM Regulations, 1994 (Ref. 20) and the HSE document on 'Protection of Works and General Public during the Development of

Contaminated Land' 1991. The asbestos fibres are generally classified as a 'Hazardous Waste'. However, given that the asbestos fibres have been found in soil, the waste may be acceptable at a stable non-reactive hazardous waste cell at a Non Hazardous landfill (Ref. 22).

Low concentrations of water soluble sulphate were found. Special Digest 1 (Ref. 16) recommends precautionary measures with respect to sulphate attack on concrete for several classes of conditions. The measured concentrations fall within the least onerous Class, Design Sulphate Class DS-1.

Using these values, suggests an ACEC class for the site of AC-1s should be used where ground-water is static and an ACEC class for the site of AC-2z should be used where ground-water is mobile.

The risk due to the generation of carbon dioxide ground gas has been assessed as low. Guidance on gas protection measures is given in Table 29 in CIRIA Report 149 (Ref. 23). However, this document makes its recommendations based on gas concentrations and since publication it has been recognised that the source and the flow rates should also be taken into account. Accordingly, it is considered that the measures proposed by Wilson and Card (Ref. 24) are more appropriate. The most likely source, the concentrations and the flows indicate a 'characteristic situation 1' which means that no special gas protection measures will be required.

Monitoring for ground gas should be undertaken as a precautionary measure where construction workers are likely to be working in excavations. In the event of hazardous concentrations being encountered, consideration should be given to forced ventilation.

Made ground is inherently varied. Should unexpected or suspect material be found, the advice of Raeburn Drilling & Geotechnical should be sought as to the nature of the materials and the precautions with respect to them.

Any contamination found should be addressed in accordance with the Health and Safety plan for the site. Standard safety precautions should be incorporated into the Health and Safety plan in order to address the possibility of site operatives coming into contact with any potentially contaminated made ground encountered, for example within the excavations.



Project Engineering Geologist



Chief Geotechnical Engineer

ILimited

For and on Behalf of Raeburn Drilling and Geotechnica
Ground Investigation Department
Hamilton

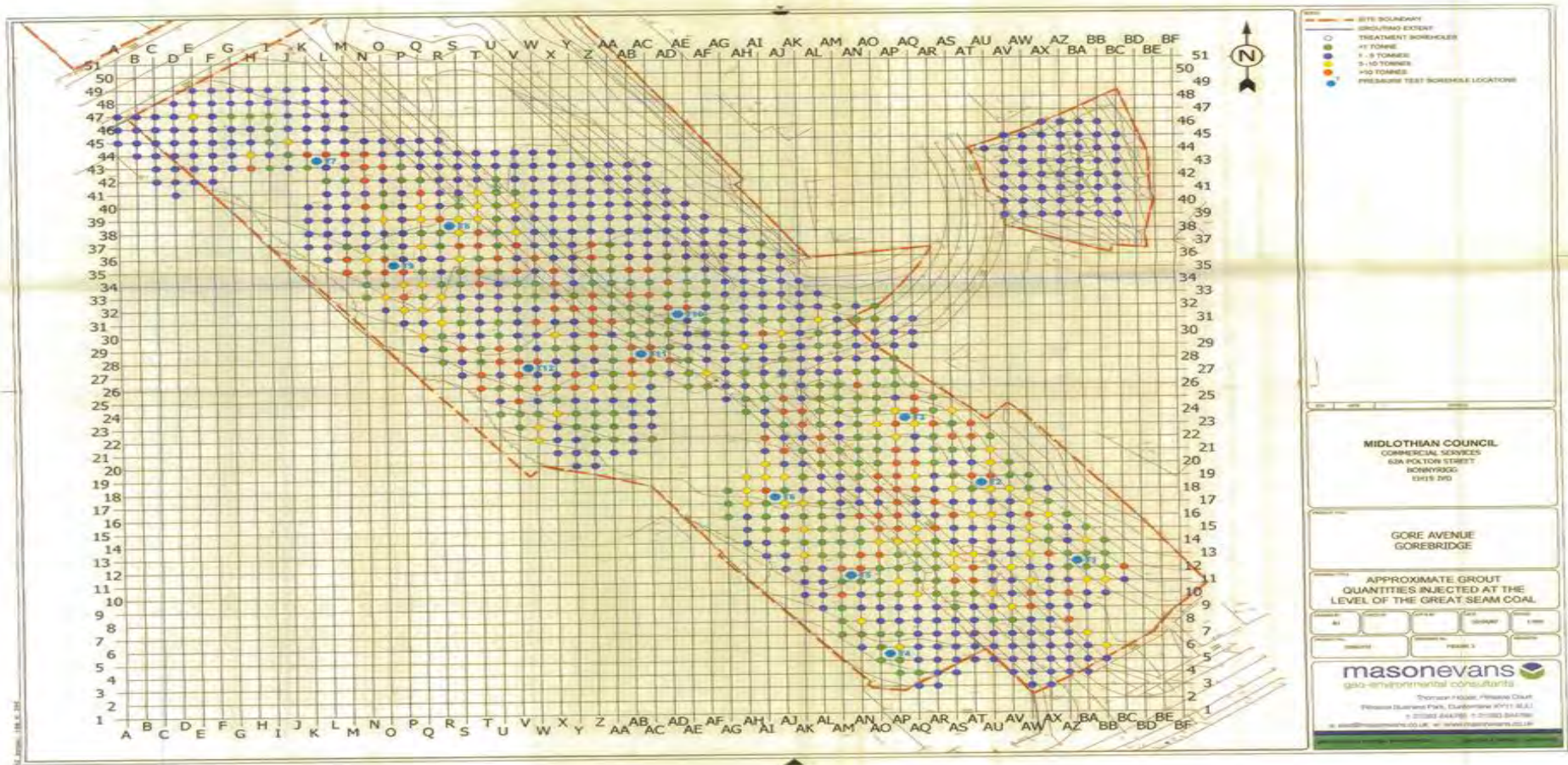
This report is not to be used for contractual or engineering purposes unless the report text and front cover sheet is signed where indicated by both the originator of the report and the approver and the report is designated 'Final' on the cover sheet.

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Appendix 8: Mason Evans grouting plan (extract)



Source: Midlothian Council

Appendix 9: Information leaflet for residents of Newbyres Crescent, Gorebridge



- Results from our air quality monitors for the last two week (April 14 – 25) show no build-up of higher than expected levels of carbon dioxide (CO₂) in homes and there were no alarms raised by the CO₂ detectors now in place across the new build estate.
- We are working with NHS Lothian and a number of independent experts to safeguard residents and investigate and resolve understandable concerns
- The detectors are in the right place to protect you – your hallway service cupboards where there is the greatest chance of any underground gas seeping in along power and gas pipework.
- As a further precaution, we've now agreed with NHS Lothian to make the detectors even more sensitive, just to be sure you're protected against any potential problems. Currently set to go off when CO₂, which occurs naturally in air and can build up in unventilated rooms with several people present, reaches 3,800 parts per million, we're now setting the detectors at 2,000 parts per million. We had been following Health and Safety Executive advice on the trigger levels and have now received more specific guidance from NHS Lothian on this point which we're putting in place at the first opportunity to provide you with as much reassurance as possible.
- This means we will need access to your homes again to change the settings on the detectors, and we are contacting you to make access arrangements for staff to attend to make the changes and would like to thank you for your patience and co-operation.
- If the detector, which will now be more sensitive, does sound, please open your windows and external doors as this gas is quick to clear when rooms are ventilated, and please call the council on 0131 XXX XX11 and our staff will come out to attend your home as soon as possible.
- These staff will have their own separate detectors. They will enter your home and test the levels using these detectors for a period of around an hour. If after an hour, these detectors show the level of CO₂ within your home to be 5,000 parts per million, you will be provided with emergency accommodation.
- It is necessary to wait for an hour and take a number of readings over that period as the level of CO₂ can fluctuate, and this time allows a more accurate estimate of the amount of gas in the air to be taken.
- As the detectors in your service cupboard will now be more sensitive, it is possible they will go off more frequently without that being an indication that high levels of CO₂ are entering your home from underground sources. Council staff are available on a 24 hour basis to support you and come to your home for those important other checks to be made and we are increasing the number of people available to ensure you continue to receive that support.

Timescale and background:

In September 2013, two families reported people becoming unwell in ground floor rooms in two separate properties on the estate.

Midlothian Council began investigations to

- a) Identify the gas encountered by the families and determine any health effects
- b) Assess how the gas had entered the properties involved.
- c) Consider any remedial action to fix this.

Initially, the council moved to test for carbon monoxide and other substances and extensive testing of the heating systems at the initial two, and other adjoining properties, were carried out to establish the nature of the gas.

This first phase of testing ruled out the possibility of a carbon monoxide leak and led to a second phase of detailed work involving the Coal Authority, the industry experts in dealing with former coal mining areas.

The joint work with the Coal Authority confirmed the gas involved as being carbon dioxide (CO₂). The council began monitoring air quality in the estate and this led to a further three sets of tenants being rehoused on a precautionary basis. Midlothian Council took action to protect the health of the residents in the five affected properties at Newbyres Crescent by rehoming them on an emergency basis and will continue to offer this option to residents where necessary.

Air Quality Monitoring and Testing

Following the identification of the gas as carbon dioxide, Midlothian Council appointed the engineering experts, Fairhurst, to act as its independent experts.

On 3 February 2014, the company began a three month period of air quality monitoring. This time period is required to give a true picture of the levels of (CO₂) that may be present.

This air quality monitoring work has involved a number of extensive procedures to establish if the gas was present, and if so, at what levels, so that the council could continue to protect residents.

Every house in the immediate Newbyres Crescent area had its walls drilled from outside for special checks to be made on the cavity space between the house's outer and inner walls.

A smaller number of houses had special data logging equipment installed inside the house, which analyses the content of air in small spaces over a period of time. Midlothian Council will be placing these in each house on a rolling programme also.

What are the risks involved with (CO₂)?

Carbon dioxide (CO₂) is a colourless, odourless, tasteless gas which is heavier than air and so can accumulate in basements and ground floor areas of houses.

CO₂ is toxic in high concentrations due to the fact that it reduces the amount of oxygen in air. Exposure to high levels of CO₂ may reduce oxygen levels in the blood leading to symptoms of illness. Very high exposures can ultimately prove fatal.

Symptoms of CO₂ exposure will start to resolve relatively quickly providing an exposed person is moved away from the source of the gas or from an affected building and into the fresh air.

If the levels of CO₂ are only moderately increased, the symptoms of exposure can be very non-specific, e.g. headache, drowsiness, mild mental confusion, impaired coordination and judgement, giddiness.

Increasing levels may lead on to: weakness, ringing in the ears (tinnitus), tiredness, nausea, diarrhoea, increasing weakness of muscles, difficulty breathing/breathlessness as well as stinging sensations in the eyes, nose and throat.

Higher concentrations still may lead on to more serious symptoms of convulsions and unconsciousness (coma) leading on to death.

The severity of physical symptoms will vary depending on age, general health, level of physical activity, the concentration of CO₂ in the air and how long people are exposed to it for.

People with poor cardiac health (heart failure, high blood pressure, etc.) or poor respiratory health due to illnesses such as asthma, Chronic Obstructive Pulmonary Disease (COPD), chronic bronchitis or any other condition that means they are prone to breathlessness, may experience more severe symptoms if exposed to increased CO₂ (and lowered oxygen levels).

If anyone starts to experience any symptoms they think might be due to CO₂ exposure, they should go outside into the fresh air and see if the symptoms improve. If the symptoms are due to CO₂ exposure, they should start to improve relatively quickly as fresh air is breathed. If symptoms persist then individuals should seek medical advice. Another sign of possible increased CO₂ levels may be abnormal behaviour by pet animals (especially cats or dogs) walking at floor level. Signs of unusual behaviour, especially tiredness, weakness, fitting or unusual drowsiness in normally active pets may be an early sign of problems.

What action can be taken to reduce the concentration of CO₂

CO₂ levels will fluctuate during the day depending on the number of people in the house (human breathing generates CO₂ and activities including cooking etc. Levels are normally higher when people are most active and lower at night time when people are sleeping).

CO₂ concentrations will be minimised if there is adequate normal ventilation in a house. If there is any suspicion that CO₂ levels are increasing, these should reduce quickly if windows and external doors are opened.

Residents are currently advised to ensure that at all times their homes are kept well ventilated, more so than they would do normally, to reduce the risk that CO₂ may build up, especially overnight. This is especially important if anyone sleeps downstairs. If people do sleep at ground level they should not sleep directly on the floor or even on mattresses on a floor at ground level. Mattresses should be on beds above floor level. If using gas appliances for cooking or heating (including gas fires and gas boilers) these will generate CO₂ themselves, so adequate ventilation of the house is even more important. A sign that CO₂ levels are increasing may be that gas appliance pilot lights stop working, that lighters or matches do not ignite or that gas appliances will not light at all or burn more poorly than normal. This could be an indication that the indoor air is low in oxygen due to excess CO₂.

It would therefore be advisable for residents always to keep a window open in the kitchen while cooking using a gas appliance to reduce the chance of CO₂ building up. If a gas fire is used as heating, adequate ventilation of downstairs rooms should be ensured and downstairs indoor room doors left open to prevent CO₂ build up.

Is there anything else I could be doing?

While our recent monitoring shows there is no evidence or indication of a build up of CO₂ gas, and therefore no requirement for anyone to move out, you may find it worthwhile to consider taking some steps just in case fast action is needed and you are asked to leave your home for a time.

Do you or anyone in your house take medication on a regular basis?

It may be worth packing a small bag with items such as medication, or important documents and keeping that safe somewhere. While we can normally get access to homes we've had to vacate temporarily afterwards, that may not be as fast as you or we would like and it may be better to prepare for this possibility in advance.

Will Midlothian Council continue to re-home anyone where increased levels of CO₂ are identified?

We have acted quickly to re-home residents where our monitoring arrangements highlighted a potential risk.

We remain ready to re-house residents if that is required.

Will Midlothian Council cover the costs if I need to be re-homed?

Midlothian Council will cover reasonable costs incurred and will arrange alternative accommodation for you in that event.

Is carbon dioxide combustible?

No carbon dioxide is not combustible; it would actually work to put out a fire.

What are the long term options?

We are currently investigating technical solutions that will allow the vacated homes to be returned to use. It is too early to be able to give a timescale for this but we will share information with residents as soon as we can as we understand how upsetting uncertainty can be.

What should I do if I have any queries?

If you have any health concerns, please do call your GP and make them aware of the situation regards elevated CO₂ levels. We're working with local health practices who have all been given information on the ongoing situation.

Appendix 10: Housing relocation priority matrix

An early piece of work for the Care for People Group was the gathering of household composition information which led to the development of this matrix to assist relocation process. All partners were involved in the development of this and ensured that the prioritisation matrix was adhered to during implementation.

The matrix centred on three key strands (A-C) for which points were awarded. The greater the number of points awarded, the higher the priority to re-house the residents. These aspects were:

- A Newbyres Crescent and Gore Avenue resident – an automatic award of 300 points; which resulted in all Newbyres residents being placed at the top of the housing list. All households in the development, including households who have already been decanted in the original five houses, were awarded 300 additional points which in effect placed them at the top of housing lists in Midlothian, ensuring that they are given higher priority compared to other applicants. These additional points applied to attaining council houses in all areas in Midlothian and not just lets in the Gorebridge area as a number of tenants had expressed a preference to move out with Gorebridge.
- B
 - (i) Households most at risk of carbon dioxide exposure – Up to 300 points, depending on the specific circumstances.
 - (ii) An additional priority consideration was whether radon was detected at a risk level.

The properties in Newbyres Crescent and Gore Avenue at highest risk of elevated CO₂ levels, had already been decanted. However, some remaining properties had been identified as having higher levels than others and some houses were located in close proximity to the decanted houses. Consequently, the council prioritised the households in properties which were at risk of higher levels of carbon dioxide by providing additional points for these households. Households were awarded additional points in the following circumstances:

- Households in a property identified as having a “moderate risk” of carbon dioxide through cavity wall monitoring.
 - Households with high carbon dioxide readings from their fitted detection alarms, verified by the officer in attendance.
 - Households where a monitor had recorded high levels of carbon dioxide.
- C Medical need or household circumstances exacerbated by carbon dioxide exposure – up to 100 points.

Households were informed of this method of allocating properties through home visits from Midlothian Council's customer and housing services and environmental health staff, who provided a leaflet with advice about the process. In addition to the accumulated points, information was gathered from each household on their preferred relocation venue. They then received additional points notification via a letter. Householders could discuss their level of priority with staff at the site office in Gore Avenue or via the council's housing service allocations team if they required further clarification.

A significant challenge for the group was managing the dilemma between residents' choices and the need to ensure that all residents were moved as quickly as possible to ensure the protection of human health. Where carbon dioxide was identified at elevated levels and was considered an immediate threat to health, residents were

placed in temporary accommodation until a permanent relocation of choice was identified.

There were a number of available options for rehousing, including:

- Council housing
- Housing association accommodation
- Private let
- Open market purchases
- Option to return to a new build property

The council agreed that to offset any financial detriment households should be entitled to assistance in the form of one payment of either a Home Loss Allowance or Disturbance Allowance.

In practice Strand A of the prioritisation scheme gave all affected Newbyres Crescent and Gore Avenue residents the highest priority to help them get rehoused. Approximately half of residents stated wished to remain in Gorebridge, but a significant number were interested in being rehoused elsewhere in Midlothian.

Households may have had specific reasons why they wished to remain in Gorebridge. Some wanted their children to stay at the local primary school, others had work or medical requirements best met there. These factors were considered to make sure that housing offers when making housing offers were reasonable and met household needs.

Appendix 11: The different phases of ground gas monitoring within the properties

Monitoring Phase	Date of Monitoring	Properties Monitored	Location of Monitoring	Equipment Used	Purpose
Coal Authority	October 2013	87/89 Newbyres Crescent	Borehole, general atmosphere, under floor, service entry point and wall cavity	Coal Authority gas monitoring equipment	Initial investigations
Fairhurst Wall Cavity Monitoring	Round 1 10-12 February 2014 Round 2 12-14 March 2014	All ground floor properties (excluding those assisted living properties on Gore Avenue and the Newbyres Village Care Home)	Borehole, and wall cavity	GFM 435	Having identified elevated CO ₂ levels in two properties initial analysis to determine if other properties may be affected by mines gas
Fairhurst internal Monitoring (Phase 1) Cycle 1	25 February 2014 to 20 March 2014	4, 6, 8, 20a, 30, 85, 87 Newbyres Crescent	Internal, service entry cupboard	Gas Clam	Monitoring for range of gases including methane, carbon dioxide, VOC, hydrogen sulphide, carbon monoxide, oxygen and atmospheric pressure
Fairhurst Internal Monitoring (Phase 1) Cycle 2	7 April 2014 to 30 April 2014	2, 10, 12, 22a, 26, 28, 32, 79, 85, 91 Newbyres Crescent	Internal, service entry cupboard	Gas Clam	
Fairhurst Internal Monitoring (Phase 1) Cycle 3	2 May 2014 to 29 May 2014	14a, 34, 67, 69, 71, 73, 75, 77, 81a, 83 Newbyres Crescent	Internal, service entry cupboard	Gas Clam	
Fairhurst Internal Monitoring (Phase 1) Cycle 4	29 May 2014 to 24 June 2014	7a, 9a, 11a, 11b, 13a Gore Avenue and 16a, 18a, 24, 101a and 101b Newbyres Crescent	Internal, service entry cupboard	Gas Clam	
Fairhurst Internal Monitoring (Phase 1) Cycle 5	27 June 2014 to 24 July 2014	10, 10a, 12a, 14, 14a, 16, 16a, 18, 18a and Newbyres Village Care	Internal, service entry cupboard Linen cupboard in care home	Gas Clam	

		Home			
Fairhurst External Monitoring Phase 1b	10 February 2014 to 24 July 2014	Rear garden area of 87 Newbyres Crescent	Borehole in rear garden area of 87 Newbyres Crescent	GFM 435	To determine gas flow and concentrations from the boreholes
Midlothian Council Internal Alarms	7 April 2014 - last property decanted 1 September 2015.	All properties	Internal, service entry cupboard	Duomo CO ₂ Monitor & Controller Alarm	Alarm set to sound at 2000ppm CO ₂
SEPA Internal and External Gas Monitoring and Sampling	5 May 2014	87 and 89 Newbyres Crescent and from a borehole to the rear of 87	87 and 89 Newbyres Crescent and from a borehole to the rear of 87	GA-5000	Gas sampling to determine if gas from mines gas source
Fairhurst Internal Monitoring (Phase 2)	16 September 2014 to 27 January 2015	8, 12, 14a, 20a, 28, 32, 77 Newbyres Crescent and 10a and 12a Gore Avenue	Ground floor living area at floor level	EVM 7	Once CO ₂ confirmed as gas of concern this CO ₂ monitor with a lower detection threshold was deployed
		12a Gore Avenue	Rear bedroom	Blue Line S4610-ST	Recording atmospheric pressure
Fairhurst Internal Monitoring (Phase 3)	27 January 2015 to 16 June 2015	10, 71, 79, 83, 91 Newbyres Crescent, 14 and 18 Gore Avenue and Newbyres Village Care Home	Ground floor living area at floor level Store room (Area 5, Cupboard 144) At floor level	EVM 7	Once CO ₂ confirmed as gas of concern this CO ₂ monitor with a lower detection threshold was deployed
		12a Gore Avenue	Rear bedroom	Blue Line S4610-ST	Recording atmospheric pressure

Appendix 12: Update to residents of Newbyres Crescent, 29 May 2014

This bulletin is to update you on the latest developments in connection with our ongoing investigation and response to issues with carbon dioxide gas.

We are continuing to share as much information as possible with you and to support you through this unsettling time.

I would also advise that last week's data results (8th May to 15th May) have continued to show no evidence of elevated levels of CO₂ or other gases in the tested properties, which are fitted with the logging equipment, which has been the case for 3 weeks now. That air quality surveillance is continuing as planned.

We have staff available on a 24 hour basis to respond to any call and we would encourage you to call **0131 XXX XXXX** immediately in the event that your CO₂ detector alarm goes off.

We have been working with public health experts to ensure that the correct steps are being taken to protect your health in this ongoing situation, and we have previously advised you on this at the start of April.

There are national rules in place in Scotland which set out how different organisations like the NHS, Councils, the Scottish Government, agencies such as the Scottish Environmental Protection Agency and others should work together to assess a potential risk to public health and identify and take the steps to reduce the risk or remove it altogether, in this case at Newbyres Crescent.

Under these rules, it is standard practice for a group of experts known as an Incident Management Team (IMT) to be pulled together, with the membership of that group drawn from the agencies above, under the chairmanship of a public health expert from NHS Lothian.

This structure ensures that safeguarding public health is the most important factor and the independence of the Incident Management Team and the NHS leadership ensures that the correct solutions for your health are identified and introduced.

As we have previously confirmed, the council is working with experts to ensure we are doing the right thing in this situation and an Incident Management Team is in place to manage the response. This Incident Management Team has met on a number of occasions and will continue to meet until the problem is fully resolved.

As a precaution, the Incident Management Team has asked us to test all of the homes for radon gas – including the homes that have been vacated temporarily – to provide a higher level of reassurance that there are no other gases potentially involved in possible escapes into homes in Newbyres Crescent and Gore Avenue.

This is purely as a precaution and Gorebridge is not seen as an area where there is a high possibility of radon gas being present. Over the next few days you may see specialist experts entering the sealed homes to conduct these tests, and we will also be testing your property.

You will have received letters about this testing process separately. The procedures and process behind an Incident Management Team is explained in a Council paper which has been supplied with this bulletin. The Incident Management Team has now given us permission to share this paper with you. This report was presented to elected members on 20th May and was approved, with one change to the final recommendations listed at the end

of the paper. This is that the Council will now encourage the Incident Management Team and the Scottish Government to consider recommending an independent inquiry or investigation into the causes behind and the Council's response to this situation.

I have previously advised you that your homes were built without the use of a protective gas membrane under the foundations and the Council has been advised by our independent experts that it is not possible to guard with certainty against the recurrence of ground gas coming to the surface without that kind of defence.

Work is continuing to establish the possible engineering options which would allow this new protection to be provided. The options will be summarised and presented to the full Council, which is all 18 elected members, at a special meeting in June. The Incident Management Team is the body with the final say on what option is put in place and it will have to approve the decision made by the Council.

Whatever option is chosen to address your exposure to potentially harmful gases such as carbon dioxide, substantial engineering work will be required and that we will need to plan for you to leave your home for an expected minimum period of three months. Midlothian Council and NHS Lothian will plan this together, using the expertise of the Care for People group and the Joint Health Improvement Partnership. This will be planned in such a way that children are able to attend school and other residents who require care or support from the Council continue to do so from a suitable, alternative domestic environment.

We appreciate how unsettling this is and we will visit you again to give you specific details on when you will be provided with alternative housing but felt it was better to let you know about this now rather than wait any longer.

Although the details on the timescales and other details are unclear at present, I want to reassure you that the Council and other agencies have already begun the planning needed in terms of preparing to try and minimise the disruption to your lives this will involve. As soon as the final option is chosen, this preparation will accelerate and we will keep you informed at all times.

Residents' FAQs

Will the Council cover the costs when I am re-homed?

The Council will cover reasonable costs incurred and will arrange alternative accommodation for you. You will be visited by a housing officer who will ask you to fill in an application form. You will be asked what your preference is in terms of type of accommodation – other council accommodation, private rental or housing association property.

We regret not being able to provide further information on the likely timescales but will give you this information as soon as it is available.

Will I have a choice about where we go?

Yes, we will provide a number of options. But it will not be safe for you to stay in your homes while the substantial engineering work involved, irrespective of the final option chosen, is underway and so you cannot stay in your current home.

Why can't you say when this will happen?

There are a number of engineering solutions currently being considered and the right choice has to be made to ensure that the final choice delivers protection for you and your home for its expected life over the next 60 years. We regret not being able to provide you with as much information as we would like but as soon as this information is available, it will be provided to you.

I've got children at school. I don't want to take them away from their friends.

We will work with you to find alternative accommodation which allows you to keep your children in school and minimise the disruption for you and your family.

What will happen to all my things?

Houses will be secured and all furniture and fittings are either moved to your new temporary accommodation or stored depending on your views. The Council will cover all removal and storage costs.

Who sorts out things like mail redirection?

Royal Mail and other companies which provide subscriptions such as Sky will not deal with the Council but instead deal with you direct. We will reimburse costs for those changes you have to make.

We've spent money on redecorating our home. Will the work damage it, and who pays if it does?

At this stage it is not clear which option will be recommended for the Council to implement by the Incident Management Team and so it is not possible to confirm whether or not your internal decorations will be affected, although the engineering work involved will be substantial in any of the options under consideration. The Council's insurers will consider any claims for damage of this nature.

We have freezers and fridges full of food – does the electric get cut off?

Moving out for work to take place is a planned exercise and we will work with you to ensure that we are as prepared as possible when the move takes place. This means you will have notice and be able to plan ahead, including running down food supplies if you chose. All services will be cut or capped for safety reasons when the large-scale engineering work goes ahead.

If these houses are so dangerous that this work is needed, why aren't we being rehomed right now?

The expert advice we've received is that you can remain in your homes with the protection and reassurance provided by the CO₂ monitors and the 24 hour emergency cover provided by the Council should the alarms go off. If the alarm does go off, please open your windows and external doors as this gas is quick to clear when rooms are ventilated, and please call the council on **0131 XXX XXXX** and our staff will come out to attend your home as soon as possible.

These staff will have their own separate detectors. They will enter your home and test the levels using these detectors for a period of around an hour. If after an hour, these detectors show on average that the level of CO₂ within the living areas of your home is over 1,000 parts per million, you will be provided with emergency accommodation.

It is necessary to wait for an hour and take a number of readings over that period as the level of CO₂ can fluctuate, and this time allows a more accurate estimate of the amount of gas in the air to be taken.

Council staff are available on a 24 hour basis to support you and come to your home for those important other checks to be made and we are increasing the number of people available to ensure you continue to receive that support.

What are the risks involved with Carbon Dioxide?

Carbon dioxide (CO₂) is a colourless, odourless, tasteless gas which is heavier than air and so can accumulate in basements and ground floor areas of houses.

CO₂ is toxic in high concentrations due to the fact that it reduces the amount of oxygen in air. Exposure to high levels of CO₂ may reduce oxygen levels in the blood leading to symptoms of illness. Very high exposures can ultimately prove fatal.

Symptoms of CO₂ exposure will start to resolve relatively quickly providing an exposed person is moved away from the source of the gas or from an affected building and into the fresh air.

If the levels of CO₂ are only moderately increased, the symptoms of exposure can be very non-specific, e.g. headache, drowsiness, mild mental confusion, impaired coordination and judgement, giddiness.

Increasing levels may lead on to: weakness, ringing in the ears (tinnitus), tiredness, nausea, diarrhoea, increasing weakness of muscles, difficulty breathing/breathlessness as well as stinging sensations in the eyes, nose and throat.

Higher concentrations still may lead on to more serious symptoms of convulsions and unconsciousness (coma) leading on to death.

The severity of physical symptoms will vary depending on age, general health, level of physical activity, the concentration of CO₂ in the air and how long people are exposed to it for.

People with poor cardiac health (heart failure, high blood pressure, etc.) or poor respiratory health due to illnesses such as asthma, Chronic Obstructive Pulmonary Disease (COPD), chronic bronchitis or any other condition that means they are prone to breathlessness, may experience more severe symptoms if exposed to increased CO₂ (and lowered oxygen levels).

If anyone starts to experience any symptoms they think might be due to CO₂ exposure, they should go outside into the fresh air and see if the symptoms improve. If the symptoms are due to CO₂ exposure, they should start to improve relatively quickly as fresh air is breathed. If symptoms persist then individuals should seek medical advice. Another sign of possible increased CO₂ levels may be abnormal behaviour by pet animals (especially cats or dogs) walking at floor level. Signs of unusual behaviour, especially tiredness, weakness, fitting or unusual drowsiness in normally active pets may be an early sign of problems.

What action can be taken to reduce the concentration of CO₂

CO₂ levels will fluctuate during the day depending on the number of people in the house (human breathing generates CO₂ and activities including cooking etc. Levels are normally higher when people are most active and lower at night time when people are sleeping.

CO₂ concentrations will be minimised if there is adequate normal ventilation in a house. If there is any suspicion that CO₂ levels are increasing, these should reduce quickly if windows and external doors are opened.

Residents are currently advised to ensure that **at all times** their homes are kept well ventilated, more so than they would do normally, to reduce the risk that CO₂ may build up, especially overnight. This is especially important if anyone sleeps downstairs. If people do sleep at ground level they should not sleep directly on the floor or even on mattresses on a floor at ground level. Mattresses should be on beds above floor level. If using gas appliances for cooking or heating (including gas fires and gas boilers) these will generate CO₂ themselves, so adequate ventilation of the house is even more important. A sign that CO₂ levels are increasing may be that gas appliance pilot lights stop working, that lighters or matches do not ignite or that gas appliances will not light at all or burn more poorly than normal. This could be an indication that the indoor air is low in oxygen due to excess CO₂.

It would therefore be advisable for residents always to keep a window open in the kitchen while cooking using a gas appliance to reduce the chance of CO₂ building up. If a gas fire is used as heating, adequate ventilation of downstairs rooms should be ensured and downstairs indoor room doors left open to prevent CO₂ build up.

Is there anything else I could be doing?

While our recent monitoring shows there is no evidence or indication of a build up of CO₂ gas, and therefore no requirement for anyone to move out, you may find it worthwhile to consider taking some steps just in case fast action is needed and you are asked to leave your home for a time. Do you or anyone in your house take medication on a regular basis?

It may be worth packing a small bag with items such as medication, or important documents and keeping that safe somewhere. While we can normally get access to homes we have had to vacate temporarily afterwards, that may not be as fast as you or we would like and it may be better to prepare for this possibility in advance.

Appendix 13: Criteria for option appraisal of potential solutions

i) Criterion		Assessment			
		Zero	Low	Medium	High
Public Health utility of the solution	Probability of guaranteed interruption of Source-Pathway-Receptor linkage				
	Risk of solution breakdown and recurrence of Source-Pathway-Receptor linkage				
	Probability of requirements for ongoing monitoring of: a) CO ₂ gas levels b) Population health				
Strength of evidence for effectiveness of the solution	Strength of evidence-base on effectiveness of the proposed solution: e.g. • Peer reviewed / published scientific trials = high • Recognised expert opinion = medium • Commercial opinion = low • None = zero				
Technical or management dependency of solution	Level of dependency on ongoing support to monitor the integrity of the solution (e.g. equipment / hardware, people, requirement for ongoing maintenance, technical complexity etc.)				
Timescale	The probability that the solution could be completed within a reasonably rapid timescale, ideally within a year or preferably less, to reduce the chronic stress associated with living in an area subject to an ongoing hazard and investigation.				
ii) Criterion		Costs			
Economic Factors	Total estimated cost of actual solution over total lifetime – <u>excluding</u> replacement / modification costs (capital spend)				
	Total estimated costs of actual solution over total lifetime – <u>including</u> replacement / modification costs (capital spend)				
	Total costs of any ongoing maintenance, equipment replacement, monitoring systems, etc. (current spend)				
iii) Other items					

Appendix 14: The Role of the Local Authority in Contaminated Land Assessment

SECTION 1

Section 1 is a paraphrase of first part of Annex 1 in the relevant Statutory Guidance

Whilst Consultants/ Developers have the option to choose what risk assessment (e.g. CIRIA, NHBC, etc) to use or prevention measures to adopt, the Scottish Executive/ Government has set out in the Statutory Guidance how their policy on Contaminated Land/ Gas issues should be dealt with in that any land for development should be “suitable for use” (Environmental Protection Act 1990: Part IIA Contaminated Land Statutory Guidance: Edition 2 Paper SE/2006/44 May 2006)

<http://www.gov.scot/Publications/2006/06/05131212/0>

“Suitable for use” is defined in Environmental Protection Act 1990: Part IIA Contaminated Land Statutory Guidance: Edition 2,

Annex 1 – A Statement of Scottish Executive Policy.

This focuses on the risk associated with land contamination and recognises that risks will vary greatly according to the use of the land and a wide range of other factors such as the underlying geology of the site. Risks therefore need to be assessed on a site-by-site basis.

The “suitable for use” approach then consists of three elements: -

- (a) **Ensuring that land is suitable for its current use** – Part IIA process
- (b) **Ensuring that land is made suitable for any new use, as planning permission is given for that new use** - in other words, on the basis of the proposed future use and circumstances, assessing the potential risks from contamination, before official permission is given for the development and, where necessary to avoid unacceptable risks to human health and the environment, remediating the land before the new use commences; this is the role of the town and country planning and building control regimes; and
- (c) **Limiting requirements for remediation to the work necessary to prevent unacceptable risks to human health or the environment in relation to the current use or future use of the land for which planning permission is being sought.**

Therefore, for any site where a potential risk has been identified there is a process by which the site investigation/ risk assessments have to be supplied to Planning/ Building Standards to show that the land is suitable for the proposed use. The site investigations/ risk assessments are generally reviewed by Contaminated Land Officers (CLO) or similar within local authorities to show that they comply with current best practice in their scope, detail and competency. Generally (but not exclusively) these CLO sit within Environmental Health units of local authorities.

SECTION 2.

Review processes

Some LAs (including Midlothian) contract out the review process to recognised industry experts through procurement processes/ framework agreement.

This external peer review procedure Midlothian (and others) adopt for these reviews is detailed below: -

Desk Study/ SI info provided to Env Health having been submitted to either Planning/ Building Standards as part of an application
Information passed to external reviewer (ER)
Acceptance or comments of recommendations by Env Health/ ER
Review passed to Planning/ BS then onto applicant
Comments responded to by Applicant
Forwarded to Env Health/ ER for assessment [this step of seeking and receiving further information may be repeated on a number of occasions]
Once all points satisfied – Planning Permission or Building Warrant granted
Works undertaken and validation/ verification provided to Env Health/ ER for assessment
Acceptance or comments by Env Health/ ER [may be repeated steps as above]
Comments provided to resolve issues by applicant forwarded to Env Health/ ER
All points satisfied – Conditions purified or completion certificate issued

SECTION 3

Interaction with Other Regimes

(Annex 1 [as above] – Paras 39-44)

The following section is copied from the Annex.

Paragraph 41

In relation to planning decisions, land contamination may be regarded as a “material consideration” when individual planning applications are considered as part of the statutory development control process. When determining a planning application the planning authority should satisfy itself that the potential for contamination has been properly assessed by the applicant, and the proposed development incorporates any necessary remediation.

Planning Advice Note 33 (PAN 33) states that the planning authority must consider (often following expert advice) whether a developer’s restoration plan is adequate to avoid unacceptable risks to human health and the wider environment from the contamination on the site, both during the restoration period and for the final end use. If it is not adequate then there are grounds for refusal. Where necessary, any planning permission should include conditions requiring that remediation measures are implemented before commencement of any new use. Under the “suitable for use” approach, risks should be assessed, and remediation requirements set, on the basis of the proposed new use. It is also the responsibility of the planning authority to consider the potential risk of development works, and/or a proposed use, contaminating a site or the surrounding area. (This is in contrast to the approach under Part IIA, where only the current use and circumstances are considered.)

Paragraph 43

In addition to the planning system, the *Building (Scotland) Act 2003* and *Building (Procedure) (Scotland) Regulations 2004* may require measures to be taken to protect the fabric of new buildings, and their future occupants, from the effects of contamination. Under this legislation the Scottish Government have produced Technical Handbook – Domestic in which Standard 3.0 Environment sets out Mandatory Standard 3.1 – Site preparation – Harmful and Dangerous Substances says –

Standard 3.1

Every building must be designed and constructed in such a way that there will not be a threat to the building or the health of people in or around the building due to the presence of harmful or dangerous substances.

Limitation:

This standard does not apply to the removal of unsuitable material, including turf, vegetable matter, wood, roots and topsoil on the site of a building (other than a dwelling) intended to have a life not exceeding the period specified in regulation 6.

Para 44

In any case where new development is taking place, it will be the responsibility of the developer to ensure the required and necessary remediation is carried out. In many cases, the enforcement of any remediation requirements will be through compliance with planning conditions and building control requirements, rather than through a remediation notice issued under Part IIA.

DRAFT

FINANCE AND RESOURCES COMMITTEE

Minutes of the meeting of the Finance and Resources Committee held at 9:30am on Wednesday 20 September 2017 in Meeting Room 7, Waverley Gate, 2-4 Waterloo Place, Edinburgh, EH1 3EG.

Present: Mr M. Hill, Non-Executive Board Member (Chair); Ms K Blair Non-Executive Board Member; Mr P. Murray, Non-Executive Board Member; Ms L. Williams, Non-Executive Board Member (teleconference); Mr B. Houston, Board Chairman; Mr T Davison, Board Chief Executive (from 10.25am until 12noon); Mrs S. Goldsmith, Director of Finance and Miss T. Gillies, Medical Director (until 12noon).

In Attendance Mr C. Marriott, Deputy Director of Finance; Ms J. Campbell, Chief Officer, Acute Services; Mr J. Crombie, Deputy Chief Executive; Mr C. Stirling, Site Director – WGH (until 10.15am); Mr I. Graham, Director of Capital Planning and Projects; Mr G Curley, Director of Operations – Facilities (from 10.15am); Mr C Briggs (Deputising for Professor A. McMahon); Mr A. Payne, Corporate Governance Manager; Ms L. Friedman, Management Trainee and Mr C. Graham, Secretariat Manager (Minutes).

Apologies for absence were received from Professor A McMahon.

Declaration of Financial and Non-Financial Interest

The Chair invited members to declare any financial and non-financial interests they had in the items of business for consideration, identifying the relevant agenda item and the nature of their interest. No such declarations were made.

The Chair informed the Committee that there would be a slight amendment to the agenda running order. The Cancer Centre Enabling Prioritisation paper would now be taken immediately following the minutes, running action note and matters arising. This would then be followed by the report on the Prioritisation Process for Capital Investment.

19 Minutes from Previous Meeting (12 July 2017)

19.1 The minutes from the meeting held on 12 July 2017 were approved as a correct record.

20 Running Action Note

20.1 The Running Action note was received. It was noted that there had been an administrative oversight in the some of the columns had not been completed; this would be addressed for the next Committee meeting.

CG/AP

21 Matters Arising

21.1 Action Plan from Members' Workshop Finance & Resources Workplan - Mrs Goldsmith reported that there would shortly be a Finance Department away day to look at the workplan. The work plan would be brought back to F&R and would cover January 2018 to March 2019. There would be a challenge around the business case as there was currently no indication of what future capital would look like. It was also noted that the sustainability and value work was still to be bottomed out

21.1.1 Mr Goldsmith agreed to bring the proposition around the workplan to the November 2017 F&R Meeting and that she and the Chair would discuss this out with the meeting.

SG/MH

21.1.2 Mr Hill added highlighted discussion on assurance held at the Board Chair's Committee meeting and raised the concern that with some of the F&R reports there is usually an assurance recommendation level; however the evidence behind this is less visible.

21.2 Clinical Information System Critical Care NHS Lothian Initial Agreement – The Chair stated that there was still a requirement to set a date for when the Committee could expect to see this item coming back. There was discussion on the timetabling of business cases and the need to close the action note loop.

21.3 Nurse Rota – Ms Campbell confirmed that the agreed update would come to the November F&R Meeting.

JCam

22.1 Cancer Centre Enabling Prioritisation

22.1.1 Mr Stirling updated the Committee on the progress of the Cancer Centre Enabling Project and confirmed that the Cancer Enabling projects being considered by the Cancer services team for prioritisation against an the indicative budget of £10m included:

- Improved HEI Compliant Inpatients Wards;
- Expanded Day Systemic Anti Cancer Treatment (SACT) Service; and
- New fit-for-purpose Oncology Assessment Area
- Linear Accelerator provision.

22.1.2 Mrs Goldsmith explained that there was a balance to be struck, the aspiration being to eventually develop a new Cancer Centre for the Lothians and South East Scotland at the WGH site with a 2025-2030 timescale. There had been dialogue with the Scottish Government for some time now, with the strategic assessment being submitted last Christmas. It was unlikely that such extent of capital would be guaranteed in the future as there were conflicting priorities for the Government such as transport infrastructure. The hope would be that the Government would be supportive and additional resource over the £10M would be forthcoming.

- 22.1.3 Mr Crombie stated that there was a need for assurance and it should be made explicitly clear that the £10M would not sort all of the problems at the Cancer Centre nor would it deliver a state of the art centre. Non Executives who had visited the centre would have seen the compromised facility. It should be clear to the Committee that the funding would offer improvements but would not deliver a facility which would be rated as exemplary from a HEI point of view. Mr Stirling added that the current centre environment did have a negative effect on staff recruitment.
- 22.1.4 Mrs Goldsmith stated that when investing an amount such as £10M, time needed to be taken up front to sort out any issues before the contract is signed. The Chair added that this did not have to be rushed and it was noted that the funding could not be spent this financial year.
- 22.1.5 There was discussion on charitable trust contributions and additional capital from the Scottish Government. The Committee recognised that this was a hugely complex and challenging project which would require the decanting and moving around of various services. There was also consideration of the ongoing regional planning developments.
- 22.1.6 Mrs Goldsmith confirmed that if the Committee were supportive of the approach to use the £10M to address the current priorities, a more formal future proposal around a Cancer Centre for the Lothians and South East Scotland could be considered. The work on the Initial Agreement and representations to the Scottish Government would continue.
- 22.1.7 The Chair stated the going back to previous discussion on papers and the work of the Committee around assurance; rather than just noting the paper, the Committee needed to seek assurance that ongoing work will deliver what was required.
- 22.1.8 The Committee agreed to progression of the prioritisation work and the proposal to delegate authority of approval of the prioritised options for the enabling programme to Mrs Goldsmith.

Chris Stirling left the meeting at 10.15am

22.2 Prioritisation Process for Capital Investment

- 22.2.1 Mr Briggs outlined the formal prioritisation process through which all NHS Lothian's capital investment decisions would now be taken as requested by the Committee in January 2017.
- 22.2.2 Mr Briggs reported that there had been discussions on the new process with the Health and Social Care Partnerships (HSCPs), Integration Joint Boards (IJBs), Corporate Functions and Royal Edinburgh Hospital tea. The starting point for discussions had been the Scottish Capital Investment Manual (SCIM) guidance on prioritising capital projects. It was important that a joined up single prioritised list could be developed amongst the four HSCPs.

- 22.2.3 There was discussion on the prioritisation criteria, scoring and strategic fit. Mr Briggs stated that this new approach was a move from a subjective to an objective process. Mr Murray expressed concern that from an IJB perspective any potential projects would struggle to survive the strategic fit test as currently described as this was acute focussed. Mr Briggs explained that the context in which this process works needed to be reflected and that a prioritisation process was needed as there was not enough capital.
- 22.2.4 The Committee also considered the regional challenges due to scarce capital and how a single regional capital list could be achieved and prioritised.
- 22.2.5 Mrs Goldsmith stated that there had to be a layered pragmatic approach to prioritisation. It was noted that it was not normal to receive all funding for projects at once and that a prioritisation approach allowed for better management of a complex programme as sometimes there can be slippage opportunities to pull in projects such as primary care projects which did tend to be smaller scale.
- 22.2.6 The Committee recognised that the paper had not yet been considered by all IJBs and that more discussion was needed around reflecting the strategic change to shifting the balance of care. Consideration also needs to be given to eHealth and IT involvement.
- 22.2.7 The Committee approved the prioritisation process and recommended that this new process be adopted by the Lothian Capital Investment Group and Senior Management teams in Acute, Health & Social Care Partnerships, Royal Edinburgh and Associated Services and across the corporate infrastructure. The Committee also asked that there be further consideration given to measurables and that the IJB concerns around acute bias in relation to capital requirements be further explored along with IJBs influence on capital spend.

AMcM

Mr Briggs left the meeting at 11am

23 Revenue

23.1 Review of Financial Plan 2017/18

- 23.1.1 Mrs Goldsmith introduced the paper setting out the elements of agreement of the 2017/18 plan and how the areas of investment aligned to extant corporate objectives and the risks contained within the Boards Risk Register at the time of the Plan sign-off. This approach had been agreed at the July 2017 F&R Committee. Mrs Goldsmith explained that this work was linked to the corporate risk register and corporate objectives with a view to driving financial sustainability and value.
- 23.1.2 The Committee also discussed any learning points for the 2018/19 planning process. It was noted that the Regional Health and Social Care Delivery plan would be a specific feature for the 2018/19 plan.
- 23.1.3 The Chair stated that this was a good report as this was a difficult thing to map out. The process would also help with forward looking programmes. The Committee discussed the options around providing the Board with assurance around the achievement of financial balance. It was appreciated that for this process to be helpful moving forward then choice being made against risks involved had to be more explicit.

23.2 M5 and Q1 Review

- 23.2.1 Mr Marriot reported that the Month 5 position was showing £6M over the year to date. The Committee noted the drivers around this included Junior Doctors, Nursing, GP Prescribing and anticipated primary care rebate and legacy LRP.
- 23.2.2 The Committee noted that Month 5 showed no real surprises and the financial recovery plans identified in table 2 were acknowledged.
- 23.2.3 In relation to the Quarter 1 Review, Mr Marriott reported that the forecast position was of a £22M deficit which would hopefully reduce to £4.5M at year end. The current figure for Quarter 1 was £9M. Additional areas of flexibility were being explored.
- 23.2.4 The Committee considered the implications for Integration Joint Boards (IJBs) and Business Areas. Mr Marriott stated that on the back of the Committee's approval, IJBs would be contacted and reminded of their financial responsibilities.
- 23.2.5 The Committee also discussed the risks as outlined in appendix 5, these included delayed discharges, waiting times and winter (flu) impact. It was noted that in Month 5 there were no risks above those already known.
- 23.2.6 Mr Davison asked how the deficit would manifest in the IJB accounts. Mrs Goldsmith confirmed that the answer to this was not yet known and that Scott Moncrieff had been commissioned to look at this issue.
- 23.2.7 Mr Davison used the example of overspend in prescribing and added that for the Committee to take a strategic view, any IJB overspending should cover that gap and any carry forward should go towards balancing books. Last year NHS Lothian was disadvantaged covering IJB deficits. The Committee accepted that there needed to be a view taken on what the approach to this will be.
- 23.2.8 Mrs Goldsmith stated that she hoped to bring back the outcome of the Scott Moncrieff work back to the next meeting and that this would be a main agenda item along with the outcome of the midyear review.

SG/CM

- 23.2.9 The Committee acknowledged that ongoing actions are being progressed to reduce the predicted in year deficit in order to achieve a year-end balanced position; however it was accepted that only limited assurance could be given of the achievement of breakeven at this time.

23.3 Initial Draft - 18/19 Financial Plan

23.3.1 Mrs Goldsmith introduced the report providing the Committee with an overview of the draft Financial Outlook for the next five years, and specifically the Financial Plan for 18/19. Mrs Goldsmith reported that this was the very early financial plan for 2018/19. It was noted that in previous years the first draft would be submitted in November with the refined plan coming through between January and March. The numbers do not change much in this period and this was a top down approach with little input from business units.

23.3.2 The paper set out an initial assessment of the financial position based on the current forecast outturn, anticipated growth and assumptions around additional resources. Mrs Goldsmith highlighted the recurring 4% gap and that some reserves had been built up again and these were sitting separately as a contingency. The Committee noted that the gap tended to be higher than other boards but that this was a general reflection of NHS Lothian's NRAC position.

23.3.3 Mr Marriott updated the Committee on the current IJBS position. The finance team were working closely with the IJBs Chief Financial Officers to understand the 5 year plan. Correspondence would be sent to the IJBs outlining the expected financial uplift. This would help the IJBs with the budget setting models. There would be a paper brought to the November F&R meeting providing further details and refinements.

SG/CM

23.3.4 There was discussion on the development of the financial outlook with the IJBs; the longer term strategy for private sector use; acute medicines policy; demand and capacity. The Committee noted that none of these developments address the significant financial gap and that this was being further exacerbated by Scottish Government work on set aside budgets and transferring these formally to the IJBs.

23.3.5 Mr Davison outlined the developing difficulties from a regional point of view and the need for further investment in the Board's Quality Management System to continue to drive out waste and variation.

23.3.6 Mrs Goldsmith explained that this was an iterative process, at the start of the year it was not known how break even would be achieved and that a lot of work is undertaken within different funding streams; balance sheet treatment and local focus on non recurring savings in order to achieve the break even position. There was discussion on the best language to use to best frame the year start deficit position.

23.3.7 Mr Crombie stated that the proposed letters to IJBs and all business units was a positive step however there needed to be a link between the allocation letter and performance and to not have this would be a mistake.

Mr Davison and Miss Gillies left the meeting at 12noon.

23.3.8 The Committee noted that even if financial balance was achieved, over the next couple years NHS Lothian would still not be in a position of sustainability and the provision of best service for the funds available links back to the strategic plan.

23.3.9 The Committee acknowledged that, based on information currently available, NHS Lothian is not able to provide any assurance on its ability to deliver a balanced financial position over the next 5 years. Further reports would come back to the Committee and potentially a future Board Development Session.

SG

23.3.10 The Committee also agreed to support the request for the IJBs to prepare 3-5 year Strategic Plans to support future financial sustainability, based on the financial outlook for the four IJBs and confirmed that the indicative budget offers to IJBs for 18/19 should be made based on current planning assumptions.

23.3.11 The Committee agreed that it was able to take a lot of assurance from the explained process of analysis but could take no assurance that this would meet the required outcomes.

24 Capital

24.1 Royal Infirmary of Edinburgh Cladding

24.1.1 Mr Curley provided the Committee with an update on progress and actions taken to date following on from the previous papers provided. The report focussed on NHS Lothian's ability to maintain and sustain protected zones when subjected to fire and in light of the Grenfell Tower fire in London.

24.1.2 Mr Curley explained the multiagency reviews had been undertaken as part of mitigation measures and to ensure maintained clinical activity. Both Consort and the Fire Service were content that the RIE was safe and fit for purpose; however there may be some further tests and potential for remedial measures. The expected timescale for completing the review would be 3-6 weeks. Options for addressing the known issue will be available in the next few months.

24.1.3 The Chair thanked Mr Curley for the update and asked about potential cost implications if cladding had to be replaced. Mr Crombie confirmed that there would be a liability for Consort; however NHS Lothian may also have to contribute.

24.1.4 The Committee welcomed how Mr Curley and his team had managed this situation and recognised the large amount of work that had been undertaken in a short timescale.

24.1.5 The Committee agreed to continue to support the direction of travel and the strategy around managing ongoing surveys, precautionary investigations and measures being undertaken to mitigate the potential risk.

24.1.6 The Committee were content to accept the proposed Moderate Assurance level in relation to building safety, whilst acknowledging that the Board awaits further assurance from professional experts on all aspects of fire safety.

24.1.7 The Committee also recognised that the cladding issue at the RIE is now recorded within NHS Lothian's corporate risk register until the totality of the risk is known and fully understood.

Mr Curley left the meeting at 12.15pm

24.2 Property and Asset Management Investment Programme 2017/18

24.2.1 Mr I Graham spoke to the circulated paper and highlighted the following points of interest:

- **PAMS 2017** - To note the preliminary feedback from Scottish Government /Health Facilities Scotland to the Board's PAMS submission approved by the Committee had been very positive. They wish to use as an exemplar in their dialogue with other Boards.
- **REH Phase 1** - All patient moves now completed and in occupation. Feedback received has been positive. A visit for Board Members would be arranged. Phase 2 and business case including further dialogue on revenue consequences for IJBs would come to the next F&R meeting.

IG

- **East Lothian Community Hospital** – The Committee noted that the topping out ceremony had taken place in the last week.
- **Herdmanflat and Hopetoun Unit** – dialogue around collaborative working continues.
- **RHSC** - Following a significant period of due diligence and contract negotiation, which had been delayed due to two late applications by Marchmont and Sciennes Development Trust, the contract for the sale of the premises had now been concluded. The purchaser will meet a 10% deposit on completion of their title due diligence but otherwise will be responsible for all Town Planning applications etc. The full purchase price will be paid upon vacant possession after site decommissioning by NHS Lothian. An appropriate period for the reprovision has been allowed for in the contract.
- **Bangour Village Hospital** – A preferred bidder had been identified. Legal negotiations are ongoing.
- **Royal Victoria Hospital** – A number of interested parties including the City Council, a more detailed paper would come to a future F&R meeting.
- **Astley Ainslie Hospital** - Due to long lead times in Town Planning matters and in anticipation of the business case for REH phase 2 and 3 progressing, work has commenced in relation to site sale. Preliminary selection of advisers is underway and initial engagement with community interest groups has commenced. The work has identified some 400 staff, across a number of services that will require reprovision in addition to the clinical services moving to REH.
- **Ward 20 at St John's Hospital** – Work is now completed and operational.

24.2.2 The Committee congratulated Mr I Graham and colleagues on the success of the Board's PAMS submission. The Committee also welcomed the progression with the RHSC sale.

24.2.3 The Committee noted the progress to date against the agreed 2017/18 investment programme and agreed the additional investments proposed following the Quarter 1 review.

24.2.4 The Committee accepted the Moderate Assurance level recommended against the programme delivery in year. Mr I Graham stated that controls were in place and variance is being reported through this paper and the Business Case Monitor. Mr I Graham hoped to refine the statement around assurance levels as the report develops.

24.3 RHSC/DCN – Completion Issues

- 24.3.1 Mrs Goldsmith advised the Committee of two key issues surrounding the new facility which it had been felt could not be accepted and this had led to dispute resolution. A mediated solution had also been attempted with the IHSL, equity funders and construction company. The Committee acknowledged that undertaking resolution works could delay the programme delivery until February 2018. Mrs Goldsmith would circulate further information in confidence to the Committee and would bring back regular updates as appropriate.

SG

25 For Information

25.1 Property & Asset Management Investment Programme 2017/18: Capital Business Case Monitor

- 25.1.1 Noted as part of the assurance process.

26 Any Other Competent Business

26.1 East Craigs Surgery, Edinburgh – Premises Issues

- 26.1.1 Mr I Graham gave an overview of the current issues relating to the East Craigs Surgery.

- 26.1.2 The Committee noted that the practice had terminated its contract and recruitment of an alternative practice is underway in the normal manner. The Health and Social Care Partnership has confirmed that there remained a need for premises for the replacement practice in the immediate area. A site search by NHS Lothian (and partners) had failed to identify a suitable alternative. Long term, nearby housing developments will add to pressure in the area but may also unlock opportunities for a new surgery premises.

- 26.1.3 Mr I Graham added that dialogue with the remaining partners in the practice had been ongoing for the last few months and a resolution to the property matters, where the existing partnership owns the premises, reached stalemate due to different aspirations and valuations. A provisional agreement at a total transaction value, including property, fees and fixtures of £900,000 was reached with two of the remaining Partners on 15 September. This is “subject to business case” and their own Partners approvals. All Property Transaction Handbook requirements will need to be met.

- 26.1.4 Mr Crombie stated that it was disappointing that notification of this issue had come so late given the Board’s recent work around vulnerable practices.

- 26.1.5 The Committee agreed that this item should come back to the November meeting. The position was noted and it was also recognised that electronic action may be required ahead of the next meeting, in which case the Chair and Mrs Goldsmith were delegated to take forward the completion of the purchase of the property at £900,000 as a “total transaction value”.

SG/MH

27 Date of Next Meeting

27.1 The next meeting of the Finance and Resources Committee would take place at **9.30** on **Wednesday 15 November 2017** in **Meeting Room 7**, Fifth Floor, Waverley Gate.

27.2 2018 meeting dates:

23 January 2018 (Tuesday)
23 May 2018
19 September 2018

21 March 2018
25 July 2018
21 November 2018

DRAFT

FINANCE AND RESOURCES COMMITTEE

Minutes of the meeting of the Finance and Resources Committee held at 9:30am on Wednesday 15 November 2017 in Meeting Room 8&9, Waverley Gate, 2-4 Waterloo Place, Edinburgh, EH1 3EG.

Present: Mr M. Hill, Non-Executive Board Member (Chair), Mr P. Murray, Non-Executive Board Member (until 11:45am), Cllr R Henderson, Non-Executive Board Member, Mr A. McCann, Non-Executive Board Member, Ms L. Williams, Non-Executive Board Member (teleconference), Mrs S. Goldsmith, Director of Finance and Miss T. Gillies, Medical Director.

In Attendance: Mr C. Marriott, Deputy Director of Finance, Ms J. Campbell, Chief Officer, Acute Services, Mr J. Crombie, Deputy Chief Executive, Mr C. Stirling, Site Director – WGH (Item 31.4), Miss F. Ireland, Assistant Director - Nursing Workforce & Business Support (Item 30), Mr I. Graham, Director of Capital Planning and Projects, Mr G. Curley, Director of Operations – Facilities (Item 31.5), Mr A. Milne, Project Director Hub Major Initiatives – REH (Item 31.1), Ms L. Cullen, Senior Communications Officer, Mr A. Payne, Head of Corporate Governance and Mr C. Graham, Secretariat Manager (Minutes).

Apologies for absence were received from Mr B. Houston, Mr T. Davison, Professor A McMahon, Ms K Blair, Professor M White and Professor Alison McCallum.

Declaration of Financial and Non-Financial Interest

The Chair invited members to declare any financial and non-financial interests they had in the items of business for consideration, identifying the relevant agenda item and the nature of their interest. No such declarations were made. The responsibilities for those who were IJB Chairs were noted.

28 Minutes from Previous Meeting (20 September 2017)

- 28.1 The minutes from the meeting held on 20 September 2017 were approved as a correct record.

29 Matters Arising

- 29.1 Running Action Note - The Running Action note was agreed. Mr Payne stated that the intention was to ensure that issues are dealt with between meetings in the same way as Audit and Risk Committee; items can then be completed and removed from the running action note promptly.

- 29.1.1 Meetings between the Chair of F&RC and the corresponding Lead Member from each of the four IJBs - The Chair reported that a meeting had been scheduled for 3 November 2017 and then cancelled in light of the progress that had been made on financial planning. The Director of Finance would consider the need for a meeting of the chairs at a later date.

- 29.1.2 Mrs Goldsmith stated that in terms of the financial plan and distribution of resources there were matters for the Board which she would be keen to discuss at the F&R Committee first. Mrs Goldsmith confirmed that the IJB Chief Finance Officers were part of Mr Marriott's finance meetings and involved with planning.
- 29.1.3 The Committee discussed the recent Midlothian workshop, where there had been dialogue on finance. Mr Murray stated that he had found the informal discussion on some of the financial issues to have been helpful.
- 29.1.4 The Chair suggested that further discussion be taken offline and that there was a need to keep close to the issues raised. There would be further discussion with those appropriate outwith the meeting and whatever comes out would feed into the policy approach to budget setting.
- 29.2 Finance & Resources Committee Workplan - The Chair reminded members that the workplan should take stock of what matters were relevant to its remit and what the Committee should be considering throughout the year.
- 29.2.1 Mrs Goldsmith pointed out that the work plan was still currently in development and that this was a first attempt to map out what was required in order to cover the Committee's Terms of Reference and Annual Planning Cycle. It would need to be explicit in relation to sustainability and improvement work as part of the Committee's lead role in providing assurance to the Board. This was the same situation with Capital which was fluid at the moment so not possible to map out precise timetables given the uncertainty around funding flow. There were also other areas that the Committee had responsibility for e.g. Payment Verification and System Procurement.
- 29.2.2 Miss Gillies stated that Payment Verification related to the Quality and Outcomes Framework (QOF) which was now phased out and better focus would be on enhanced service payments and understanding assurances around that. There was discussion on changing the section to 'New GP Contract Issues Arising' and it was noted that this should relate to all Primary Care Payments, not just GPs.
- 29.2.3 The Chair stated that the Committee's focus previously tended to be skewed towards Capital matters and was now rebalancing to give greater attention to financial planning and wider financial robustness. There was a need to re-frame the scope and role of the committee accordingly. The workplan needed to be kept maintained on a continuous basis and link in with the Lothian Capital Investment Group and finance colleagues. It would also inform the formal review at the time of drafting the annual report for the Audit and Risk Committee.
- 29.2.4 The Committee approved the layout and approach moving forward with the workplan, with consideration to the comments raised above.

30 Revenue

30.1 Impact of e-Rostering Implementation

- 30.1.1 Miss Ireland informed the Committee that the paper set out the impact of eRostering on the visibility of staffing utilisation and efficiency; it also outlined the progress made from the initial business case to where the project was at now. The business case had been founded on having the right staff in the right place at the right time, although there had been no cash sum put against the project at the start.
- 30.1.2 Miss Ireland stated that the Committee could take significant assurance that there were gains coming from the system, including data access, matrix measuring, highlighting of improved practices and identification of bad practice. Moving forward there would be more focus on why additional duty hours were being used and making sure staff were delivering their contracted hours.
- 30.1.3 Mr Murray commented that whilst the detail in the paper was welcome and very relevant, there would normally be the expectation that with such an investment there would be a summary of benefit and value-added.
- 30.1.4 There was discussion on performance measures and focus on cost savings moving forward. It was noted that more than seven thousand people were now on the eRostering system and that areas that were using staff more effectively were being highlighted. The Chair added that there were legitimate Knowledge and Performance Indicators (KPIs) around the system associated with performance and cost.
- 30.1.5 Miss Ireland made the point that there had been a 37% reduction in agency spend in Lothian, well ahead of the reduction in national spend. Mr Murray questioned if there was a way to make this saving directly attributable to eRostering. Miss Ireland replied that eRostering was part of a range of solutions to staffing issues so could not be solely attributed to the reduction, generic recruitment was also part of this.
- 30.1.6 Mrs Goldsmith explained that the principle in the Strategic Financial Paper was to look at agreeing a matrix for measurement which was able to link cause and effect in an organisation as large as NHS Lothian.
- 30.1.7 Mr Crombie added that there was also a link to the level of education and support that is required to implement e-rostering successfully. The aspiration for eRostering had been to have one off training for everyone using the system, but there had been additional expenditure in returning to update people on how to use eRostering.
- 30.1.8 Ms Campbell reported that the eRostering project had changed from its original intent. Now data was available it was time to review the original KPIs and consider their relevance and how these may be adjusted based on the roll out and where we currently were. It was noted that there was a sub project at the RIE looking at the use of real time eRostering using handheld devices.
- 30.1.9 Miss Ireland stated that the current KPIs were being adopted and some wards were delivering against these. Areas that were achieving the KPIs could look to bring new ones in; however there was still work ongoing in areas that were not complying with the first set of KPIs.

- 30.1.10 Mr Marriott commended Miss Ireland's and Ms Campbell's teams for the success of eRostering. It was noted that the National eRostering tool roll out was currently stalled so NHS Lothian would be the first Board in Scotland to have all its nurses on the eRostering system.
- 30.1.11 Mr McCann noted that the system was only for nurses at the moment and questioned if a wider deployment of the roll out could be achieved quicker if the implementation team was grown. Miss Ireland confirmed that the initial funding was for a 2 year roll out to nurses only. An additional year had then been added to go back and revisit wards as training support for the 2 rosters after implementation. It was still hoped that the current team would meet the 2019 deadline but there had been recent changes in the team.
- 30.1.12 The Chair clarified Mr McCann's point that from a business case perspective it may be better to load more at the front end to achieve a greater return on the investment sooner.
- 30.1.13 There was discussion on bank and agency spend and how analytics could be used to drill into staff behaviours e.g. were sickness levels higher in the summer months or when there was a major sporting event or concert. Miss Ireland stated that there was access to that type of data. The system does identify when a staff member goes off sick when they may have had the request for leave turned down.
- 30.1.14 There was also discussion on staff delivering their full hours. Miss Ireland confirmed that the intention was for staff to gather up minutes into a 6 hour shift which could be used for mandatory education.
- 30.1.15 The Chair confirmed that there needed to be discussion around legitimate KPIs including cost savings; whether an accelerated roll out would be of financial benefit and if any analysis being done can be linked to organisational behaviour.
- 30.1.16 The committee agreed to accept significant assurance that eRostering:**
- **was enabling operational staff to have access to better quality and timely management information to assist with the management of their rosters.**
 - **offers system controls to ensure that all hours are accounted for.**
 - **has identified opportunities for cost avoidance through identifying anomalies in the rostering practices around working patterns for long days.**
 - **provides management with systematic assurance as to whether the rosters are compliant with the European Working Time Regulations.**
- 30.1.17 The Committee also agreed to the addition of a formal evaluation towards the end of the eRostering roll out.

30.2 Financial Accounting and Budgetary Implications of Integration Joint Boards

- 30.2.1 Mr Marriott reported on the ongoing work to establish the impact of the four IJB outturn positions on the financial results of NHS Lothian.
- 30.2.2 There was discussion on the treatment of IJB accounts and the work between NHS Lothian, the IJB Chief Financial Officers (CFOs) and external auditors. It was noted that for the 2016/17 position £6.2M had been allocated to help all 4 IJBs breakeven. Mr Marriott pointed out that Edinburgh IJB had established a social care funding reserve and confirmed that if an IJB sets up a reserve then NHS Lothian receives 50% of this. If accounts are set up with a negative investment reserve with a deficit, then this sits on the NHS Lothian balance sheet.
- 30.2.3 There was also discussion on the arrangements if an IJB overspends. Normally health would look take remedial action; the CFOs would seek IJB approval. Options would include using any underspend in any other arm of the IJB or to use the health component to offset the social care component, this would require all three partners to agree to that position (IJB, Council and Health Board). Another option would be to utilise any reserve. The Committee noted that other board areas had the option within their Integration Schemes to overspend, however this was not the case in Lothian.
- 30.2.4 Mr Marriott confirmed that collectively there was a £9M overspend year end position for all 4 IJBs. The paper had been written to try and make options to address this as explicit as possible. Mr Marriott would look to pull together options for the midyear review.
- 30.2.5 The Chair asked Mr Marriott to confirm the extent of current discussions with the CFOs and what he thought their position was. Mr Marriott stated that there had been open discussions with the CFOs and there was a need to go through each of the integration schemes with individual IJBs.
- 30.2.6 Mr Murray reported on a recent meeting with other IJB Chairs, Vice Chairs and the Scottish Government. There had been discussion on IJB direction, decision making, use of legislative scope and budget setting. The Committee considered the administrative nuances that still needed to be sorted out with the IJBs and their partners and the areas that the IJBs should have greater involvement with moving forward, e.g. community care and supported accommodation. It was recognised that there needed to be greater support for transformational change in relation to the IJBs.
- 30.2.7 The Committee agreed to endorse the interpretation of the IJB integration schemes for dealing with projected financial overspends and acknowledged the financial options available to NHS Lothian to meet IJB projected financial overspends.**

30.3 2017/18 Financial Position and 2018/19 Financial Outlook

- 30.3.1 Mr Marriott introduced the report providing an overview of the financial position at period 6 and an updated year end forecast. The Committee noted that the paper also set out the assessment of the 2018/19 financial position based on the current forecast outturn, anticipated growth and assumptions around additional resources.
- 30.3.2 Mr Marriott identified the current risks around GP prescribing and efficiency and productivity against the in year end forecast. Work was still ongoing to deliver a break even position. Limited assurance was being provided for a 2017/18 break even position. Mrs Goldsmith reported that she had recently met with the Scottish Government and discussed the Pharmaceutical Pricing Regulations Scheme funding.
- 30.3.3 The Committee discussed the long standing pressure issues around Junior Doctors including budget, spend, establishment – both current and budgeted and impact on rotas. Ms Campbell stated that work with the Medical Director and the undergraduate and postgraduate fellows and teams to increase direct clinical care was underway.
- 30.3.4 There was also discussion on the risk appetite of the Board in determining what saving programmes may look like. Mr Crombie stated that teams were now at the point of running out of ideas unless we are going to have radical change. The Chair suggested that since the size of the challenge was known, it may be appropriate to revisit the risk appetite. If difficult issues were identified earlier there would be more time to engage and de-sensitise delivery further down the line.
- 30.3.5 Mr Marriott moved on to cover the 2018/19 position. There was discussion on robust review and scenario planning. Given the potential span of assumptions the deficit position for next year could range from £1.5M to £42M. The NRAC contribution was currently unclear.
- 30.3.6 Mr Murray referred back to Audit Scotland's NHS in Scotland 2016 report, in particular the guidance around scenario planning which looked at consequences of scenario planning and impact on service delivery. The Chair added that this was an excellent point and considering the numbers in isolation of impact was not helpful. Mr Crombie stated that it would be worthwhile looking at how this could be applied internally and take a review on that basis. It was agreed that the Audit Scotland report should be circulated.
- 30.3.7 The Committee discussed implications for financial scenarios, e.g. the impact on the expenditure growth of medicines. It was not clear if there had ever been a review of the strategic management of medicines and it was suggested that a similar strategic management study as the one done in theatres could be undertaken.
- 30.3.8 Mrs Goldsmith stated that there were still huge questions around this from the Medicines Pharmacists that undertake the forward look. There were a number of strands of work including the £2M investment in primary care prescribing, quality approach clusters and acute medicines contract changes.

30.3.9 The Committee agreed that for the next meeting a proposal around a strategic review of medicines management needed be presented. This should also link into the sustainability and value work being undertaken by Lorna Seville.

SG

30.3.10 The Committee noted the current financial position and that the Month 6 year end forecast indicated overspend of £4.9m and that options to achieve yearend balance would be explored as part of the Mid Year Review.

30.3.11 The Committee agreed to accept limited assurance in relation to the achievement of a year-end balanced position whilst acknowledging ongoing actions being progressed to reduce the deficit.

30.3.12 The Committee also accepted that no assurance could be provided on the ability to deliver a balanced financial position in 2018/19 at this current time with the information available.

30.4 Updating the IJB Budget and Cost Allocation Model

30.4.1 Mr McCreadie introduced the paper which provided an update around the proposal to change the allocation of budget and costs to each IJB within Lothian using a refined allocation model.

30.4.2 There was discussion on the current arrangements in place to model and allocate NHS Lothian budgets and costs to each IJB; the proposed changes to modelling and allocating of budget and costs to more fairly reflect the resources delegated to and utilised by each IJB and the next steps required in order to ensure these arrangements can be progressed timeously.

30.4.3 Mr McCreadie stated that the intention would be to use NRAC and continue to deploy this model across the 4 IJBs; there would be allocation of the totality to IJBs based on this principle.

30.4.4 The Committee noted that whilst the IJB CFOs had been supportive of the principle of looking at budget and attributing costs, caution had to be taken to minimise turbulence for the IJBs. Transitional arrangements would also need to be considered along with management arrangements for budgets, how we might allocate and change budgets in future, strategic planning, operational arrangements and timing of reporting to make it as useful as possible.

30.4.5 Mr McCann asked how the CFOs and IJBs had reacted in relation to perceived "Turbulence". Mr McCreadie stated that there had been differential levels of enthusiasm. There needed to be clearer understanding on the use of services and data. There was a lot of anxiety around the financial challenges at moment. All CFOs and IJBs acknowledge the principle, the budgetary recognition around fair shares and the purity of applying NRAC.

30.4.6 There was discussion on the need for sophisticated financial systems to allow the allocating of patient costs. Mr McCreadie commented that the area of the set aside element will use improved information and that the hosted services are beginning to understand how to apply costs across 4 IJBs and gain more confidence in set aside areas, it was hoped to have as simple a methodology as possible. Mrs Goldsmith added that this approach strengthens the link between operational management and strategic planning and gives each IJB their fair share of resource.

30.4.7 The Committee recognised that this proposal and underlying principle would need to be taken to the IJBs over the next few months for agreement.

30.4.8 The Committee Agreed the principle to explore the modification of the budget setting model based on an NRAC share and endorsed the proposal to utilise patient level data as a means to ascribe costs to IJBs based on the utilisation of services within their patient population.

30.5 Strategic Financial Management – Future Approach

30.5.1 Mrs Goldsmith provided an update on the draft Financial Outlook for the next five years along with a revised approach to delivering financial sustainability over this timeframe. The Committee noted that the development of the strategy was based on analytical work and the framework was set out in the paper.

30.5.2 Mrs Goldsmith reported on the next steps which would require clear identification of the building blocks for the delivery of financial recovery as well as consideration of the mechanisms for delivery and oversight of the underpinning change work:

- Designing an approach to the development of Sustainability and Value (S&V) plans at a business unit level; including the potential establishment of a star chamber approach;
- Continued mapping of existing change projects into the S&V plan, and to the opportunities identified through variance analysis, as well as the opportunities supported nationally, and those reported in the literature
- Continued mapping of the existing (and planned) management and governance structures of all change programmes/projects in NHS Lothian and agree routine reporting arrangements
- Embedding a 'Return on Investment' evaluation into all change programmes/projects; confirm reporting arrangements to Lothian's S&V Group;
- Developing a process for prioritisation of investment in change projects, linking to the RoI evaluation and the corporate objectives, to underpin the allocation of supporting resource;

30.5.3 There was discussion on reducing the cost of medicines output; reinvestment in change; scenarios where other committees look to F&R for assurance; what the board can deliver and delivery of financial recovery and improvement. The Committee noted that the Board could not deliver 4-6% savings year on year on its own and would need to work in partnerships with others e.g. IJBs and at regional level.

30.5.4 Mrs Goldsmith further reported that the paper described financial recovery; one key element of this was the need to be much more robust about the matrix and using data to hold business units to account through performance review. It was noted that a suite of

tools would be provided with the expectation that business units use these to help in setting out delivery for next year and beyond. This was about embedding improvement as part of the financial strategy.

30.5.5 The Committee discussed the separating out of financials; role of the strategic planning committee; quality improvement; scenario planning; risk appetite and the differences between management and governance. Mrs Goldsmith stated that often service managers and clinicians found it difficult to deliver change.

30.5.6 There was also discussion on timescales. The Committee noted the need for a close relationship between the Chief Executive and the Scottish Government.

30.5.7 Mr McCann added that there may be potential in referring to the Getting It Right First Time (GIRFT) Programme which was helping to improve the quality of care within the NHS by reducing unwarranted variations, bringing efficiencies and improving patient outcomes.

30.5.8 Mrs Goldsmith thanked the Committee for providing feedback.

31 Capital

31.1 Royal Edinburgh Hospital

31.1.1 Mr Milne gave an update on the current status of Phase 2 and Phase 3 of the Royal Edinburgh Campus Masterplan development, the work required to inform an Outline Business Case (OBC) and the proposed timescales.

31.1.2 The Committee noted that there were two issues affecting progress at the moment,:

- **final bed modelling** - resolution going back to IJBs to confirm
- **funding** – Mackinnon House unable to be revenue funded as it is a listed building. Scottish Government to come back with a way of revising cash flow and looking at reprofiling capital expenditure.

31.1.3 These issues were reflected in the paper and forecasts were based on what the risks may be.

31.1.4 Mr Milne reported that planning on Phase 3 was running concurrently with phase2, which was at an advanced design stage. Good progress was being made with Phase 3 with work being done on the IJBs care models and looking at community versus hospital. The project request was going through the hub route and had been designed to split business case approvals. It was noted that the agreed service models had been to the programme board and Corporate Management Team.

31.1.5 The proposed timescale was to have the reports back to the programme board in January, then onto Governance in March. Any redesign would be undertaken in March/April 2018 and then option appraisals would come back to the Finance and Resources Committee.

- 31.1.6 There was discussion on the costs of delay and the factoring in of the key risks around patient services. It was noted that the prelim amounts were high. Mr Milne stated that these were an estimate under the hub agreement and that they had been flagged as a risk at the moment but may come down.
- 31.1.7 In terms of delay, Mr Milne added that the correspondence from Scottish Government and the bed modelling OCT had come at the same time. The Funding and Clinical Model was estimated to take 3 months with the appropriate approvals taking another 3 months. Giving 6 months total delay. It was noted that Phase 2 was priority at the moment.
- 31.1.8 Cllr Henderson stated that there had been meetings in the last couple of years with Headway based on Astley Ainslie Hospital site. Headway was a third sector organisation providing support to head injury patients and their carers. The organisation undertook good work and took referrals from NHS Lothian and health and social care services. At the moment there appeared to be no plans for them to move in phase 2 or phase 3 of the project. They now needed to find alternative premises. This would be a great loss and went against the service delivery in the community approach that was being sought. Cllr Henderson asked if consideration would be given to reprovision or accommodation for Headway.
- 31.1.9 Mr Milne stated that there had been a meeting with Headway and it was correct that there was no provision of specific space for headway. It was planned to have third sector space but not specifically for one organisation. The Chair added that there appeared to be an opportunity for the IJB to input. There was an appropriateness of conversation for this committee and there was a proper process for discussion to make sure everything was properly considered.
- 31.1.10 Mrs Goldsmith stated that engagement for the next phase would provide the IJB the opportunity to set direction of travel and the model included third sector contribution.
- 31.1.11 Mr Crombie agreed to meet out with the meeting with Mr Milne and Cllr Henderson to clarify the situation.**
- 31.1.12 The Committee agree to the proposed delay (approx 6 months) to delivery of the OBC for Phase 2, to allow further engagement with Integration Joint Boards (IJBs) on service models. The Committee also agreed to accept the recommended significant assurance level that work was underway to agree IJB service requirements and funding model for Phase 3; and the next steps and timescales to allow Phase 2 and Phase 3 to progress to OBC with anticipated Phase 2 OBC Submission to the Committee in March 2018.**

31.2 Standard Business Case for the Purchase of Property for East Craigs Surgery

- 31.2.1 Mrs Goldsmith introduced the paper seeking to gain the Committee's approval for the East Craigs Medical Practice Standard Business Case and approval for executive management to proceed with the purchase of the East Craigs Medical Practice premises.

- 31.2.2 The Committee noted that the Board found itself in a difficult position with a practice which only had 2 out of 6 partners remaining and potential for the practice to dissolve at the end of November. Of the 6 partners 3 had now retired and had requested their equity share back out from the practice. The remaining partners were not in a position to reimburse this as there were other loans against the property. This left a dissolving practice with over 8000 patients, with premises owned by retired landlords and 2 GPs not wishing to own practice premises.
- 31.2.3 Mrs Goldsmith added that the IJB had committed to the need for this practice given the growing population in this area and need for potential additional provision. There was no other suitable accommodation available. This had resulted in 2 options, either to lease or purchase the building. The proposal was to purchase the building despite concern for setting a precedent. The MPV was marginally better to purchase and extend the building in future if appropriate.
- 31.2.4 There was discussion on to what extent this approach could set a precedent for other practices. Mr McCann stated that having read the GMS document there was potential to see this situation more often.
- 31.2.5 Mrs Goldsmith stated that the Corporate Management Team had agreed to have separation of all commercial property matters through the Board and set out a protocol for dealing with commercial property matters.
- 31.2.6 The Committee agreed to Approve the proposed purchase of the East Craigs Medical Practice premises.**
- 31.3 Sale of Hopetoun Unit/ Herdmanflat Hospital to East Lothian Council
- 31.3.1 Mrs Goldsmith introduced the report which considered the potential options for the sale of the Hopetoun/Herdmanflat site.
- 31.3.2 The Committee noted that Herdmanflat Hospital in Haddington, which incorporated the Hopetoun Unit, will become surplus to requirements no later than April 2020, when the new East Lothian Community Hospital is fully operational.
- 31.3.3 The Board had planned to market the Hopetoun element for sale, but had put this on hold pending discussion with East Lothian Council (ELC) and the Health and Social Care Partnership (HSCP) regarding the potential for use of the site for delivery of ELC/HSCP strategic objectives. It was noted that whilst the NHS Lothian assessment of value was greater than the ELC officer, there was provision for such a sale in the NHS Scotland Property Transactions Handbook.
- 31.3.4 Mr I Graham added that this could constitute a model that can be applied elsewhere in Lothian and across Scotland. For example, Royal Victoria and Liberton sites both offer the opportunity to work in partnership with HSCTs and local authority to deliver joint objectives using a model that follows the basic principles that will be established here.
- 31.3.5 The Chair stated this should not be treated as a precedent as the Board should keep its options open. Mr McCann questioned if, from an IJB perspective, consideration could be given to the use of buildings deemed not suitable for residential purposes.

31.3.6 The Committee, whilst recognising that approval was not required, agreed to endorse the option, proposed by LCIG, to accept in principle the offer from East Lothian Council (ELC) to purchase the entire site for the sum of £2.4 million. The Committee were assured that the disposal would be delivered in compliance with the terms of the NHS Scotland Property Transactions Handbook and agreed with Scottish Government. The Committee requested that a condition of sale be added, namely to ensure that provision is made for supported accommodation for older people on site.

31.4 Oncology Enabling Projects

31.4.1 Mr Stirling gave an update on progress made since July 2016. It was noted that this report was an addendum to the Oncology Bridging Projects Initial Agreement that was supported by the Committee in July 2016 and followed on from the update at the September 2017 meeting.

31.4.2 The Committee noted the progress made in developing plans against a potential £10m capital investment; the preferred way forward following a review of the capital proposals supported by the Committee; the impact of the £11m charitable donation received by NHS Lothian for upgrading the Haematology estate and the indicative timescales and route map for delivering a full new Edinburgh Cancer Centre (ECC) by 2030 at the earliest.

31.4.3 Mrs Goldsmith stated that there was a desire as part of the next stage to take something to the Board to flag the enabling work to maintain services given the current poor condition of the building. Once this work and funds were identified and initial agreement was in place she would bring the matter back to F&R then to Board.

31.4.4 The Committee agreed to approve the development of the four projects contained within the reviewed Bridging Project proposal, now known as the Oncology Enabling Projects.

31.4.5 The Committee also approved submission of the £15.2M proposal to the Scottish Government Capital Investment Group.

31.5 Backlog Maintenance Update

31.5.1 Mr Curley provided the Committee with an update on the backlog maintenance programme (BLM). Mr Curley stated that the paper provided the opportunity to outline things requiring clarity, including assurance that the BLM figure was not underestimated, noting that this did not include design fees, VAT, decant or solutions for clinical services. If these metrics are applied the number jumps from £54M to £210M. The Scottish Government ambition was to resolve BLM by 2020. At the moment only Limited Assurance could be given to achieving this. There was significant assurance of achieving the £54M target.

31.5.2 Mr Curley stated that NHS Lothian performed better than all Scottish Boards and had started to address BLM earlier. There was a concern around visibility with 60% of acute estate sitting within the private sector. As part of a wider view from the Board in terms of risk and how they are managed, it was proposed that the Facilities directorate set up a multi-disciplinary group (including finance) to identify options for funding, which would allow the Board to increase the level of funding to be deployed to attend to the risks arising from backlog maintenance. Facilities would also seek guidance on the governance arrangements of this group.

31.5.3 The Committee agreed to support the current programme of works proposed for this financial year and to support the proposal that the Facilities directorate set up a multi-disciplinary group as described.

31.5.4 The Committee also agreed to take significant assurance that Management have calculated the BLM in line with NHS Scotland's requirements and BLM remained a priority for Facilities and that high priority items are being undertaken within the funding currently allocated. This aligns with the Board's commitment to prioritise patient safety in particular.

31.5.5 Furthermore the Committee agreed to accept limited assurance that the Board can achieve an adequate reduction in the high and significant risks within BLM with the current level of funding by 2020 (the Scottish Government's objective).

31.6 Leases for Primary Care Premises

31.6.1 Mrs Goldsmith introduced the paper seeking the Committee's support for the plan to sustain accommodation occupied by the Bellevue Medical Practices. The Chair asked what the cost could be in a worst case scenario. Mrs Goldsmith stated that this had not yet been worked out. The Committee noted that Bellevue was an example, once again, where the Board were in the position of having no choice but take over the lease as described. This was likely to be in line with the national direction of travel.

31.6.2 A significant piece of work was required and would be brought back to the Committee.

SG

31.6.3 The Committee supported in principle the proposal for NHS Lothian to take over the whole lease for the building

31.7 Property and Asset Management Investment Programme

31.7.1 Mr I Graham updated the Committee on the current status of Property and Asset Management Investment Programme. Mr I Graham reported that a number of primary care projects were now nearing completion and the issues relating to Blackburn Partnership Centre were being addressed.

31.7.2 With regards to the Sick Kids & DCN project, the Committee noted that dialogue continued with IHSL and their supply chain regarding the completion of the construction, in particular compliance and programme matters. The formal reports from the Board's Independent Experts have now been conveyed under cover of legal advice to IHSL.

31.7.3 It was agreed that appendix 1 should be updated to reflect projects that had funding agreed and were committed and to bring back an update on business case monitors.

IG

31.7.4 The Committee noted the progress made against the agreed 2017/18 investment programme and agreed to take moderate assurance around the programme delivery in year.

32 Any Other Competent Business

32.1 None.

33 Date of Next Meeting

33.1 The next meeting of the Finance and Resources Committee would take place at 9.30 on **Tuesday 23 January 2018** in Meeting Room 8&9, Fifth Floor, Waverley Gate.

Please note January Meeting is on a Tuesday

33.2 2018 meeting dates:

23 January 2018 (Tuesday)	21 March 2018
23 May 2018	25 July 2018
19 September 2018	21 November 2018

STAFF GOVERNANCE COMMITTEE

Minutes of a Meeting of the Staff Governance Committee held at 9:30am on Wednesday 25 October 2017 in Meeting Room 6&7, Fifth Floor, Waverley Gate, 2-4 Waterloo Place, Edinburgh.

Present:

Mrs A Mitchell (Chair); Mr A Joyce; Cllr D Milligan; Ms H Fitzgerald; Mr S McLaughlin; Mrs J Butler; Miss T Gillies and Professor A McMahon.

In Attendance:

Ms J Campbell (Chief Operating Officer); Mr J Crombie (Deputy Chief Executive); Mrs R Kelly (Associate Director of HR); Ms A Langsley (Interim Head of Corporate Education & Employee Development) (Item 28.4); Ms S Sloan (Lead Practitioner Clinical Leadership) (Item 31); Ms S Russell (Staff Governance Associate Scottish Government) (Item 27); Mr Alan Payne (Corporate Governance Manager, NHS Lothian) and Mr C Graham (Board Secretariat).

Apologies for Absence were received from Professor T Humphrey; Cllr J McGinty; Mr I Wilson and Mr B Houston.

Declaration of Financial and Non-Financial Interest

The Chair reminded members that they should declare any financial and non-financial interests they had in the items of business for consideration, identifying the relevant agenda item and the nature of their interest. There were no declarations of interest.

The Chair welcomed Cllr Derek Milligan to his first meeting as member and thanked Mr John Oates for his contribution to the work of the Committee in his time as member.

25. Minutes of the Previous Meeting

- 25.1 The Minutes and Action Note of the Staff Governance Committee Meeting held on 26 July 2017 were approved as a correct record.

26. Matters Arising

- 26.1 The Chair reported that most of the items on the Action Note had now been addressed or were to be dealt with on the agenda.

- 26.2 In relation to the Health and Safety update it was noted that the Minutes of the last two Health and Safety Committee meetings would be circulated to Staff Governance Committee members after today's meeting.

CG

- 26.3 Miss Gillies gave an update on the recent GMC visit to NHS Lothian. This had been a very positive visit and no requirements or recommendations had been made for the Royal Hospital for Sick Children. Miss Gillies would bring a paper back to the Committee once the final reports were available.

TG

27. Assurance and Scrutiny

27.1 Staff Governance Monitoring Framework

The Chair welcomed Mrs Susan Russell, Staff Governance Associate at the Scottish Government to the meeting.

- 27.1.1 Mrs Russell gave a presentation on the project looking at revision of the Staff Governance Standard Monitoring Framework and the local monitoring template. Part of the project includes engagement sessions with the four Staff Governance Committees in the Boards which are participating in the iMatter test of change pilots – NHS Lothian, NHS Highland, NHS Tayside and the Scottish Ambulance Service.
- 27.1.2 There was discussion on the local monitoring template and assessment tool as well as use of the local template. The Committee noted that a decision had been taken by SWAG not to review the Staff Governance standard at this time so as not to derail the iMatter process.
- 27.1.3 Mrs Russell stated that Mrs Kelly and Mr Steven Haddow from NHS Lothian were members of the Staff Governance Monitoring Framework Review Group and that their input had been extremely helpful especially in relation to the risks involved. The Government also wanted to consider how best to share, good practice and success stories.
- 27.1.4 In relation to use of the local template, Mrs Russell asked for the Committee's views on its effectiveness and also who used the local template within NHS Lothian. Mrs Kelly stated that last year the template had been sent to local partnership forums for completion and that some sections covered areas on which Mrs Kelly already held information. The Board template was then completed between Mrs Kelly and Mr Joyce.
- 27.1.5 Mrs Butler added that the template as currently designed was one dimensional and merely an exercise which was completed annually. There was a need to be more imaginative than a once per year template and to use the opportunity to showcase work around staff engagement and experience. It would be helpful to understand how the Scottish Government used the template once received and how beneficial this was found to be.
- 27.1.6 Mrs Russell confirmed that all material in the templates was assessed and that they had traditionally been used to assess progress and improvement against the staff survey. With the staff survey no longer undertaken, this gave the need for this review. There was an opportunity to be radical and make the process very different.
- 27.1.7 There was discussion on how a new process would link in with the assurance for the Board currently provided by the Committee. The Chair pointed out that previously the Committee had been considering twenty-eight strands and that the Staff Governance Committee agenda had now been restructured to map against Everyone Matters 20:20 Workforce Vision and this was beginning to make more sense, provide better links and better assurance to the Board with a clearer view on what was being considered. It was felt that any new mechanism should be accessible any time of the year and not just a once a year exercise.

- 27.1.8 The Committee further discussed the potential to link in with the Scottish Government's Annual Review process; the risk of duplication of governance activity; sharing of good practice; celebrating success events and other national level opportunities. Mrs Russell informed the Committee that the Scottish Government's Staff Governance website was changing to be a revamp of the iMatter site and would be populated with Good News Stories as appropriate. The Committee confirmed that the Board only used the Template because this was request by the Scottish Government.
- 27.1.9 Mrs Butler suggested that any new monitoring tool should adopt continuous improvement principles and methodology
- 27.1.10 Ms Russell stated that this exercise was important as it helped the Government to understand what Boards had in place locally and to avoid reinventing the wheel. This was about having something fluid and alive that could be accessed in the best way possible. At the moment it was felt that the local template did not add value to the work of the Board.
- 27.1.11 The discussion then focussed on the template's fitness for purpose; the opportunity for improvement and to do something more streamlined, dynamic and fit for purpose to provide appropriate assurance to the Scottish Government.
- 27.1.12 Mr Crombie asked when the information gathering across the Boards would be complete and the process moved forward. Mrs Russell confirmed that the visit to NHS Lothian was the last of the four visits and that the graphic on the discussions held would be sent to Lothian before the end of the week. The three other Boards had all had their individual graphic and NHS Highland had signed theirs off.
- 27.1.13 It was noted that the Scottish Government working group had held a couple of productive meetings and that an update would be going to SWAG on the 1st November. The test of change project in Boards runs to December 2017. The outputs from this exercise, and the test of change project would then form part of the national staff experience report which would come out in spring 2018.

27.2 Corporate Risk Register

- 27.2.1 3328 – Roadways/Traffic Management - Mr Crombie introduced the paper which replicates the report brought to the Committee previously in July 2017. Mr Crombie confirmed that it was unlikely that the previously notified moderate assurance level would change for the rest of this year. The paper highlighted ongoing work on each individual campus.
- 27.2.1.1 The Committee accepted the moderate assurance suggested and it acknowledged that capital funding issues remained a risk.
- 27.2.2 3455 – Management of Violence and Aggression - Miss Gillies introduced the report updating the Committee on the review of the NHS Lothian approach to incidents involving Violence and Aggression. The Committee noted that the review had been brought to the Committee first before being shared wider. Miss Gillies stated that it was important to have the Committee sense-check the document before wider circulation.
- 27.2.2.1 Miss Gillies reported that the number of incidents was currently high but remained static and that incidents of harm were lower. There was less clarity around the types of harm, e.g. are there repeated incidents of harm in the same circumstances or related to an individual patient? It was proposed to look at changes to the DATIX

recording process to have the ability to provide themes and develop a system of visibility from the results of investigations.

- 27.2.2.2 The Committee noted that the Lothian Occupational Health Director, Dr Leckie had met with Mr Tim Montgomery and his REAS team to take forward learning and embedding of new processes. This was also part of the work to reconfigure the Health and Safety Committee.
- 27.2.2.3 The Committee acknowledged that the report had its limitations and Miss Gillies and Mrs Butler had made a judgement call to now focus on an improvement plan rather than refining the review further. There was discussion on the reporting system needing to be clearer if incidents relate to harm.
- 27.2.2.4 The Chair stated that it would be helpful for the report recommendations to be mapped clearly to the terms of reference and as part of the assurance for the Committee there should be some specific recommendations on what would be done and timescales for this.
- 27.2.2.5 The Committee requested that a detailed paper on the improvement plan be provided for consideration at the January 2018 meeting. This should include mapping to terms of reference and more detail around key outputs required to bring about change.

TG

- 27.2.2.6 The Committee recognised the limited assurance request given the uncharted territory involved. The Committee agreed to the limited level of assurance requested in the review paper, however this was felt to be generous given the lack of visibility at the moment on how this was currently being tackled in the Board.
- 27.2.3 3527 – Medical Workforce Sustainability - Miss Gillies informed the Committee that this report was in a similar format to those previously submitted, with a lot of detail provided on figures and the process of recruitment for trained staff and doctors in training.
 - 27.2.3.1 Miss Gillies outlined her intention to seek the Committee's support in respect of rewriting the risk, which would mean general practice sustainability being a separate risk. There was discussion on other elements of the paper and other risks coming through in particular around regional elements and the impact of NES' failure to recruit. Miss Gillies stated that given this discussion it would seem sensible to split out the risks in terms of actions taken.
 - 27.2.3.2 The Chair stated that it was important to have the risk defined accurately and in that context she would be happy for the review. Mrs Butler added that she would also support the redefining of the risk and its ongoing review. The Chair added that Mr Payne, Corporate Governance Manager, would be arranging a session for Governance Committee Chairs on corporate objectives and defining risks
 - 27.2.3.3 Miss Gillies stated that it was important to consider how the current risk around recruitment was presented. It was acknowledged that there was potential to put people off coming into areas where there are significant pressures due to workforce shortages. It should be recognised that there are realistic and specific issues around recruitment but that these are not across every speciality.

- 27.2.3.4 The Committee acknowledged the relatively strong recruitment position of NHS Lothian when compared with other NHS Boards and supported the review of the risk that currently appears on the corporate risk register to ensure it more closely reflects the level of risk within specific specialties/services.
- 27.2.3.5 The Committee recognised the measures that have been undertaken to mitigate risks and accepted the moderate level of assurance requested in the report that controls are in place to mitigate any risks to patient safety.
- 27.2.4 3828 – Nurse Workforce – Safe Staffing Levels – Professor McMahon reported that there was a lot happening around nursing recruitment at the moment. Lothian were in the fortunate position that it was still able to attract nursing graduates. There were challenges being faced due to the reluctance of universities to have two graduate outputs. Whilst Lothian remained an attractive place to come and work there were recruitment difficulties at St John's Hospital, however there remained a good pipeline of band 2s coming from West Lothian College.
- 27.2.4.1 There was discussion on workforce demography, the success of recent recruitment events and other initiatives such as the return to practice programme and the expansion of training places for health visiting, district nursing and school nursing. The work on the regional bank and national theatres bank continued. There was also a large piece of work around skill mix which included looking at modern apprenticeships and widening access.
- 27.2.4.2 The Committee discussed eRostering and its use and how it is starting to be implemented in higher risk areas. It was recognised that eRostering was an effective system but needed to be better utilised.
- 27.2.4.3 There was also discussion on ways to better use existing staff and free up staff time away from paperwork and documentation. Professor McMahon stated that there was a need to ensure both good clinical care and good documentation. The importance of good documentation was a key theme highlighted by the recent Western General Hospital unannounced inspection. Mrs Campbell added that good documentation was also critical to delivery of care and that there had always been a requirement to record care whether this had been on paper or electronically as is now the case. It was also important to recognise that digital literacy of nursing staff and others had to be improved
- 27.2.4.4 Councillor Milligan cited issues with Computer on Wheels. Mr Crombie stated that when the Computer on Wheels programme was rolled out, not enough computers were provided and that there was now an investment programme looking at this. Miss Gillies reported on 'TRAK Tuesdays' whereby short training videos picking up on common misconceptions about TRAK would be sent out to staff on a Tuesday as reminders to staff. The Committee noted that future plans included pulling observations information directly from devices to save time on data entry.
- 27.3 Staff Governance Workplan – 2017/18 – Mrs Kelly reminded the Committee that the workplan had changed to reflect the Everyone Matters priorities and that papers would be brought throughout the year. The workplan would come to every meeting for use as a reference document.

27.4 Staff Governance Assurance Statement – The Committee noted that the levels of assurance taken against papers at each meeting would be added into the statement. Once items are considered information would be added into the statement with comments around the next steps: this in turn would feed into the end of year annual report.

27.4.1 The Chair requested that a more accurate timeline be entered against Fire Safety mandatory training rather than an open statement. Mrs Kelly agreed to update this timeline.

RK

27.5 Human Resources and Organisational Development Strategy 2015-18 - Mrs Butler introduced the report providing the Committee with a progress update on delivery against the priorities set out in the HR & OD Strategy, which had been published in June 2015.

27.5.1 The Committee noted the developments that have been progressed by NHS Lothian over the last 2 years to deliver the ambitions and commitments set out in the extant HR & OD Strategy (June 2015 – March 2018).

27.5.2 The Chair added that the Strategy was clearly outdated in terms of current strategic focus and that, whilst a lot had been achieved by the Strategy, it would also be helpful to highlight what had not been achieved or where there had been a short fall.

27.5.3 The Committee took significant assurance that the Board were on track to deliver the Strategy by March 2018. It was agreed that the Board's Corporate Management Team should revisit the requirement for an HR & OD Strategy beyond 2018; given the development of a Staff Engagement and Experience Development Plan and its supporting workstreams and the work that is being progressed by the Workforce Planning and Development Programme Board. It was hoped that a recommendation on this would be brought back to the Staff Governance Committee in January 2018.

JB

28. Healthy Organisational Culture

28.1 iMatter Update – Mrs Kelly reported that all staff in the organisation had now been through at least one cycle of iMatter. There was still work to be done around the rate of team report conversion to action plans.

28.1.1 The Chair asked if there was a reason why conversion was not happening. Mrs Butler stated that this had been discussed at the Corporate Management Team and that there was a commitment to get beneath this information for the appropriate areas and to drive forward improvement.

28.1.2 Mrs Kelly pointed out that the 2018 anniversary cycles would be split into three cycles to be complete by the end of summer. This would free up time at the end of the year in case any work was required around the Dignity at Work survey.

28.1.3 The Committee agreed to take significant assurance that full implementation will be achieved by December 2017, the date set by the Scottish Government. The Chair added that whilst the Committee could take significant assurance on the iMatter roll out, the focus now had to move on from this to action planning

28.2 Whistleblowing Monitoring Report

Mr Joyce took over the Chair for this item.

- 28.2.1 Mrs Kelly reported that whistleblowing training for managers, HR and staff side reps continued. There had been some non attenders at the training but the importance of the training had been stressed to those who are booked onto future courses.
- 28.2.2 In relation to current cases, these were outlined in the appendix 1 to the report. Currently there were 13 cases (11 in the appendix and 2 further cases since the report had been prepared). There were regular meetings between Mrs Mitchell, Mrs Butler and Mrs Kelly to review the progress of these cases. The Committee noted that appendix 2 of the report referred to the confidential alert line and NHS Scotland whistleblowing advice services.
- 28.2.3 There was discussion on some of the cases outlined in appendix 1. It was noted that one outstanding action was not directly linked to whistleblowing but referred to an internal audit report with actions awaiting completion before conclusion. Mr Crombie agreed to take away an action to look at the outstanding actions.
- JC**
- 28.2.4 Mrs Mitchell stated that as whistleblowing champion her aim was to be able to share any learning from whistle blowing cases where possible and but without compromising the anonymity or confidentiality of those raising concerns.
- 28.2.5 The Committee agreed to take moderate assurance based on the information contained in the report that systems and processes were in place to help to create a climate in NHS Lothian which ensures employees had absolute confidence in the fairness and objectivity of the procedures through which their concerns are raised and are assured that concerns raised will be acted upon.

The Chair returned to Mrs Mitchell.

- 28.3 Health and Safety Update – Miss Gillies updated the Committee on work underway to reconfigure the NHS Lothian Health and Safety Committee from 2018 onwards.
- 28.3.1 Miss Gillies explained that the Health and Safety committee was a large management committee and as currently structured it was not possible to have a sense of improvement actions given its size. The suggestion was to have smaller sub-groups with grouped risks and then have the larger group meeting on an alternate basis. The smaller meetings would allow for more focussed discussion on grouped risks.
- 28.3.2 There was discussion on the terms of reference for these sub committees, the benefit of a smaller main committee and reporting to the Staff Governance Committee. It was noted that there would remain progress reporting each month. Miss Gillies confirmed that there would be no disruption to the main committee's terms of reference or site based Health and Safety committees.
- 28.3.3 The committee noted that work is underway to reconfigure the Health and Safety committee to provide greater clarity to the Staff Governance Committee (and other relevant committees) that risks are being managed appropriately. This will allow the Staff Governance Committee to state their level of assurance for the specific Health & Safety risk topics under their remit.

- 28.3.4 The Committee requested that a more detailed overview paper on the proposals be brought to the January 2018 meeting. The Chair emphasised the importance of understanding the work of the Health and Safety committee from an assurance view point.

TG

- 28.3.5 Miss Gillies also confirmed that the finalised minutes of the Health and Safety committee from the previous two meetings would be circulated by the secretariat and apologised for their omission as part of the update.

CG

- 28.4 Mandatory Training Compliance – Healthcare Associated Infection - Ms Langsley reported on the current position with mandatory Healthcare Associated Infection (HAI) education.

- 28.4.1 The Committee noted that current HAI compliance was static in the mid 70% range and therefore had not achieved the target of 80% and that performance was not improving. Suggested reasons for this included the clinical module being too onerous and the recently launched Scottish Infection Prevention and Control Education Pathway (SIPCEP) not seeming to be fit for purpose for mandatory education. There were also issues for some staff with the education being online based.

- 28.4.2 In terms of future HAI mandatory provision Ms Langsley outlined three options to the Committee which were considered by the Board's Pan Lothian Infection Control Committee:

- i. Continue with an amended version of the existing clinical and non-clinical HAI modules although they will no longer be supported by NES in terms of updates.
- ii. Implement and promote NES 'Why Infection Prevention and Control Matters' and 'Hand Hygiene' as the minimum mandatory requirement for all staff
- iii. Develop our own NHS Lothian e-learning content to meet the learning outcomes specified in SIPCEP.

- 28.4.3 The committee noted that the Infection Control Committee's preferred option was (iii).

- 28.4.4 The Committee agreed to the Limited Level of assurance being requested whilst option iii is progressed by the Infection Control Committee on the basis that the timescales for progressing option iii were reasonable. A further report would come back to the January 2018 meeting.

AL

Ms Langsley left the meeting.

- 28.5 Staff Engagement and Experience Programme Board Update - Mrs Butler reported on the work of the newly established Staff Engagement and Experience Programme Board.

- 28.5.1 The Committee noted the work to date of the Staff Engagement and Experience Programme Board and agreed to take moderate assurance that good progress is being made. The Committee recognised that the Staff Engagement and Experience Development Plan will be presented to the Committee at its meeting in January 2018.

JB

28.6 Investors in People Position Statement - Mrs Butler notified the Committee of the Board's Corporate Management Team's decision to withdraw NHS Lothian from the Investors in People accreditation process and to concentrate our organisational efforts on embedding iMatter and supporting the work of the Staff Engagement and Experience Programme Board.

28.6.1 The Chair stated that whilst this made sense given the recent iMatter progress, but questioned whether the correct governance procedure was followed with the Corporate Management Team taking such a decision. Mr Crombie stated that given the Board's commitment to iMatter and the financial implications of IIP, the CMT decision had been appropriate. Mrs Butler added that although CMT had made the decision it was recognised that, in governance terms the Staff Governance Committee needed to be sighted on the decisions.

28.6.2 Mr Payne, Corporate Governance Manager, confirmed that this was not a strategy or policy decision but that this was a management view at a certain time on the way forward and was therefore a reasonable management decision for the CMT.

28.6.3 The Committee agreed that Investors in People Scotland be notified that NHS Lothian would be withdrawing from the accreditation process when it expires in March 2018. The Committee also acknowledged that through the Staff Engagement and Experience Programme Board organisational efforts would be focussed on embedding iMatter.

JB

Ms Fitzgerald left the meeting.

29. Sustainable Workforce

29.1 Workforce Report – Mrs Kelly presented the updated Workforce Report for October 2017.

29.1.1 The Committee noted the Workforce Report and the actions being taken to address some of the issues raised in relation to sickness absence, mandatory fire training compliance and HAI. Mrs Butler explained the absence review panel process where senior members of the management team review absence cases; the work linked to staff experience and shift lengths; improvement tools available for managers and the availability of business unit employee relations practitioners to help support the management of attendance.

29.1.2 The Chair requested that more information on what was being done around short term sickness absence come to the January 2018 meeting.

JB/RK

29.2 Workforce Planning and Development Programme Board Update - Mrs Butler introduced the report which gave an overview of the work of the newly established Workforce Planning and Development Programme Board. Mrs Butler stated that it was important for the Committee to remain sighted on the challenges around workforce planning whilst acknowledging that a sizeable chunk of, the workforce was "controlled" in respect of undergraduate numbers by Scottish Government.

29.2.1 The Committee acknowledged that a Board Workforce Plan is in development and will be signed off by the Workforce Planning and Development Programme Board at its November 2018 meeting. This would then be shared with the Staff Governance Committee at its January 2018 meeting.

JB

- 29.2.2 Mrs Butler stated that prior to the establishment of the Programme Board, the Board had no vehicle to look at multi professional work force planning. The paper sets out ongoing work, whether this be in progress or commissioned to happen. The Chair asked that as part of the January 2018 update, timescales for commissioned items be included.

JB

- 29.2.3 The Committee noted the work to date of the Workforce Planning and Development Programme Board and agreed to take moderate assurance that good progress was being made.

30. Capable Workforce

- 30.1 Mandatory Compliance – Appraisal Recording Tool - Mrs Butler gave an update on implementation of TURAS Appraise which was the recording tool which would replace eKSF when its licence ran out at the end of March 2018. Mrs Butler reported that there was not yet a finalised TURAS Appraise product but that a minimum viable product was expected by the end of December 2017. The key risk was recognised as the loss of recording availability between January and March 2018 due to the transfer of data between the two systems. Business Units were each being tasked to continue with appraisals as planned but to complete on paper, to delay them until after March 2018 or bring them forward prior to January 2018.

- 30.1.1 There would also be a communications plan in place to support the eKSF to TURAS Appraise transition. Mrs Butler stated that TURAS Appraise was a very intuitive platform therefore it was not planned to provide formal training. An additional benefit of the system, for future exploration would be that TURAS Appraise can host social care data also which may be helpful for managers leading an integrated team. It was also noted that TURAS Appraise is likely to be the system that will be used for Executive and Senior Manager appraisals in the future.

- 30.1.2 The Committee agreed to take moderate assurance that appropriate arrangements were in place to manage the transition from e-KSF to TURAS Appraise.

31. Effective Leadership and Management

- 31.1 Leadership and Management Framework (LMF)

The Chair welcomed Ms Sloan to the meeting.

- 31.1.1 Ms Sloan gave an overview presentation on the new LMF. Ms Sloan explained that the LMF captured all the interventions and activities already being delivered by the Board into one easy to navigate document, which was supported further by online resources. It was planned to keep this a 'live' iterative and dynamic document to ensure information was clear, accurate and as up-to-date as possible for staff. It was important to note that this was a framework designed for Leaders and Managers at all levels and in every area of the organisation.

31.1.2 The Committee noted the four levels of categorisation for Leaders and Managers with the framework:

- **First Level-** Aspiring Leaders and Managers, and new Leaders/Managers
- **Second Level-** First Line or Middle Leader/Manager with experience and looking to enhance/ refresh skills and knowledge
- **Third Level-** Senior Leader/Manager with many years experience likely managing a service with multiple teams- wishing to refresh and develop new skills/knowledge
- **Fourth Level-** Senior Leader/Manager or Executive with many years experience within the role, working at a strategic level or aspiring to senior/strategic career role

31.1.3 The Chair asked about accessibility of the LMF to managers for use in appraisal conversations and what support managers received to make sure they are utilising the framework appropriately.

31.1.4 Ms Sloan stated that in the last few weeks staff had been encouraged to use the framework in conversations and had the opportunity to use it. Mr Butler added that the Organisational Development team were assisting with diagnostic advice, development support and coaching practice for managers.

31.1.5 There was further discussion on the quality of diagnostic conversations across the piece; this continued to be a work in progress. Ms Butler stated that it was difficult to see what a single diagnostic tool would look like, and that the priority had been to focus on good PDP conversations.

31.1.6 Mr Crombie provided feedback that the LMF signalled a major improvement in this area and that the credibility of the way it is presented added to people's interest. It was acknowledged that succession planning was an area in which there remained work to do and that this could potentially be part of the 2018/19 Corporate Objectives.

31.1.7 The Chair asked about the rationale for including costs against some courses. Mrs Butler confirmed that some courses had to be bought in and some were provided in-house as part of the blended approach. Funding needed to be in place for the bought in courses therefore the costs were displayed.

31.1.8 The Committee recognised the progress being made with the framework and supported its continued development and promotion within the organisation. The Committee acknowledged the ongoing work to evaluate the impact of the LMF, the results of which would inform future iterations of the framework and would be brought back to the Committee in spring 2018.

JB

The Chair thanked Ms Sloan for her presentation and Ms Sloan left the meeting.

32. Minutes for Information

32.1 The Committee noted the following items:

- Minutes of the Staff Engagement and Experience Project Board, 25 August 2017

33. Any Other Business

33.1 There was no other business

34. Date of Next Meeting

- 34.1 It was noted that the next meeting of the committee would be held on Wednesday 31 January 2018 at 9.30am in meeting rooms 6&7, Waverley Gate, 2-4 Waterloo Place, Edinburgh.

35. 2018 Meeting Dates

- 31 January 2018
- 21 March 2018
- 30 May 2018
- 24 July 2018
- 24 October 2018

HEALTHCARE GOVERNANCE COMMITTEE

Minutes of the meeting of the Healthcare Governance Committee held at 9:00 on Tuesday 12 September 2017 in Meeting Room 7, Waverley Gate, 2-4 Waterloo Place, Edinburgh, EH1 3EG.

Present: Dr R. Williams, Non-Executive Board Member (chair); Ms S. Allan, Non-Executive Board Member; Ms W. Fairgrieve, Partnership Representative; Ms N. Gormley, Patient and Public Representative; Mr A. Sharp, Patient and Public Representative.

In Attendance: Ms J. Bennett, Associate Director for Quality Improvement and Safety; Mr C. Bruce, Lead on Equalities and Human Rights (item 24.2); Ms J. Campbell, Chief Officer, Acute Services; Mr A. Coull, Consultant Physician (item 26.1); Mr J. Forrest, Chief Officer, West Lothian Health and Social Care Partnership; Ms T. Gillies, Medical Director; Mr B. Houston, Board Chairman; Ms M. Hughes, Chief Nurse, West Lothian Health and Social Care Partnership; Mr R. Mackie, Information Analyst; Professor A. McCallum, Director of Public Health and Health Policy; Professor A. McMahon, Director of Strategic Planning; Ms J. Morrison, Head of Patient Experience; Ms C. Myles, Chief Nurse, Midlothian Health and Social Care Partnership; Ms B. Pillath, Committee Administrator (minutes); Mr D. Small, Chief Officer, East Lothian Health and Social Care Partnership; Professor A. Timoney, Director of Pharmacy.

Apologies: Ms M. Barton, West Lothian Health and Social Care Partnership; Dr B. Cook, Medical Director, Acute Services; Mr J. Crombie, Deputy Chief Executive; Ms P. Eccles, Partnership Representative; Ms C. Hirst, Non-Executive Board Member; Ms F. Ireland, Non-Executive Board Member; Mr A. Joyce, Employee Director; Mr J. Oates, Non-Executive Board Member.

Chair's Welcome and Introductions

Dr Williams welcomed members to the meeting and members introduced themselves.

Members were reminded that they should declare any financial or non-financial interests they had in the items of business for consideration, identifying the relevant agenda item and the nature of their interest. No interests were declared.

21. Patient Story

- 21.1 Ms Gormley read out part of a Care Assurance Standards interview with a patient in a cancer ward who commented on the caring, compassionate and helpful staff.

22. Minutes from Previous Meeting (11 July 2017)

- 22.1 The minutes from the meeting held on 11 July 2017 were approved as a correct record subject to two amendments.
- 22.2 The updated cumulative Committee action note had been previously circulated.

23. Committee Effectiveness

23.1 Corporate Risk Register

- 23.1.1 Ms Bennett spoke to the previously circulated paper. Those areas that had been shown as high risk for long periods were challenging problems locally and nationally. At the governance level assurance was taken on the actions being taken and the progress made to mitigate these longstanding risks. The Board might be required to accept or tolerate some risks where actions to mitigate them were in place.

23.2 Quality and Performance Improvement Report

- 23.2.1 Ms Bennett spoke to the previously circulated paper. All the areas highlighted as having low levels of assurance had been discussed at the Healthcare Governance Committee in the past two meetings or were on the current agenda where members received detailed information on improvement plans in place.
- 23.2.2 Dr Watson noted that in future access to the background data would be available using an online dashboard.
- 23.2.3 Members approved the recommendations laid out in the paper.

24. Person Centred Culture

24.1 Spiritual Care and Bereavement Update

- 24.1.1 Professor McMahon spoke to the previously circulated paper. Ms Gormley asked whether a decrease in referrals to the Royal Hospital for Sick Children reflected a lower demand for the service or a shortage of resources. Professor McMahon agreed to find out and noted that the team had been recently re-structured and demand and capacity would be evaluated. This was the first time data had been collected.
- 24.1.2 Nursing staff were also able to deal with the range of needs associated with end of life care. Mr Small noted that small numbers of referrals in community hospitals where most end of life care took place reflect the nurses familiarity with this. Higher numbers of referrals were made in acute hospitals where more unexpected deaths occurred.
- 24.1.3 It was noted that there was a large variation in numbers of referrals and agreed that nurse directors would be asked for their understanding of the reasons behind this.
- 24.1.4 Members accepted the recommendations laid out in the paper and asked for a further update with answers to the questions posed to be submitted to the meeting in January 2018. **AMcM**

24.2 Equality and Human Rights Improvement Plan

- 24.2.1 Mr Bruce spoke to the previously circulated paper. Professor McCallum noted that a multi-agency world congress on migration and ethnic minority health was due to take place in Edinburgh including representatives from health and social care, welfare

benefits, academic and research, patient groups and health. Some work for this would be done alongside the improvement plan.

- 24.2.2 Professor McCallum noted that timescales had not been added to the plan as the changes needed to take place in all areas and needed to be implemented by the service, but agreed to look at milestones coming out of the work being done.
- 24.2.3 It was suggested that some indicators were needed to show that progress was being made and that it was having an impact. These could be qualitative or quantitative measures. Mr Bruce noted that the characteristics information needed to be gathered in order to make or show progress and the work being done so far was working towards this.
- 24.2.2 Members accepted the recommendations laid out in the paper and accepted significant assurance that an appropriate improvement plan was in place. A further update would be received in June 2018 when the new system had been developed.

AMcC

24.3 Tippethill Review

- 24.3.1 Mr Forrest spoke to the previously circulated paper regarding a review of services at Tippethill Hospital after some student nurses had raised concerns about leadership, values and appropriate recording. During the review a lack of adherence to policy and procedure was found. There had been no complaints from patients or families and no patients had come to harm. An improvement plan had been put in place and there would be work to ensure all community hospitals were following policy. Feedback and an apology had been given to the students who raised the concerns.
- 24.3.2 Mr Houston noted that this was an open, honest report and a positive outcome in response to whistleblowing. Mr Forrest noted that Tippethill Hospital was remote and most members of staff were recruited from the local area and knew each other from the community. New staff did not tend to stay long. Ways to refresh staff, including a rotating model, were being considered. Chief Nurses were considering setting up a peer review system to ensure a clear presence in remote hospitals.
- 24.3.3 Managers had interviewed staff members from the ward individually and members of staff had come forward to help implement the action plan and were keen to improve; they did not want to be part of a ward with a poor reputation.
- 24.3.4 Ms Gormley suggested that feedback from patients should be included as part of the action plan. Mr Forrest advised that managers had spoken to the patients and families involved and they did not agree with the complaints made and were happy with the care received. He agreed to articulate this aspect better in the action plan.
- 24.3.5 Members approved the recommendations laid out in the paper.

25. Safe Care

25.1 Public Protection Update

- 25.1.1 Professor McMahon spoke to the previously circulated paper. Members accepted the recommendations laid out in the paper and accepted moderate assurance that actions and systems were in place to mitigate harm.

25.2 GP and Primary Care Sustainability

- 25.2.1 Mr Small spoke to the previously circulated paper. A project manager had been appointed to lead workforce change work in practices; the process was expected to take 2 years. The new GP contract would be voted at the end of the year. It was expected that the GP would be the expert generalist with the health board employing more supporting staff, with 3 years to implement. The circulated workplan would be implemented this financial year but it was expected that the impact would not be seen for 2-4 years.
- 25.2.2 Mr Sharp noted that this could be an exciting time for general practice and that this should be emphasized to improve the image of general practice in Lothian. Ms Gillies agreed and noted that work was in process with universities to try and encourage students to stay in Edinburgh.
- 25.2.3 Ms Morrison noted that the team continued to receive a large number of complaints from patients unable to register with GP practices and that this was not getting less. Mr Small agreed to keep her updated with actions being taken so that this could be explained to patients.
- 25.2.4 There was discussion about the possibility of having a GP practice available to all patients, on the model of the out of hours service but operating in hours. Mr Small advised that having a GP practice covering the whole population of Edinburgh had been considered but there had been contractual problems. A service was being established in Musselburgh which was fronted by NHS 24 and staffed by physiotherapists and nurses and would meet same day demand from the whole area. It was noted that there was a need to ensure interaction with the patient's home GP practice so that patients were not seeking help in both practices.
- 25.2.5 There was a need to build a case for shifting the balance of care to the community both because it was better for people and because it reduced the risks associated with a total healthcare system. It needed to be possible to show what the impact would be. Ms Gillies advised that there was not much data on this currently but that the Musselburgh practice would give an idea of demand, and data from 2c practices could also be used to gather data for instance of number of patients not able to register. Professor McCallum noted that data of effectiveness of primary care spend compared to acute spend with the same outcomes was available. Mr Houston added that as the system was under pressure the resources were not available to shift the balance of care even though this would lead to improvements; there was a need to move out of this position by making a case for making the move based on reduced risk and financial efficiencies.

25.3 Hospital Based Complex Clinical Care

- 25.3.1 Professor McMahon gave a brief verbal update. An update paper would be submitted to the next meeting. **AMcM**

25.4 Integration Joint Board Plans for Mitigating Risk of Delayed Discharges

- 25.4.1 Mr Forrest spoke to the previously circulated paper. This was the first report in this format. The Health and Social Care Partnerships were working hard to reduce delayed discharges. The group would implement actions over the winter and try to make these sustainable. Updates were heard from representatives from East Lothian, West Lothian and Midlothian Health and Social Care Partnerships.
- 25.4.2 Mr Forrest stated that the group was confident that the actions being put in place would make an improvement; the challenge would be sustaining this. Mr Small noted that in East Lothian the problems were short term and would be resolved by winter.
- 25.4.3 This year there had been an early move to recruit staff and commit additional funds for winter management. The acute sector was being encouraged to get as close to establishment staff as possible by filling vacancies.
- 25.4.4 The winter plan for 2016/17 had been an improvement on previous years so this year the successes would be taken into account and further actions taken. A range of processes were in place for transport, vaccination, staffing, domestic staffing and diagnostic access. Respiratory clinics worked well at the Royal Infirmary in winter 2016/17 and this would be rolled out to other areas for this winter.
- 25.4.5 Members accepted the recommendations laid out in the paper. Members were assured that reducing delayed discharge was a key priority but accepted limited assurance that improvement would occur as the impact of actions in place was not yet clear. There would be a further update at the next meeting. **JF**

25.5 Hip Replacements Safety Alert

- 25.5.1 Ms Gillies spoke to the previously circulated paper. In response to a question about identifying patients coming into Lothian who may have received this type of hip replacement, Ms Gillies advised that there was no robust system for this; GPs could be asked to be aware but patients could come from anywhere in the world and may not know what type of hip replacement they have had. This would be a small number of patients. Only one other Health Board in Scotland put in a lot of metal on metal hips.
- 25.5.2 Members approved the recommendations laid out in the paper.

25.6 Mental Welfare Commission Perinatal Report and Service Review

- 25.6.1 Professor McMahon spoke to the previously circulated paper which alerted the Committee that further work was being done in this unit. The outcome of the review would be brought to the Committee in January 2018. Ms Gillies had met with the family involved in the incident and would keep them updated on the outcome of the review. **AMcM**

- 25.6.2 This unit had had a lot of intense scrutiny in recent years with a number of reviews and it was hoped that the next stage would be developing and supporting the team.

- 25.6.3 Members accepted the recommendations laid out in the paper and accepted limited assurance as the review was ongoing.

25.7 Human Factors Project Evaluation

- 25.7.1 Ms Gillies spoke to the previously circulated paper. Members were supportive of the good sustainable work done which was now being rolled out in Scotland, and they accepted the recommendations laid out in the paper.

25.8 Death in Hospitals Work

- 25.8.1 Ms Gillies spoke to the previously circulated paper. This work was in progress; by January 2018 there would be a much better idea of the position with all areas having a framework in place or working towards this.

- 25.8.2 Members accepted the recommendations laid out in the paper. A progress report would be submitted in one years' time. **TG**

25.9 Alcohol and Drug Partnerships; actions to mitigate impact of changes

- 25.9.1 Professor McMahon spoke to the previously circulated paper. In response to a question about the governance process around and Integration Joint Board making a decision which was appropriate for them but affected the population in other areas, Professor McMahon advised that each issue was being discussed at the collaboration group and that some had now been resolved.

- 25.9.2 Ms Allan noted that the possible reduction of psychology services described in item 4.9 of the paper was concerning as it would affect a psychological service which was already under pressure.

- 25.9.3 Professor McCallum noted that the Scottish Government had heard concerns about the impact of reduction in funding at a time when there was an increase in need and an increase in the number of drug related deaths in Scotland, and that they may look at the governance arrangements again; the Alcohol and Drug Partnerships did not fit easily with the new Integration Joint Boards in governance terms.

- 25.9.4 Members noted that work had been undertaken and was ongoing, they accepted the recommendations laid out in the paper and accepted limited assurance. A further update would be given at the meeting in January 2018. **AMcM**

25.10 Child and Adolescent Mental Health Service Recovery Plan

- 25.10.1 Professor McMahon spoke to the previously circulated paper. Dr Watson noted that a quality improvement programme was ongoing in CAMHS and there had been a lot of positive work and engagement with patients. A presentation on this had previously been received by the Committee.
- 25.10.2 The target for reduction of the waiting list was September 2017 and this had not been met. Improvement plans in West Lothian, Midlothian and East Lothian had been sustained. North Edinburgh had now recruited to establishment which should improve progress with the backlog; the biggest problems had been in this area.
- 25.10.3 Members accepted limited assurance. A new action plan for reducing the size of the waiting list with timescales and milestones would be brought to the next meeting.

AMcM

25.11 Adult Mental Health Psychological Services Update

- 25.11.1 Mr Forrest spoke to the previously circulated paper. He anticipated that performance would continue to improve and would be sustained. There was still some risk about recruitment and a need to prioritise funding in the future.
- 25.11.2 It was noted that a number of initiatives had not been implemented in Edinburgh; this could now be addressed. There would be a focus on Edinburgh at the next Board development day.
- 25.11.3 Ms Allan noted that on the paper it stated that engaging with people was not relevant; this was not right, there needed to be a reference to the high level of patient concern in this area.
- 25.11.4 Members accepted the recommendations laid out in the paper and accepted limited assurance. There would be a further update in November 2017 including a statement on involving people.

JF

25.12 Monitoring Out of Area Group Update

- 25.12.1 Professor McMahon spoke to the previously circulated paper. Review of patients placed out of area would now take place to try and repatriate patients as it was important that they were treated in Lothian near their families and homes. There was not currently a facility in Scotland for patients requiring a high secure female facility but consideration was being given to building such a facility on current sites.
- 25.12.2 Members accepted the recommendations laid out in the paper. There would be a further update at the meeting in May 2018.

AMcM

25.13 Policy Development and Implementation: Approval Process

- 25.13.1 Professor McMahon spoke to the previously circulated paper which asked that the Healthcare Governance Committee would oversee the group that was being set up. This had been recommended by the Audit and Risk Committee. The staff compliance aspect of the policy would be overseen by the Staff Governance Committee.
- 25.13.2 It was noted that the Ionizing Radiation Protocol would not be included in this process as there was a lot of technical expertise which would be lost, and there was external and internal assurance that this process was robust.
- 25.14.3 Professor McMahon agreed to add GP or primary care representatives to the membership.
- 25.15.4 Members approved the recommendations laid out in the paper.

26. Effective Care

26.1 Quality Improvement Stroke Programme

- 26.1.1 The Chair welcomed Dr Coull to the meeting and he gave a presentation. A paper had been previously circulated. There had previously been a structured group which met to make improvements to stroke bundle compliance, but the quality improvement methodology had encouraged a new focus. This was supported with analysts from the Quality team. This was a large amount of work and although data analyst support had been good it had been inconsistent with new analysts having to be trained.
- 26.1.2 Dr Watson noted that an evaluation had been done on all the quality programmes currently in place and that there needed to be more thought about how to engage with services that already had a quality system in place.
- 26.1.3 It was envisaged that stroke prevention and management plans would be developed in each of the Integration Joint Boards so that the approach was consistent. A suggestion was that representatives from each IJB attend the monthly Stroke Programme Board to ensure this.
- 26.1.4 It was noted that the stroke bundle targets measured processes but not clinical outcome. The target for compliance was 80% as it was recognised that for some patients alternative care was appropriate, for instance care in ICU.
- 26.1.5 Members approved the recommendations laid out in the paper and accepted moderate assurance that improvement processes were in place. There would be a further update in 6 months' time.

TG

26.2 Abdominal aortic aneurysm (AAA) Screening Update

- 26.2.1 Professor McCallum spoke to the previously circulated paper. Members accepted that the required criteria were being met and that there was progress towards achieving the desired outcome in the next 12 months. Members accepted the recommendations laid out in the paper and accepted moderate assurance. An annual update would be received. **AMcC**

26.3 West Lothian Health and Social Care Inspection of Children's Services

- 26.3.1 Mr Forrest spoke to the previously circulated paper. The inspection report had been published on 29 August 2017. This was a positive report with some recommendations which would be incorporated into an action plan.
- 26.3.2 Members accepted the recommendations laid out in the paper and accepted significant assurance. As Healthcare Improvement Scotland would monitor the outcome of the actions, a further update to the Committee would not be required.

26.4 Governance Arrangements for Services Transferring from REAS to Health and Social Care Partnership

- 26.4.1 Professor McMahon gave a verbal update. A number of services had been transferred out of REAS. Each service had a lead manager and a lead professional who would describe governance arrangements.

26.5. Pharmaceutical Care Services Plan

- 26.5.1 Professor McCallum spoke to the previously circulated paper. It was noted that the paper, which followed a template from the Scottish Government, identified the current position but did not describe how to address the problems identified. Professor McCallum advised that there would be consideration of a strategic plan.
- 26.5.2 Members accepted the recommendations laid out in the paper.

27. Exception Reporting Only

Members noted the following previously circulated items for information:

- 27.1 Maternity Services Reports;
27.2 Quality Improvement Teams Annual Report;
27.3 Information Governance Annual Report;
27.4 Edinburgh Transplant Service Annual Report;
27.5 Healthcare Associated Infection Update.

28. Other Minutes: Exception Reporting Only

Members noted the previously circulated minutes from the following meetings:

- 28.1 Clinical Management Group, 13 June 2017, 11 July 2017;
- 28.2 Feedback and Quality Assurance Working Group, 26 July 2017, 30 August 2017.

29. Date of Next Meeting

- 29.1 The next meeting of the Healthcare Governance Committee would take place at **9.00** on **Tuesday 14 November 2017** in **Meeting Room 7**, Second Floor, Waverley Gate.

DRAFT**STRATEGIC PLANNING COMMITTEE**

Minutes of the meeting of the Strategic Planning Committee held at 9.30 on Thursday 12 October 2017 in Meeting Room 7, Waverley Gate, 2-4 Waterloo Place, Edinburgh, EH1 3EG.

Present: Mr B. Houston, Board Chairman (chair); Mr M. Ash, Non-Executive Board Member; Ms C. Hirst, Non-Executive Board Member; Ms F. Ireland, Non-Executive Board Member; Mr A. Joyce, Employee Director, Non-Executive Board Member; Professor A. McCallum, Director of Public Health; Mr A. McCann, Non-Executive Board Member; Professor Alex McMahon, Nurse Director; Mr P. Murray, Non-Executive Board Member; Professor M. Whyte, Non-Executive Board Member

In Attendance: Ms J. Anderson, Partnership Representative; Mr C. Briggs, Director, Strategic Planning; Ms C. Cartwright, Strategic Programme Manager; Ms L. Friedman, Finance Trainee (observing); Mr I. Graham, Director of Capital Planning and Projects; Mr M. Higgins, Senior Researcher, Public Health; Dr D. Milne, Consultant in Public Health; Mr A. Payne, Head of Corporate Governance (observing); Mr C. Stirling, Site Director, Western General Hospital.

Apologies: Ms J. Butler, Director of Human Resources; Mr J. Crombie, Deputy Chief Executive; Mr T. Davison, Chief Executive; Mr M. Hill, Non-Executive Board Member; Ms T. Gillies, Medical Director; Ms S. Goldsmith, Director of Finance; Professor T. Humphrey, Non-Executive Board Member; Mr D. Small, Chief Officer, East Lothian Health and Social Care Partnership;

The Chair welcomed members to the meeting and members introduced themselves.

Members were reminded that they should declare any financial or non-financial interests they had in the items of business for consideration, identifying the relevant agenda item and the nature of their interest. No interests were declared.

1. Minutes and Actions from Previous Meeting (10 August 2017)

- 1.1 The minutes from the meeting held on 10 August 2017 were approved as a correct record subject to correction of one typographical error.

2. The People's Health

2.1 NHS Lothian Best Start – Maternity and Neonatal Strategy Update

- 2.1.1 A paper had been previously circulated giving an update on the strategy to implement the 76 recommendations required for all Boards. Four Boards including NHS Lothian would be a pilot for implementation. Updates for governance related to service redesign would be brought to this Committee with relevant elements also being updated to the Healthcare Governance and Staff Governance Committees.

2.1.2 It was noted that the recommendations covered NHS Lothian services only and not those delegated to the Integration Joint Boards. There would be a relationship with community care services no direct implications as recommendations were associated with pre-birth care rather than post-natal care where community midwives were involved.

2.1.3 The work was being done on a regional basis but consideration would be given to any implications for the paediatrics review.

2.1.4 Members accepted the recommendations laid out in the paper.

2.2 Edinburgh Children's Services Plan

2.2.1 Professor McMahon spoke to the previously circulated paper and plan. Dr Milne noted that there had been a meeting with electoral membership to discuss big strategic aims and ideas about what would make the biggest difference to families. The outcome was that the focus should be on high impact areas. A report had also been produced on engaging children in planning.

2.2.2 It was noted that the governance arrangements involving the Integrated Children's Service Board, NHS Lothian, and the Council were complicated and that responsibilities were not clear. The structure was different to other IJB areas as children's services had not been delegated to the IJB. It was noted that there was now a good working relationship despite the complicated governance arrangements. Professor McMahon noted that governance arrangements for children's services were complicated in all IJBs and suggested that a piece of work was done on this focussing on how arrangements could be made clearer. **AMcM**

2.2.3 Members approved the plan for submission to the Scottish Government on behalf of the Board.

3.3 Edinburgh Locality Plan

3.3.1 Mr Higgins gave a presentation on the previously circulated paper. There were four locality improvement plans for Edinburgh, the ideas for which were driven by local communities. The actions in the plan were taken from the ideas of the communities during the engagement process; these would be taken by the leadership teams who would translate them into the best ways to affect the improvements described. These teams would then engage with the community on the outcomes.

3.3.2 Mr Murray noted that there was a danger of separating the community planning element and evidence based strategic planning and ability to deliver services. The two elements needed to be brought together. It was noted that the community planning process was carried out in a way required by the Scottish Government, but that the important part was the work in bringing the actions in line with the strategic plan. It was noted that the community plan would be finalised in March 2018 after the strategic plan had been finalised so there needed to be discussion as to how these would be linked. This would be part of the ongoing review of the strategic plan through the IJB directions.

3.3.3 Ms Hirst suggested that there were a number of discussions on strategic planning in progress in different areas and there needed to be more clarity in who was making decisions.

3.3.4 It was agreed that feedback would be given to the Scottish Government asking for areas of work to be prioritised and giving an indication of what the priorities should be. This would be taken to the IJBs before submitting to the Scottish Government.

CH / CB

3.3.5 Members accepted the recommendations laid out in the paper.

3.4 Lothian's House of Care Collaboration

3.4.1 Members noted the previously circulated paper for information.

4. Integration

4.1 Edinburgh Health and Social Care Partnership Statement of Intent

4.1.1 Mr Briggs presented the previously circulated paper. This paper was a work in progress which had been circulated down management lines but had not yet been formally signed off by the IJB. It would be discussed at the IJB development session.

4.1.2 Members agreed that the statement was helpful and comprehensive. It was noted that the list of priorities was long, and hoped that once agreement was reached there could be a focus on a smaller number of key priorities.

4.1.3 Partnership working between the Council, NHS Lothian and IJB was important as the two organisations with different cultures and priorities worked together, they needed to work together not separately to deliver objectives and when things went wrong and there needed to be support for this.

4.1.4 It was noted that prevention and long term conditions had been put as second phase priorities but it was noted that these were important for all areas and should be given consideration while working on other things.

4.1.5 Although the document was intended for managers rather than staff, elements of it could be sent to Partnership staff along with an invitation for open sessions to hear concerns, as there would be implications for role and professionalism.

4.1.6 It was noted that there were elements of similar problems in all NHS Health Board partnerships but that the lead agency model in NHS Highlands seemed to work well; it was hoped that NHS Lothian could reach a similar advanced relationship in due course without using the lead agency model. Good practice in other areas was being considered.

5. The Lothian Hospitals Plan

5.1 Edinburgh Cancer Centre

- 5.1.1 Mr Stirling gave a presentation. It was noted that the Board had made a commitment to redevelop the cancer centre and that this linked with the strategic plan and the organisational values.
- 5.1.2 Professor Whyte noted that the clinical trials unit was important as there was not one in Scotland currently and Lothian was being asked to accelerate a joint application a joint application with Glasgow to become a major cancer centre in the UK.
- 5.1.3 Members noted that they were committed to supporting the redevelopment to achieve the aims set out. Due to the long period of time this had been under discussion there was a need to reassure staff in the unit of this commitment. Public engagement was also needed; this would include starting a process for a name to be agreed as part of the fundraising plan.
- 5.1.4 It was noted that NHS Lothian had a strategic plan to meet the national and health and social care outcomes for cancer care, but not the capital; it should be fed back to the Scottish Government that this capital would be required to meet local and national outcomes in cancer care.
- 5.1.5 A link would be sought with charitable organisations which would be beneficial for the service, research and staff, and this would include some fundraising activities to contribute to the centre. Jane Fergusson was considering what opportunities there may be. For example in NHS Greater Glasgow and Clyde their cancer facilities had been built with government funding but with some elements including the wellbeing centre funded by the Beatson cancer charity.
- 5.1.6 Members supported the 'next steps' proposed in the presentation with the addition of discussions to take place on the Cancer Research UK clinical research unit. This could increase levels of support for the funding application.

5.2 Royal Edinburgh Hospital Phase 2

- 5.2.1 A paper had been previously circulated which explained the reasons for the delay of phase 2. Any financial complications because of the delay would be brought to the Finance and Resources Committee. Correspondence was ongoing with the Scottish Government who had committed to the relevant revenue funding for 2018/19.
- 5.2.2 There would be engagement with the Integration Joint Boards who would agree what bed numbers they would provide. Once agreed, plans would be brought to all Integration Joint Boards and to the Strategic Planning Committee. Some agreements had already been made in some areas as part of the strategic commissioning plan process.

6. **Pan-Lothian Business**

6.1 The Lothian Box

- 6.1.1 A paper had been previously circulated. Ms Cartwright was in attendance as Strategic Programme Manager leading on the Lothian Hospitals Plan. Following the

presentation given at the previous meeting a test of the criteria had been carried out on specific areas which had supported the initial ideas. Outcomes of the process could include major investment, service redesign or further engagement. There could be a spectrum of positions within each 'box'. There needed to be consideration of the service as a whole including the individual elements within the service as individual specialties could relate differently to other services, and consideration of change over time. The tool could be used for all NHS Lothian services including GP practices, for other Boards, Integration Joint Boards and regional schemes, and for development of new services or attracting private companies.

- 6.1.2 More detailed testing work would be carried out and a further paper with outcomes brought to the meeting in December 2017. **CB**
- 6.1.3 It was suggested that the University of Edinburgh might have experience in this area that could inform the proposed process.
- 6.1.4 It was suggested that the process and methodology needed careful refinement as it would affect all Board Committees. The purpose needed to be explained to staff and public as there may be negative views in terms of the potential for the process to result in closure of vulnerable services.
- 6.1.5 It was noted that the concept of challenge and comparison to ensure best value was implicit in the paper but needed to be made explicit. This should be presented as a way of using resources to best effect and looking at new areas.
- 6.1.6 It was noted that decisions like this were already being made in the organisation but with no agreed methodology or framework, so this process would help the decision making process.
- 6.1.7 It was agreed that the Finance and Resources needed to be involved in this and that the paper would be taken to the Board Development Session on 1 November 2017 and to the next Finance and Resources Committee.

6.2 Futures Group

- 6.2.1 A paper on the vision for the 'Futures Group' had been circulated for discussion. There was discussion on what NHS Lothian could do to influence change given the existing constraints. Mr Murray suggested that the strategic planning group should support joint working between different organisations; support improvement; take action to ameliorate risks; ensure IT meets organisational priorities; ensure good practice is described for analysis.
- 6.2.2 It was agreed that the futures group should include regional bodies and all bodies associated with NHS Lothian so that it could be more influential in addressing constraints, and would include expertise in all areas for a wider scope.
- 6.2.3 It was agreed that some way of envisaging the future was required to improve the current unsustainable situation, and that Lothian was best placed to do this. The vision needed to be defined on a large scale and include innovation. The barriers to

change and the basis for problems in the organisation and their interaction must be understood.

- 6.2.4 There was discussion about whether these aims should be part of the Strategic Planning Committee or a separate forum. If part of the Strategic Planning Committee it there would need to be a rebalance of focus between planning and strategy as the current focus was mainly on planning, although this was still required. It was noted that the Strategic Planning Committee as it currently was did not fulfil the remit in the terms of reference which was more focussed on strategy. Currently elements of the strategic plan were discussed at the Committee, but these should be approved as part of the Board Governance Structure to leave more time for strategy at the Committee.
- 6.2.5 Mr Briggs and Mr Houston would discuss further and bring the next stage of ideas to the next meeting after discussion with others. **CB / BH**

7. Date of Next Meeting

- 7.1 The next meeting of this group would take place at **9.30** on **Thursday 14 December 2017** in **Meeting Room 8**, second floor, Waverley Gate.
- 7.2 Meetings in 2018 would take place on the following dates:
- Thursday 8 February 2018;
 - Thursday 12 April 2018;
 - Thursday 7 June 2018;
 - Thursday 9 August 2018;
 - Thursday 11 October 2018;
 - Thursday 6 December 2018.

Item 4.1 Minutes

Edinburgh Integration Joint Board

9:30 pm, Friday 22 September 2017

City Chambers, Edinburgh

1.9

Present:

Board Members:

Councillor Ricky Henderson (Chair), Carolyn Hirst (Vice Chair), Shulah Allan, Michael Ash, Colin Beck, Carl Bickler, Andrew Coull, Wanda Fairgrieve, Christine Farquhar, Kirsten Hey, Councillor Derek Howie, Councillor Melanie Main, Michelle Miller, Moira Pringle, Ella Simpson, Councillor Alasdair Rankin, Councillor Susan Webber, Pat Wynne.

Officers: Colin Briggs, Wendy Dale, Ann Duff, Andrew Kerr, Allan McCartney, Ross Murray and Cathy Wilson.

Apologies: Sandra Blake and Nikki Conway.

1. Minutes

Decision

To approve the minute of the Joint Board of 11 August 2017 as a correct record.

2. Sub-Group and Committee Minutes and Updates

Updates were given on Sub-Group and Committee activity.

Decision

To note the Sub-Group and Committee minutes and updates.

3. Rolling Actions Log

The Rolling Actions Log for 22 September 2017 was presented.

Decision

To note the outstanding actions.

(Reference – Rolling Actions Log – 22 September 2017, submitted.)

4. Management Arrangements for the Joint Board and Health and Social Care Partnership

An update on arrangements to cover the vacant post of Chief Officer for the Edinburgh Integration Joint Board, including proposal to approach to recruiting to this post on a permanent basis, was ruled urgent.

Decision

- 1) To note that following the departure of Rob McCulloch-Graham, there was a requirement for interim and permanent arrangements to be put in place in relation to the role of Chief Officer for the Edinburgh Integration Joint Board.
- 2) To approve the appointment of Michelle Miller, the City of Edinburgh Council's Head of Safer and Stronger Communities and Chief Social Work Officer as the Interim Chief Officer for the Edinburgh Integration Joint Board pending a permanent appointment.
- 3) To note that Alistair Gaw, Executive Director of Communities and Families for the City of Edinburgh Council would take on the Interim Chief Social Work Officer role for the Council and provide advice in this capacity to the Joint Board.
- 4) To note that the Strategic Planning function for the Edinburgh Health and Social Care Partnership (HSCP) would be led by Colin Briggs, NHS Lothian Director of Strategic Planning, on an interim basis.
- 5) That the job description for the Chief Officer be considered at a special Board meeting following the Joint Board development session on 13 October 2017.

(References – minute of the Integration Joint Board 16 June 2017 (item 12); report by the Head of Human Resources, CEC and Interim Director of Human Resources and Organisational Development, NHS Lothian, submitted)

5. Annual Accounts 2016-17

The annual accounts for the Joint Board for 2016-17 were presented for approval following scrutiny by the Audit and Risk Committee.

Decision

- 1) To approve and adopt the annual accounts for 2016/17.
- 2) To approve that the Interim Chief Finance Officer resolve and amend any minor textual issues in the annual report up to the date of sign off with Audit Scotland.
- 3) To authorise the designated signatories (Chair, Interim Chief Officer and Interim Chief Finance Officer) to sign the annual report and accounts on behalf of the Board, where indicated in the document.
- 4) To authorise the Interim Chief Finance Officer to sign the representation letter to the auditors, on behalf of the Joint Board.
- 5) To request further information on Workforce Planning once this was available.

(References – minutes of the Integration Joint Board 16 June 2017 (item 12) and Audit and Risk Committee 11 September 2017 (item 10); report by the IJB Interim Chief Officer, submitted)

6. Financial Update

An overview of the financial position for the four months of 2017/18 and the forecast year end position was provided.

Decision

- 1) To note that delegated services were reporting an overspend of £6.0m for the first four months of 2017/18, which was projected to rise to £17.2m by the end of the financial year without any further action.
- 2) To agree the release of the £2.2m provision, included in the Social Care Fund, for demography and £1.0m to support the implementation of the locality structure.
- 3) To agree to receive a detailed action plan from the Interim Chief Officer at a future date.
- 4) That a future Development Session on finance be scheduled.

(References – minute of the Integration Joint Board 14 July 2017 (item 7); report by the Interim IJB Chief Officer, submitted.)

7. Whole System Delays – Recent Trends

An overview was provided of performance in managing hospital discharge against Scottish Government targets. Key reasons for delay were explained, and a number of workstreams aimed at reducing delays were outlined.

Decision

- 1) To note the current performance in respect of people delayed in hospital.
- 2) To note the delays and pressures in the community.
- 3) To note the actions being taken to address the identified challenges.
- 4) To note the significant ongoing challenge of bringing about improvement.
- 5) To agree that board members would consider additional information on the full costs of anticipated demand at a future Development Session.

(References – minute of the Integration Joint Board 14 July 2017 (item 6); report by the Interim IJB Chief Officer, submitted.)

8. Older People's Inspection Update

An update was provided on progress against the Improvement Plan implemented following the Inspection of Older People's Services.

Decision

- 1) To note actions taken to date in responding to the inspection's recommendations, as set out in Appendix 1 of the Interim Chief Officer's report.
- 2) To note the Partnership's intention to review the associated actions plan and report back on priorities and timescales.

(References – minute of the Integration Joint Board 14 July 2017 (item 4); report by the Interim IJB Chief Officer, submitted.)

Declaration of interest

Christine Farquhar declared a non-financial interest in the above item as a guardian of an individual in receipt of direct payments and Chair of a learning disability provider.

9. Proposals for Investment – referral from the Strategic Planning Group

Requests for investment from the Social Care Fund, as recommended by the Strategic Planning Group, were submitted for approval. (see also item 15)

Decision

- 1) To approve the investment of £2,167,167 to build capacity in services for people with learning disabilities.
- 2) To approve the investment of £588,096 on an invest to save basis as set out in the business case for the expansion of the telecare service.
- 3) To request officers, implementing this decision, to take account of the detailed issues raised at the recent Strategic Planning Group.

(References – minute of the Strategic Planning Group 1 September 2017 (item 4); report by the Interim IJB Chief Officer, submitted.)

Declaration of interests

Christine Farquhar declared a non-financial interest in the above item as a guardian of an individual in receipt of Direct Payments and the former Chair of a learning disability provider.

10. Primary Care Population and Premises

A summary of work undertaken by the Edinburgh Health and Social Care Partnership to ascertain the likely capacity requirements in primary care to 2026 was submitted. A population growth of 50,000 for Edinburgh was estimated for the next ten years.

Approval was also sought to develop a prioritised capital investment plan and then work with NHS Lothian to prioritise this with the overall capital envelope available.

Decision

- 1) To note the analysis of General Practice (GP) premises and population growth for the period 2016-2026 detailed in appendix 1 of the report by the Interim Chief Officer.
- 2) To note the high-level estimate that this growth would equate to approximately £57m of investment over the next ten years.
- 3) To mandate the Edinburgh Health and Social Care Partnership to prioritise this list and engage with NHS Lothian on how this could be accommodated with the available envelope.

- 4) To request that a fuller report outlining a comprehensive primary care strategy, covering both revenue and capital requirements, be brought back to the Joint Board in the first quarter of the 2018 calendar year.

(References – minute of the Integration Joint Board 16 June 2017 (item 7); report by the Interim IJB Chief Officer, submitted.)

11. Review of Grant Programmes

It was proposed that existing grant arrangements funded by the Joint Board stayed in place until 31 March 2019 while a review of grant programmes was undertaken over the next 12 months.

Decision

- 1) To agree to extend the existing grants programmes detailed in Appendix 1 to the Interim Chief Officer's report for a further year to 31 March 2019.
- 2) To agree to delegate the extension of the existing contract with the Edinburgh Voluntary Organisations Council (EVOC), for third sector interface services to the Interim Chief Officer, subject to compliance with the Council's Standing Orders.
- 3) To agree that future reports on the scope, methodology and timetable to the review would be considered by the Strategic Planning Group in advance of approval by the Joint Board.

(References – minute of the Strategic Planning Group 1 September 2017 (item 7); report by the Interim IJB Chief Officer, submitted.)

Declaration of interests

Christine Farquhar declared a non-financial interest in the above item as a director of VOCAL.

12. Royal Edinburgh Hospital Phase 1 Verbal Update

It was advised that the Royal Edinburgh Hospital had been occupied by staff and initial impressions of the building were positive. An invitation was extended to Joint Board members to visit the facility. NHS Lothian has also concluded that it would not be necessary to use the old building as contingency accommodation.

Decision

To note the verbal update.

(References – minute of the Integration Joint Board 16 June 2017 (item 10); report by the Interim IJB Chief Officer, submitted.)

13. Assurance Challenges

Assurance challenges and associated risks affecting the Joint Board were highlighted. Specific concerns raised by the Audit and Risk Committee for communication to the Joint Board included:

- Lack of an independent Chief Risk Officer (CRO).
- Lack of regular update of the Joint Board Risk Register.

- Limited assurance coverage provided by the 2017/18 Internal Audit Plan.

Decision

- 1) To note the current assurance challenges and associated risks affecting the Joint Board and their impact.
- 2) To note that the Interim Chief Officer would develop proposals for approval by partner organisations.
- 3) To note that a replacement Audit and Risk Committee Chair would be required to be appointed following the resignation of Angus McCann.

(References – minute of the Audit and Risk Committee 11 September 2017 (item 5); report by the Interim IJB Chief Officer, submitted.)

14. Resolution to Consider in Private

Decision

The Joint Board resolved that the public be excluded from the meeting during consideration of the following items of business on the grounds that they involved the disclosure of exempt information as defined under standing order 5.9.

15. Proposals for Investment (Dementia Post Diagnostic Support Service) - Referral from the Strategic Planning Group

A business case from the Dementia Post-Diagnostic Support Service (PDS) in Edinburgh for funding to help improve outcomes for people newly diagnosed with early stage dementia through support and intervention was submitted.

Decision

To agree substantive baseline funding over five years from April 2018 to March 2023, for continuation of dementia post-diagnostic support (PDS) delivery in Edinburgh.

(References – minute of the Strategic Planning Group 1 September 2017 (item 7); report by the Interim IJB Chief Officer, submitted.)

Item 4.1 Minutes

Edinburgh Integration Joint Board

9:30 am, Friday 13 October 2017

City Chambers, Edinburgh

Present:

Board Members:

Councillor Ricky Henderson (Chair), Carolyn Hirst (Vice Chair), Shulah Allan, Michael Ash, Colin Beck, Carl Bickler, Sandra Blake, Andrew Coull, Christine Farquhar, Kirsten Hey, Councillor Derek Howie, Councillor Melanie Main, Ian McKay, Michelle Miller, Moira Pringle, Ella Simpson, Councillor Alasdair Rankin, Councillor Susan Webber, Richard Williams and Pat Wynne.

Officers: Colin Briggs, Wendy Dale, Ann Duff, Jamie Macrae, Allan McCartney and Julie Tickle.

1. Appointment of Chief Officer, Edinburgh Integration Joint Board and Director, Edinburgh Health and Social Care Partnership

An outline of the recommended approach for the recruitment of a permanent Chief Officer of the Joint Board and Director of the Edinburgh Health and Social Care Partnership was provided. The update also highlighted the need to recruit to the new Head of Operations and Head of Strategic Planning roles, which would be addressed more fully in a subsequent report to the Joint Board.

Decision

- 1) To note that it was critical to move ahead with the recruitment for the permanent candidate for the post of Chief Officer, Edinburgh Integration Joint Board/Director, Edinburgh Health and Social Care Partnership.
- 2) To approve the engagement of FWB Park Brown, the procured contracted supplier for recruitment searches for Head of Service and Director level roles.
- 3) To approve the recruitment panel as detailed in the report, subject to any necessary approvals from the Council or NHS Lothian.
- 4) To note that an assessment centre approach would be used for the recruitment of the Chief Officer/Director role and details of this (including design and cost) would be presented to Andrew Kerr, Chief Executive, City of Edinburgh Council, and Tim Davison, Chief Executive, NHS Lothian, in

consultation with the Chair and Vice Chair of the Joint Board for their consideration and approval in October 2017.

- 5) To note that recruitment would take place for the new posts of Head of Operations and Head of Strategic Planning. Work was underway to finalise and evaluate both role profiles, and it was envisaged that this would be completed after the NHS Lothian evaluation panel on 23 October 2017.
- 6) To note the intention to recruit for all three roles at the same time. If the opportunity arose to appoint to the Head of Service roles before the Chief Officer/Director was selected, the Joint Board would be asked to confirm the arrangements.

(References – minute of the Integration Joint Board 11 August 2017 (item 1) and 22 September 2017 (item 4); report by the Head of Human Resources, City of Edinburgh Council, and Interim Director of Human Resources and Organisational Development, NHS Lothian, submitted)

MINUTE of MEETING of the WEST LOTHIAN INTEGRATION JOINT BOARD of WEST LOTHIAN COUNCIL held within STRATHBROCK PARTNERSHIP CENTRE, 189 (A) WEST MAIN STREET, BROXBURN EH52 5LH, on 26 SEPTEMBER 2017.

Present –

Voting Members - Martin Hill (Chair), Harry Cartmill (Vice-Chair), Damian Timson and Susan Goldsmith.

Non-Voting Members - Ian Buchanan (Stakeholder Representative), Elaine Duncan (Professional Advisor), Mary-Denise McKernan (Stakeholder Representative), Martin Murray (Staff Representative), Patrick Welsh (Chief Finance Officer), Marion Barton (Head of Health Services).

Apologies – Dave King (Voting Member), Alex Joyce (Voting Member), Lynsay Williams (Voting Member), Jim Forrest (Director), Malread Hughes (Professional Advisor), Jane Houston (Staff Representative), Jane Kellock (Chief Social Work Officer), James McCallum (Professional Advisor), Bridget Meisak (WL Voluntary Sector Gateway).

In Attendance – Carol Bebbington (Senior Manager Primary Care and Business Support), Alan Bell (Senior Manager, Communities and Information, WLC), James Millar (Standards Officer), Lorna Kemp (Project Officer), Keith MacPherson (Ernst Young).

1. DECLARATIONS OF INTEREST

Public Sector Climate Change Duties (Agenda Item 12) -

Martin Hill declared a non-financial interest as a Non-Executive Member of SEPA.

2. MINUTE

- (a) The West Lothian Integration Joint Board approved the minute of its meeting held on 27 June 2017.
- (b) The West Lothian Integration Joint Board noted the minute of the meeting of the West Lothian Integration Joint Board Audit Risk and Governance Committee held on Friday 31 March 2017.
- (c) The West Lothian Integration Joint Board noted the minute of meeting of the West Lothian Integration Strategic Planning Group held on 20 April 2017.

3. APPOINTMENTS

The Board considered a report (copies of which had been circulated) by the Director dealing with some recent membership and appointment changes.

The report explained that the changes related to the positions of Chair and Vice-Chair of the Board, the position of Chair of the Audit, Risk and Governance Committee and the position of Chair of the Health and Care Governance Group.

It was recommended that the Board:-

1. In relation to the positions of Chair and Vice-Chair of the Board:-
 - a) Note that the position of Chair was to be held by a voting member appointed by NHS Lothian from 21 September 2017 until 20 September 2019.
 - b) To note that Martin Hill had been appointed by the health board to that position.
 - c) To note that the position of Vice-Chair is to be held by a voting member appointed by West Lothian Council for that same period.
 - d) To note that Harry Cartmill had been appointed by the council to that position.
2. In relation to the position of Chair of the Audit, Risk and Governance Committee:-
 - a) To note that Martin Hill may no longer be the Chair or a members of the Audit, Risk and Governance Committee.
 - b) To appoint a voting member appointed by NHS Lothian in his place.
 - c) To appoint a Chair of the committee from the members on the committee
 - d) To appoint a Vice-Chair from the remaining members on the committee.
3. In relation to the position of Chair of the Health and Care Governance Group:-
 - a) To note that the position of Chair is vacant.
 - b) To appoint a voting member of the Board to that position.

Decision

1. To note that Martin Hill had been appointed to the position of Chair from 21 September 2017 until 20 September 2019.

2. To note that Harry Cartmill had been appointed to the position of Vice-Chair for the same period.
3. To agree that Damian Timson be appointed to the position of Chair of Audit, Risk and Governance Committee.
4. To defer the appointment of a Vice-Chair of Audit, risk and Governance Committee to the next meeting of the Board.
5. To defer the appointment of a Chair of the Health and Care Governance Group to the next meeting of the Board.

4. AUDIT OF ANNUAL ACCOUNTS

A report had been circulated by the Chief Finance Officer advising the Board of the outcome of the 2016/17 Audit and providing a summary of the key points arising from the Auditor's Annual Report.

The report provided the following appendices:-

Appendix 1 Ernst and Young – Annual Audit Report for Year Ended 31 March 2017.

Appendix 2 2016/17 Audited Statement of Accounts for West Lothian Integration Joint Board.

The Auditor's conclusions on their audit of the 2016/17 accounts included the following key points:-

There was an unqualified opinion on the financial statements.

- The financial statements were prepared to a satisfactory standard. There were no adjusted or unadjusted audit differences arising from the audit.
- The IJB had complied with the requirements of the Local Authority Accounts (Scotland) Regulations 2014.
- Achieving financial sustainability continued to represent a significant challenge for the IJB and management had recognised the need to put in place longer term financial planning arrangements.
- The IJB had generally established a sound basis to demonstrate good governance and transparency in operational activity.
- Core financial management arrangements had been established and EY were satisfied that these were adequate for the current management of financial activities.
- In response to the need to measure performance and progress against the IJB's Strategic Plan, EY had concluded that the IJB had identified local outcomes and key performance indicators through

which to measure performance.

It was recommended that the Board:-

- Note the Auditor's 2016/17 Annual Audit Report including the completed management action plan.
- Agrees the audited 2016/17 Annual Accounts for signature.

On behalf of the Board, the Chair thanked the Chief Finance Officer and the Head of GPS Audit and his staff for the audit work undertaken.

Decision

1. To note the Auditor's 2016/17 Annual Audit Report including the completed management action plan.
2. To agree the audited 2016/17 Annual Accounts for signature.
3. To refer the 2016/17 Annual Accounts to the Audit, Risk and Governance Committee for further scrutiny.

5. IJB BUDGET UPDATE

A report had been circulated by the Chief Finance Officer providing an update on the 2017/18 budget forecast position for the IJB delegated health and social care function and providing an update on financial planning for future years.

A table within the report showed the most recently reported 2017/18 forecast position by NHS Lothian and West Lothian Council based on their first overall year end forecast.

Appendix 1 to the report provided further detail on the forecast position shown in the table. An overspend of £539,000 was forecast on the payment to the IJB and an overspend of £1.586 million was forecast against the share of acute set aside resources attributed to West Lothian.

A summary of key risks and service pressures had been identified and these were noted in the narrative within the report against the relevant components of the delegated budget.

The Chief Finance Officer recalled that, as part of the 2017/18 payment to the IJB from the council and NHS Lothian there was £3.520 million of budget savings identified as reported to the Board on 14 March 2017. The monitoring undertaken estimated that £3.501 million of this target was achievable.

In addition, the share of acute set aside budget included a share of acute savings totalling £438,000 of which £418,000 was currently estimated to be achievable. The overall forecast position for the IJB took account of the position on savings noted. The summary split of these savings was shown in a table within the report, along with the actual level of savings

considered to be achievable.

The Chief Finance Officer reported that, while in overall terms satisfactory progress was being made on the delivery of 2017/18 savings, it was vital that savings were fully achieved on a recurring basis. NHS Lothian and the council had established processes in place for monitoring and reporting on the delivery of savings and regular updates would be provided to the Board on progress with delivery of savings.

It was noted that an overall estimated council gap of £73 million over the period 2018/19 to 2022/23 had been agreed as the basis for future planning by Council Executive on 19 September 2017. Budget saving proposals for delegated functions were currently being worked on at an officer level by senior managers supporting the IJB and an overall consultation on council delivered services outlining officer proposals to help meet the £73 million gap would be issued to the public on 16 October 2017. The public consultation would be open for a period of four weeks.

The Board noted that, in terms of the 2018/19 budget position, this was being progressed as part of the wider medium term financial strategy work but was clearly the most pressing priority given timescales and also the likelihood that the financial gap in 2018/19 would be the highest over the five year period.

High level proposals on saving areas and themes would be developed by officers over the coming weeks and it was proposed that a further development session be held with the Board during October/November 2017 to consider potential savings options across health and social care and the impact on the IJB's strategic planning role.

The Chief Finance Officer recommended that the Board:-

1. Note the roles and responsibilities for managing within budget taking account of the approved West Lothian Integration Scheme.
2. Note the forecast outturn for 2017/18 in respect of IJB Delegated functions taking account of saving assumptions.
3. Note that further management action was required by Partner bodies in partnership with the IJB to manage the 2017/18 budget pressures identified and updates on this would be reported to future Board meetings.
4. Note the update on progress with financial planning for future years and propose next steps.

There followed a discussion on the planned consultation which was due to commence on 16 October 2017. The Chief Finance Officer responded to questions raised by the Chair concerning the purpose of the consultation and the Governance Manager provided further information about the proposed consultation process.

Decision

1. To note the report and the recommendation outlined in Section B of the report.
2. To agree that the IJB write to the Chief Executive, West Lothian Council requesting details of the council's consultation on its budget strategy and the potential for IJB involvement in the process.

6. **DEVELOPMENT AND INDUCTION SESSION: THURSDAY 31 AUGUST 2017**

A report had been circulated by the Director providing a summary of the West Lothian IJB Development and Induction Session that took place on Thursday 31 August 2017 at Strathbrock Partnership Centre.

The Board was informed that the session was well attended and the following subjects were covered:-

- Governance Roles and Responsibilities
- Health and Inequalities
- Finance
- Strategic Plan

The report contained a list of emerging themes and considerations.

It was recommended that the Board:-

1. Note the summary of the Development and Induction Session as outlined in the report.
2. Agree dates for further IJB development sessions; and
3. Agree any further action to be taken.

The Board then heard from the Project Officer in relation to plans for further IJB development sessions.

Decision

- To note the terms of the report.
- To note that members had been consulted on dates for further IJB development session.
- To agree that the summary be made available to interested parties within the Health and Social Care Partnership.

INQUORATE MEETING

Harry Cartmill left the meeting, having given notice at the start of the meeting that he would leave the meeting at 4.30 pm. The meeting then

became inquorate and no further business was conducted.

MINUTE of MEETING of the WEST LOTHIAN INTEGRATION JOINT BOARD of WEST LOTHIAN COUNCIL held within STRATHBROCK PARTNERSHIP CENTRE, 189 (A) WEST MAIN STREET, BROXBURN EH52 5LH, on 31 OCTOBER 2017.

Present –

Voting Members - Martin Hill (Chair), Harry Cartmill (Vice-Chair), Martin Connor, Alex Joyce, Dave King, George Paul, Damian Timson, Lynsay Williams

Non-Voting Members – Elaine Duncan (Professional Advisor), Jim Forrest (Director), Mairead Hughes (Professional Advisor), Jane Houston (Staff Representative), Jane Kellock (Chief Social Work Officer), Patrick Welsh (Chief Finance Officer).

Apologies - Ian Buchanan, Mary-Denise McKernan, Martin Murray and Bridget Meisak (Non-Voting Members)

In Attendance – Carol Bebbington (Senior Manager Primary Care and Business Support), Alan Bell (Senior Manager, Communities and Information, WLC), James Millar (Standards Officer), Lorna Kemp (Project Officer).

1. DECLARATIONS OF INTEREST

ADP Performance (Agenda Item 9) – Damian Timson declared a non-financial interest as a member of the ADP Committee.

2. ORDER OF BUSINESS

In relation to the order of business, the Board agreed a suggestion by the Chair that those items requiring decision and discussion would be dealt with in the order presented on the Agenda. It was further agreed that items 12, 15 and 16 did not require discussion and they were presented for information only.

3. MINUTES -

- (a) The West Lothian Integration Joint Board approved the minute of its meeting held on 26 September 2017.
- (b) The West Lothian Integration Joint Board noted the minute of the meeting of the West Lothian Integration Joint Board Audit Risk and Governance Committee held on 28 June 2017.
- (c) The West Lothian Integration Joint Board noted the minute of meeting of the West Lothian Integration Strategic Planning Group held on 17 August 2017.

4. OUTSTANDING APPOINTMENTS

The Board considered a report (copies of which had been circulated) by the Director concerning some outstanding appointments.

The Board was informed that Martin Hill had ceased to be a Member and Chair of the Audit, Risk and Governance Committee since becoming Chair of the Board. Damian Timson had been appointed as Chair of the Committee on 26 September 2017. The Board was being asked to appoint a voting member of the Board to fill the vacancy. Thereafter, one of the committee members should be appointed as Vice-Chair. The present committee members were Jane Houston, Martin Murray, George Paul, Damian Timson and Lynsay Williams.

In relation to the Health and care Governance Group, it was noted that a voting member of the Board should be appointed as Chair of the Group.

It was recommended that the Board:-

1. appoint a voting member of the Board appointed by NHS Lothian to the Audit, Risk and Governance Committee.
2. appoint a Vice-Chair of that committee from amongst its members
3. appoint a voting member of the Board to the position of Chair of the Health and Care Governance Group.

Decision

1. To agree to appoint Martin Connor as Vice-Chair of the Audit, Risk and Governance Committee.
2. To agree to appoint Alex Joyce to the position of Chair of the Health and Care Governance Group,

5. PROVISION OF SUPPORT SERVICES

The Board considered a report (copies of which had been circulated) by the Director providing an update on the provision of support services by West Lothian Council and NHS in the context of the Integration Scheme.

The Board was informed that the Integration Scheme provided that the support services needed by the Board would be agreed by the council and health board through an officer working group and then agreed with the Board once it had been formally established.

The arrangements which had emerged before and since the establishment of the Board meant that the council provided the board with the bulk of the support services it needed. It provided committee services, legal advice, the Standards Officer, the Finance Officer, the Internal Audit function, and a Project Officer to provide support in relation to records management, information management and security, public

sector equality duties, climate change and engagement and participation activity.

Both council and health board contributed staff resources in relation to health and care governance, equalities impact assessments and public health.

The Director concluded that it remained the case that most of the areas of work that remained to be addressed in the Integration Scheme were listed under support services. However, the current provision of support was deemed to be realistic and sufficient to fulfil the Board's needs. It was recommended that support provision to the Board was monitored closely and reviewed again in two years.

It was recommended that the Board:-

1. note the arrangements in place for the provision of support services to the Board;
2. note that arrangements had been made by the council and health board for the provision of support services to the Board which were realistic and sufficient for the Board's purposes.
3. agree that the services provided be monitored continuously and reviewed every two years.

Decision

To note the terms of the report and to agree that the services provided would be monitored continuously and reviewed every two years.

6. IJB INFORMATION MANAGEMENT

The Board considered a report (copies of which had been circulated) by the Director providing an update in relation to Information Management and action taken to ensure compliance with related legislation including the Freedom of Information (Scotland) Act 2002; the Public Records (Scotland) Act 2011; and the Data Protection Act 1998.

The Board was informed of its duties in relation to ensuring that the Board met its statutory requirements in relation to managing and sharing information, as well as maintaining public confidence and best practice. The Board was registered with the Information Commissioners Office as a data controller and was, therefore, subject to the same data protection laws as any other public body.

The report provided the following appendices:-

Appendix 1 Letter to IJB Chief Officers from the Keeper of Records, Head of National Records of Scotland (NRS).

Appendix 2 West Lothian IJB Publication Scheme

The report also provided details of Records Management and the Freedom of Information Act.

The Board was asked to:-

1. Note the progress made to ensure compliance with legislation and regulation in relation to information management and sharing;
2. Note that a Records Management Plan would be submitted for the Board upon the request of the Keeper of Records, Head of National Records of Scotland (NRS)
3. Note that quarterly submission would be made to the Office of the Scottish Information Commissioner (OSIC) with statistics on information requests made to the Board; and
4. Agree to adopt the council's Information Security Policy, Records Management Policy and Data Protection Policy in line with guidance from the Keeper of Records and in keeping with current provision of support to the Board.

Decision

To note the terms of the report and to agree to adopt the council's Information Security Policy, Records Management Policy and Data Protection Policy in line with the guidance from the Keeper of Records and in keeping with current provision of support to the Board.

7. PUBLIC SECTOR CLIMATE CHANGE DUTIES

The Board considered a report (copies of which had been circulated) by the Director advising the Board of its statutory duties under the Climate Change (Duties of Public Bodies: Reporting Requirements) (Scotland) Order 2015; to ask the Board to agree the contents of the draft submission; to agree to incorporate a statement on climate change into the Strategic Plan; and to agree the contents of that statement.

It was noted that required reporting focussed on corporate emissions arising from organisational operations and service delivery, as well as key information on: Organisational Profile; Governance, Management and Strategy; Adaptation; Procurement; and Validation. However, SSN recognised the unique nature of IJBs and did not expect IJBs to be able to address every aspect of the report in the same way that NHS boards and local authorities did.

Currently the IJB did not reference climate change in its strategic plan and did not have an agreed public position on climate change.

The report provided the following appendices:-

1. Letter from Sustainable Scotland Network (SSN) – Climate Change Reporting and Integrated Joint Boards (IJBs).

2. Draft Public Bodies Climate Change Duties Report: 2016-17 for West Lothian IJB.
3. Draft position statement on climate change.

The Director recommended that the Board:-

1. note the statutory requirement to report on climate change on an annual basis and no later than 30 November 2017
2. agree the contents of the draft 2016/17 submission to the Scottish Government;
3. agree that a statement on the Board's position on Climate Change would be included in the next iteration of the Strategic Plan and to agree the content of that statement.

Decision

1. To note the terms of the report; and
2. To agree that a statement on the Board's position on Climate Change would be included in the next iteration of the Strategic Plan and to agree the content of the statement (attached as appendix 3 to the report).

8. ALCOHOL AND DRUGS PARTNERSHIP (ADP) PERFORMANCE

The Board considered a report (copies of which had been circulated) by the Director advising of the approach proposed by the ADP to inform the impact of the reduction in funding to commissioned services.

The Board was informed that the HEAT (Health improvement, Efficiency, Access to services and Treatment) A11 standard set by the Scottish Government stated that by March 2013, 90% of clients would wait no longer than three weeks from referral received to appropriate drug or alcohol treatment that supported their recover. This remained one of the main performance measures for ADP commissioned services.

Table 1 within the report indicated that performance in 2017 was significantly down on performance in 2016.

The ADP had discussed the approach to take to inform the impact of the reduction in funding to commissioned services. It was proposed that this should take a similar form to that of the Needs Assessment for the Commission Plan by combining a broad review of secondary data sources related to both service users and the wider community with primary data obtained through stakeholder engagement. The ADP was currently working up a detailed proposal for consideration at its next meeting. The intention would be to report to the IJB on the outcome of the review for its meeting on 30 October 2017.

The Board was asked to support the approach proposed by the ADP to inform the impact of the reduction in funding to commissioned services.

There followed a number of questions about the performance information, including a question about the trend lines contained in the table. The Senior Manager advised that fuller information concerning the impact, together with preliminary proposals and resource assumptions would be available for consideration at the IJB Development Day in November.

Decision

To support the approach proposed by the ADP to inform the impact of the reduction in funding to commissioned services.

To note the intention to bring further information for consideration at the IJB Development Day in November.

9. 2017/18 BUDGET UPDATE

The Board considered a report (copies of which had been circulated) by the Chief Finance Officer providing an update on the 2017/18 budget position for the IJB delegated health and social care functions, including an update on key risk areas.

The forecast position in the report reflected the most recent NHS and council outturn position. West Lothian Council was forecasting an overall breakeven budget position for 2017/18, while NHS Lothian was forecasting an overspend of £2.090 million. Further detail on the forecast position shown was provided in Appendix 1 to the report. The position took account of a number of significant pressures across both West Lothian Council and NHS Lothian such as prescribing, junior medical staff costs and the costs of care home placements for older people. It was important that plans were put in place to address the areas of overspend part of prioritising and planning future resource use.

The Chief Finance Officer reported that a share of reserves and additional flexibility resources being used to partially offset the overall 2017/18 NHS Lothian forecast overspend, including on IJB delegated functions within Business Units, were not take account of in the IJB forecast position.

A summary of the key risks and service pressures along with actions being progressed to mitigate the risks had been identified as well as a review of in year and future year strategic risks, and these were attached at appendix 2 to the report.

It was recommended that the Board:

1. Note the forecast outturn for 2017/18 in respect of IJB Delegated functions taking account of saving assumptions.
2. Note that further management action was required by Partner bodies in partnership with the IJB to manage the 2018 budget

pressures.

3. Note the key risks associated with the 2017/18 forecast position.

10. IJB FINANCIAL PLANNING

The Board considered a report (copies of which had been circulated) by the Chief Finance Officer providing an update on medium term financial planning for IJB delegated function taking account of work progressing with West Lothian Council and NHS Lothian.

It was reported that health and social care was seeing continuing increases in care demand on an annual basis and this was placing very significant pressures on budgets as funding increases were not matching increasing expenditure associated with demands. This was evident from 2017/18 budget position for the IJB where an overspend of £2.090 million was forecast.

The Board noted that all economic forecasts including from influential bodies such as the Fraser of Allander Institute suggested that 2018/19 would see an extremely tight financial settlement that would, for example, require significantly more savings than in 2017/18.

The Chief Finance Officer advised that an overall consultation on council delivered services outlining officer proposals to meet an estimated £83 million gap had been issued to the public on 16 October 2017. The public consultation would be open for four weeks, closing on 12 November 2017.

As part of the £73 million, a number of high level proposals had been identified and were included in the consultation. These were examined within the report by the Chief Finance Officer.

In terms of Health Care functions, work was ongoing regarding the forecasting of the financial gap for overall NHS Lothian over the five year period. A letter from the NHS Lothian Director of Finance was attached in Appendix 2 to the report setting out proposed arrangements for 2018/19 and future years. At a West Lothian level, an officer Finance Programme Board had been established with the objective of identifying officer saving proposals over the medium term across locally delivered services. It was important to note that for delegated health functions, saving proposals would also need to take account of Lothian wide, regional and national health service changes proposed over the medium term that would impact on IJB delegated functions.

Finally, it was noted that the next IJB Development Session was scheduled for 30 November 2017 and it was proposed that this session be used as a private session to consider the medium term financial planning position for IJB delegated functions.

The report provided the following appendices:

- | | |
|------------|---|
| Appendix 1 | Correspondence on West Lothian Council Transforming Your Council Consultation |
|------------|---|

Appendix 2 Arrangements for Financial Planning in 2018/19 – Letter from NHS Lothian Director of Finance to IJB Chairs and Chief Officers.

It was recommended that the Board:

1. Note the progress to date on developing financial planning in relation to IJB delegated functions.
2. Consider West Lothian Council's consultation process, associated correspondence between the IJB Chair and council Chief Executive, and draft officer saving proposals
3. Consider the proposed approach to NHS Lothian financial planning for IJB delegated health functions set out in correspondence from the NHS Lothian Director of Finance, and initial high level areas identified by officers where scope for savings will be explored further.
4. Agree that the Development Session taking place on 30 November 2017 focussed on future financial and strategic planning for IJB delegated functions.

Questions raised by Board members were then dealt with by the Director and the Chief Finance Officer. The Board heard an undertaking by the Chief Finance Officer that further reports would be presented to the Board tracking progress on the management of budget pressures.

Decision

To note the terms of the report.

11. STANDARDS COMMISSION ADVICE NOTES

The Board considered a report (copies of which had been circulated) by the Standards Officer informing members of recently-issued advice by the Standards Commission on the declaration of interests at meetings and in relation to members' right to freedom of expression in political life. The first of these had been the subject of a report to the September meeting of the Board but was not dealt with then. Since that meeting, an additional advice note had been issued by the Standards Commission.

The Standards Officer advised that, on 10 August 2017, the Commission had issued a short advice note entitled "Advice Note for Members On How to Declare Interests". He provided a summary of what this meant for voting members of the Board.

The Standards Officer went on to advise that, on 4 October 2017, the Commission issued a further advice note for members of devolved public bodies concerning the boundary between the right to freedom of expression and the Code's demands for respect and courtesy to all.

The Board was informed that, under Article 10, every individual had a right to freedom of expression. There was an enhanced right in relation to political discussion, matters of public concern and questions of public interest. It applied at all levels, including local. The Commission had issued the same advice in two notes, one for councillors and the other for members of public bodies.

The report provided the following appendices:-

Appendix 1 Standards Commission Advice Note for Members on How to Declare Interests

Appendix 2 Standards Commission Advice Note on The Application of Article 10 of the ECHR and The Model Code of Conduct.

It was recommended that the Board note the terms of the advice issued by the Standards Commission on “How to Declare Interests at Meetings” and on “Freedom of Expression – the Application of Article 10 of the ECHR and the Model Code of Conduct”.

Decision

To note the terms of the report.

12. HEALTH AND SAFETY ARRANGEMENTS

The Board considered a report (copies of which had been circulated) by the Director presenting the arrangements for health and safety.

Although the IJB did not directly employ staff, they issued directions to NHS Lothian and West Lothian Council to deliver services on their behalf and should therefore have oversight of the health and safety arrangements to ensure compliance with Health and Safety law, the staff governance standards and health and safety performance.

The report outlined the remit of the Health and Safety Committee (established by the West Lothian Health and Social Care Partnership) and advised that it met quarterly. The committee reported through the respective governance routes of NHS Lothian and West Lothian Council.

The report provided the following appendices which concerned first quarter reporting for 2017/18:-

Appendix 1 – HSCP (NHS) H&S Report July 2017.

Appendix 2 – Social Policy H&S Report June 2017.

It was recommended that the Board:-

1. Note the contents of the report

2. Note the Health and Safety arrangements in place
3. Approve the reporting frequency to the Board

Decision

1. To note the terms of the report; and
2. To note the intention to report to the Board on a quarterly basis.

13. PHYSICAL DISABILITY COMMISSIONING PLAN

The Boards considered a report (copies of which had been circulated) by the Director providing an annual update on the strategic Commissioning Plan for Adults with a Physical Disability.

The report recalled that, at its meeting on 23 August 2016, the Board had approved the PD Plan which included details of how high level outcomes were to be achieved through a process of strategic commissioning. It had also been agreed to provide an annual update throughout the life of the PD Plan.

The PD Plan previously submitted did not include Section 4:Next Steps Action Plan which outlined strategic change, this was because further work was required to progress the PD Strategic Needs Assessment.In proposals submitted by other care groups it had been agreed that this should be included for approval. It was now included in Appendix 1 to the report.

The Board was asked to note the contents of the report and the areas of development identified in 'Section 4: Next Steps' of the Strategic Commissioning Plan for Adults with a Physical Disability as presented in Appendix 1.

A number of questions were raised by Board members concerning the timescales shown in Appendix 1 to the report. The Senior Manager responded to questions raised and suggested that the Action Plan, together with a progress bar, be re-submitted to the Board.

Decision

1. To note the terms of the report; and
2. To agree that the Action Plan (Appendix 1) be brought back to the next meeting showing a progress bar in relation to the projected timescales.

14. WORKPLAN

A copy of the Workplan had been circulated for information.

15. PRIMARY CARE PREMISES

A report had been circulated by the Director informing the Board of action taken under Standing Order 16 in relation to Primary Care Premises. The Board was asked to note that, following the inquorate meeting on 26 September, the Initial Agreement and Strategic Assessment had been submitted to the Lothian Capital Investment Group.

Decision

To note the action taken under Standing Order 16.

16. CONSULTATION ON THE ROLE OF THE SCOTTISH HEALTH COUNCIL

A report had been circulated by the Director attaching a response to the Healthcare Improvement Scotland's Consultation on the Role of the Scottish Health Council. The Board was asked to note the response submitted under Standing Order 16.

Decision

To note the action taken under Standing Order 16.

17. RESPONSE TO THE SCOTTISH GOVERNMENT CONSULTATION ON THE DRAFT CARERS' CHARTER OF THE CARERS (SCOTLAND) ACT 2016

A report had been circulated by the Head of Social Policy attaching a response on behalf of West Lothian Health and Social Care Partnership (H&SCP) to the Scottish Government consultation on the draft Carers' Charter of the Carers (Scotland) Act 2016.

The Board was asked to note that the response had been submitted to the Scottish Government under Standing Order 16.

Decision

To note the action taken under Standing Order 16.



Midlothian Integration Joint Board

Date	Time	Venue
Thursday 24 August 2017	2pm	Conference Room, Melville Housing, The Corn Exchange, 200 High Street, Dalkeith, EH22 1AZ.

Present (voting members):

Cllr Derek Milligan (Vice-Chair)	John Oates (Chair)
Cllr Catherine Johnstone	Tracey Gillies
Cllr Jim Muirhead	
Cllr Pauline Winchester	

Present (non voting members):

Eibhlin McHugh (Chief Officer)	Alison White (Chief Social Work Officer)
David King (Chief Finance Officer)	Caroline Myles (Chief Nurse)
Patsy Eccles (Staff side representative)	Aileen Currie (Staff side representative)
Keith Chapman (User/Carer)	Rosie McLoughlin (User/Carer)
Ewan Aitken (Third Sector)	

In attendance:

Allister Short (Head of Primary Care & Older People's Services)	Jamie Megaw (Strategic Programme Manager)
Mike Broadway (Clerk)	

Apologies:

Alex Joyce	Alison McCallum
Hamish Reid (GP/Clinical Director)	Dave Caesar (Medical Practitioner)
Fiona Huffer (NHS Lothian)	

Midlothian Integration Joint Board

Thursday 24 August 2017

1. Welcome and introductions

The Chair, John Oates, welcoming everyone to this meeting of the Midlothian Integration Joint Board.

2. Order of Business

The order of business was confirmed as outlined in the agenda that had been circulated with the following amendment:

Agenda Item 5.4 - Annual Performance Report would be taken as the third item of business immediately after the Measuring Performance Under Integration – Item 5.2.

3. Declarations of interest

No declarations of interest were received.

4. Minutes of Previous Meetings

4.1 The Minutes of (i) Meeting held on Thursday 15 June 2017 and (ii) Special Meeting held on Thursday 12 July 2017 were submitted and approved as correct records.

4.2 Matter Arising from the Minutes of Meeting held on 15 June 2017:

With reference to paragraph 5.1, the Board agreed that the following Members be appointed to the three vacant positions on the IJB Audit and Risk Committee – Councillor Jim Muirhead, Councillor Pauline Winchester, and Alex Joyce. In addition, it was also agreed that Councillor Jim Muirhead be appointed as Chair.

Action: Chief Finance Officer/Clerk

4.2 Matter Arising from the Minutes of Special Meeting held on 12 July 2017:

With reference to paragraph 4.1, the Chair, John Oates provided the Board with an update on the recruitment of the new Chief Officer for the Midlothian Integration Joint Board. He highlighted that following the recruitment process, which had been as reported to the Special IJB meeting, the unanimous recommendation of the Recruitment Panel was that Allister Short be appointed as Chief Officer.

The Board unanimous agreed to ratified the appointment of Allister Short as Chief Officer.

Action: Chief Executive

Sederent

Allister Short and Alison White joined the meeting at the start of the public reports (2.16pm).

Midlothian Integration Joint Board

Thursday 24 August 2017

5. Public Reports

Report No.	Report Title	Presented by:
5.1	Financial Update – 2016-17 and 2017-18	David King

Executive Summary of Report

The purpose of this report was to provide:-

- An update on the year to date (to June 2017) financial position for the IJB
- A proposition to review the health budgeting setting model for the IJB
- A proposition around the financial planning model for 2018/19
- Proposals to develop a multi-year financial plan to support the IJB's Strategic Plan.

Summary of discussion

The Chief Finance Officer, reminded the Board that the IJB was required to break-even in 2017/18. Financial information from the partners for the first three months of the current financial year was now available and the position for the IJB suggest that the IJB was likely be overspent by c £2.3m unless recovery plans were put in place. Recovery plans were being implemented by the partners.

In the longer term the IJB needed to:-

- Review the financial model that was used to set its budgets to ensure that the system that generates the IJB's budget doesn't in any way disadvantage the IJB. Consider the budget setting mechanism for 2018/19 and reflect on the issues that the IJB must now address for next year.
- Prepare a multi-year financial plan that would support the delivery of the IJB's Strategic Plan and support the partners in transforming the services they provide to the IJB.

The Board discussed the considerable financial challenges in meeting the requirement to break even, and the ongoing work that was being undertaken in conjunction with the Council and NHS Lothian to address these challenges. The means by which the Board and partner organisations, particularly those in the voluntary sector, could input to this process was discussed and it was agreed that this could perhaps best be done by way of a workshop. Whilst it was acknowledged that the redesign of the delivery of services was likely to be a fundamental part of the process, the importance of any new models being robustly tested to ensure that they were fit for purpose and didn't simply shift pressures on to other services was emphasised. It was also highlighted that the budget pressures and the pressures from efficiency and recovery plans required to be reflected in the IJB's Risk Register.

Decision

The Board:

- **Noted the outline financial position for the first three months of the current financial year;**

Midlothian Integration Joint Board

Thursday 24 August 2017

- Supported the proposal to review the health budget setting model;
- Supported the proposal to redesign the financial planning model in 2018/19; and
- Supported the development of a multi-year financial plan.

Action

Chief Finance Officer

Report No.	Report Title	Presented by:
5.2	Measuring Performance Under Integration	Jamie Megaw

Executive Summary of Report

With reference to paragraph 5.5 of the Meeting of 20 April 2017, there was submitted a report updating the Board on progress towards achieving the Local Improvement Goals.

Decision

Having heard from the Strategic Programme Manager, who responded to Members' questions, the Board:

- Noted the performance against the Local Improvement Goals.
- Noted that the IJB would receive an update on progress every three months. The next update would be in November 2017

Action

Strategic Programme Manager

Report No.	Report Title	Presented by:
5.4	Annual Performance Report	Jamie Megaw

Executive Summary of Report

This report introduced the 2016-17 Annual Performance Report and sought the IJB's approval of its content.

The report advised that IJBs were required to prepare and publish an Annual Performance Report. The Midlothian Annual Performance Report; a copy of which was appended to the report, provided information on the health and wellbeing of the people of Midlothian. It also described the progress made in redesigning local health and care services; the financial performance of the Partnership; and the quality of health and care services delivered during 2016-17.

Midlothian Integration Joint Board

Thursday 24 August 2017

Summary of discussion

Having heard from the Strategic Programme Manager, who responded to Members' questions, the Board warmly welcomed plans for a user friendly format, noting that partner organisations, particularly those in the voluntary sector, would welcome the opportunity to input into the process of its' production.

Decision

The Board:

- **Approved the content of the Midlothian Annual Performance Report; and**
- **Approved the proposal to lay out the report in a user friendly format to make it easier for the public to understand how the IJB has performed during 2016-17**

Action

Strategic Programme Manager

Report No.	Report Title	Presented by:
5.3	Addressing Delayed Discharge	Allister Short

Executive Summary of Report

The purpose of this report was to highlight the current challenges within Midlothian in addressing delayed discharge and to set out the actions that were being taken to ensure patients were discharged at the earliest opportunity in their care pathway.

The report advised that the Midlothian Partnership had consistently been a good performer in addressing delayed discharge and ensuring that patients were discharged in a timely manner to an appropriate setting. Over the previous 6 months, this performance had deteriorated as a result of a number of factors that were set out in more detail within the report. The report also sets out a range of actions that were either now in place or being implemented to address this performance and ensure safe discharge for patients.

Decision

The Board, having heard from the Head of Primary Care & Older People's Services:

- **Noted the current delayed discharge performance in Midlothian;**
- **Expressed support for the detailed actions in place to address and reduce the number of patients who were delayed in hospital; and**
- **Agreed to receive a further report to provide assurance that performance had improved.**

Midlothian Integration Joint Board

Thursday 24 August 2017

Action
Head of Primary Care & Older People's Services

Report No.	Report Title	Presented by:
5.5	Directions – Implementation and Performance	Eibhlin McHugh

Executive Summary of Report
<p>The report provided the IJB with information about how the 2017-18 Directions, issued to NHS Lothian and Midlothian Council on 31st March 2017, were being implemented. The implementation arrangements for each Direction as well as the key performance indicator(s) which should be improved as a result of each Direction were outlined in an appendix to the report</p>

Summary of discussion
<p>Having heard from the Chief Officer, who responded to Members' questions, the Board discussed the implementation arrangements and performance indicators. In terms of future presentation, the possibility of adding, where appropriate, anticipated timescales and a short narrative of current progress would be considered beneficial.</p>

Decision
<p>After further discussion, the Board:</p> <ul style="list-style-type: none"> • Noted the arrangements now in place to ensure that the IJB Directions were being implemented and how progress would be measured.

Action
Chief Officer/Strategic Programme Manager

Report No.	Report Title	Presented by:
5.6	Risk Register	Chris Lawson

Executive Summary of Report
<p>With reference to paragraph 5.4 of the Meeting of 9 February 2017, there was submitted a report the purpose of which was to introduces the current version of the IJB's Risk Register and to highlight the risks of major concern.</p> <p>The report explained that although the MIJB Risk Register was scrutinised by the Audit and Risk Committee and any issues of concern would be reported back to the IJB as required, it was important that the IJB itself was kept informed of the key risks and how they were being managed.</p>

Midlothian Integration Joint Board

Thursday 24 August 2017

Summary of discussion

The Board, having heard from the Risk Manager, who responded to Members' questions, discussed the Risk Register; a copy of which was appended to the report.

Decision

The Board:

- **Approved the Risk Register;**
- **Agree to review the Risk Register to ensure that it adequately reflected the financial challenges facing the IJB; and**
- **Confirmed that the risks otherwise presented in the report reflect the current risks/opportunities facing the IJB.**

Action

Risk Manager/Chief Finance Officer

Report No.	Report Title	Presented by:
5.7	Day Services Policy	Alison White

Outline of report and summary of discussion

The purpose of this report was to seek the Board's approval for a Day Services Policy intended to ensure a stronger approach to the equitable provision of Day Services.

The report explained that growing pressures on social care coupled with the continuing budget reductions meant it was essential that there was an overhaul of the approach to the delivery of services. In response to this a Realistic Care Realistic Expectations approach was being taken to social care redesign. Part of this approach included the development of policies to ensure appropriate and equitable access to and allocation of social care resources.

Summary of discussion

The Board, having heard from the Head of Adult and Social Care, discussed the Day Services Policy; a copy of which was appended to the report. It being noted that there had been good involvement from all stakeholders in relation to the revised policy and whilst some tensions still existed these could be better addressed through the new policy.

Decision

After further discussion, the Board agreed to:

- **Approve the Day Services Policy; and**
- **Note the development and consultation work on the Day Service Strategy.**

Midlothian Integration Joint Board

Thursday 24 August 2017

Action
Head of Adult and Social Care

Report No.	Report Title	Presented by:
5.8	Chief Officer's Report	Eibhlin McHugh

Executive Summary of Report
This report provided a summary of the key issues which had arisen over the past two months in health and social care, highlighting in particular service pressures as well as some recent service developments.

Summary of discussion
The Board, in considering the Chief Officer's Report, discussed the potential impacts arising from the service pressures and how these were being addressed.

Decision
The Board: <ul style="list-style-type: none"> Noted the issues raised in the report.

6. Private Reports

No private business to be discussed at this meeting.

7. Any other business

No further additional business had been notified to the Chair in advance

8. Date of next meeting

The next meeting of the Midlothian Integration Joint Board would be held on:

- Thursday 14th September 2017 2pm **Special Midlothian Integration Joint Board/Development Session**
- Thursday 5th October 2017 2pm **Midlothian Integration Joint Board**

The meeting terminated at 3.45 pm.

Minute of Special Meeting



Midlothian Integration Joint Board

Date	Time	Venue
Thursday 14 September 2017	2pm	Conference Room, Melville Housing, The Corn Exchange, 200 High Street, Dalkeith, EH22 1AZ

Present (voting members):

Cllr Derek Milligan (Vice Chair)	John Oates (Chair)
Cllr Pauline Winchester	Alex Joyce
Cllr Catherine Johnstone	

Present (non voting members):

Eibhlin McHugh (Chief Officer)	Alison White (Chief Social Work Officer)
David King (Chief Finance Officer)	

In attendance:

Councillor Janet Lay-Douglas	Jamie Megaw (Strategic Programme Manager)
Councillor Kenneth Baird	Brian Paris (Planning Officer – Older People)
Kaye Skey (Health & Social Care Partnership)	Janet Ritchie (Democratic Services Officer)

Apologies:

Councillor Jim Muirhead	
Hamish Reid (GP/Clinical Director)	
Caroline Myles (Chief Nurse)	

Midlothian Integration Joint Board

Thursday 15 September 2016

1. Welcome and introductions

The Chair, John Oates welcomed everyone to the meeting of the Midlothian Integration Joint Board.

2. Order of Business

The order of business was as set out in the Agenda.

3. Declarations of interest

No declarations of interest were received.

4. Public Reports

Report No.	Report Title	Presented by:
4.1	2016/17 Integration Joint Board Annual Accounts – Final Schedules	David King

Executive Summary of Report

As a statutory body, the MIJB is required to produce a set of annual accounts at the end of its financial year (31 March). These accounts are then reviewed by the MIJB's external auditors who report their opinion of the MIJB's annual accounts to the MIJB's Audit and Risk Committee. The Independent auditors have given the accounts an 'unqualified' opinion which means that they meet the requirements of the regulations and give a fair and true view of the MIJB's financial position in 2016/17. The accounts require to be finally signed off by 30 September, signed by the Chair of the MIJB, the Chief Officer of the MIJB, the Chief Finance Officer of the MIJB and the Independent Auditor.

The Independent Auditor reported his view to the meeting of the MIJB's Audit and Risk committee on 7 September 2017. The MIJB's Audit and Risk committee is satisfied with the report of the Independent Auditor and recommends that the Annual Accounts are approved by the MIJB.

Summary of discussion

The Chief Finance Officer presented the Annual Accounts to the Board highlighting the Background of the Midlothian Integration Joint Board (MIJB) and details of the Annual Accounts presented. These accounts have been audited by the MIJB's auditors – EY. The MIJB is governed by the Local Government Scotland Act (1973) along with the 2014 regulations and these accounts are prepared on that basis.

The Midlothian Integration Joint Board Annual Accounts were presented to the Midlothian Integration Joint Board Audit and Risk Committee on 7 September 2017.

Midlothian Integration Joint Board

Thursday 15 September 2016

Decision

The Board is recommended to:

- Approve the Midlothian Integration Joint Board's Annual Accounts for 2016/17.
- Not the report of the Independent Auditor.

5. Any Other Business

No other business was submitted.

6. Date of next meeting

The next meeting of the Midlothian Integration Joint Board would be held on:

Thursday 5 October at 2 pm at Conference Room, Melville Housing,
The Corn Exchange, 200 High Street, Dalkeith, EH22 1AZ

The meeting terminated at 2.10 pm.



MINUTES OF THE MEETING OF THE EAST LOTHIAN INTEGRATION JOINT BOARD

THURSDAY 24 AUGUST 2017
COUNCIL CHAMBER, TOWN HOUSE, HADDINGTON

Voting Members Present:

Mr P Murray (Chair)
Councillor S Currie
Councillor S Kempson
Councillor F O'Donnell
Ms F Ireland

Non-voting Members Present:

Ms F Duncan
Dr R Fairclough
Dr A Flapan (Items 2 – 10)
Mr D King (Items 7 – 10)
Ms A MacDonald
Mrs M McKay
Mr D Small
Mr E Stark
Dr J Turvill
Mr A Wilson

ELC/NHS Officers Present:

Mr P Currie

Clerk:

Ms F Currie

Apologies:

Councillor S Akhtar
Mr A Joyce
Ms M McNeill
Mr T Miller
Prof. M Whyte

Declarations of Interest:

None

1. MINUTES OF THE MEETING OF THE EAST LoTHIAN INTEGRATION JOINT BOARD OF 29 JUNE 2017 (FOR APPROVAL)

The minutes of the meeting of the East Lothian Integration Joint Board (IJB) on 29 June 2017 were presented for approval. Paul Currie requested that his name be removed from the sederunt as he had not been present at that meeting. The minutes were approved, subject to this one amendment.

2. MATTERS ARISING FROM THE MINUTES OF THE MEETING ON 29 JUNE 2017

Delayed Discharges – Alison MacDonald reported that the June and July census figures showed an improving trajectory - 10 and 12 delayed discharges respectively, against a target of 14. She added that while there continued to be a sustained effort, August had been a more challenging month with the current figure sitting at 23 and the census due next week. Ms MacDonald explained that part of the increase was due to supporting Edinburgh with step down beds and ongoing challenges around availability of care home beds and Hospital at Home.

Councillor Currie asked about the possibility of opening up additional beds in Eskgreen. Ms MacDonald said that this had been looked at but that many of those waiting on discharge from hospital required ongoing nursing care rather than simply residential care. Others had complex needs such as housing or required admission to specialist units. She indicated that the current arrangements regarding step down were short-term and the intention was to repatriate these beds from Liberton Hospital in April 2018.

Margaret McKay asked about the continuing distinction between residential and nursing care and whether this remained appropriate. She also pointed out that many people did not understand the difference between the two. David Small acknowledged her point but said that the Care Inspectorate continued to have separate regulations for residential and nursing care homes. While combining the two may be an option for independent providers, the Council was not allowed to employ nursing staff so their homes were classed as residential. However, he added that the Health & Social Care Partnership offered the opportunity of doing things differently in future and a potential way forward was being considered.

Councillor Currie commented that it was difficult for people to understand why we were not using the capacity available in East Lothian and were instead placing people elsewhere. The Chair acknowledged his remarks and said that these would be covered in discussions about the longer term plans later in the meeting.

(Item 4) Roles of members of the IJB – Councillor O'Donnell asked whether there would be time at today's meeting to discuss the role of IJB members. Mr Small advised that following the June meeting members had been consulted by e-mail and invited to comment on the definitions of their roles. Several members said they had not received this e-mail and Mr Small agreed to check when it was sent out and re-issue if necessary.

(Item 7) Financial update/HRA funding – Councillor Currie sought clarification on whether any underspend incurred by the IJB as a result of work funded via the Housing Revenue Account (HRA) should be retained by the IJB or returned to the HRA budget. He was concerned that should these monies return to the HRA it would result in the IJB

incurring an overspend in future years. Councillor O'Donnell said her understanding of the Administration's policy was that no money would be diverted from the HRA. The Chair and Mr Small agree to seek clarification from the Chief Finance Officer, David King.

(Item 7) Learning Disability – Councillor O'Donnell asked about plans for a future discussion on learning disability. Mr Small said that the intention was to work on preparing the strategy and hold a development session for IJB members before bringing forward a paper on this issue.

(Item 8) Participation and engagement – Councillor O'Donnell sought an assurance that this issue would be included in the action plan to address areas for scope for improvement. Mr Small confirmed that work was underway.

(Item 10) Carers – Margaret McKay asked if it was still the intention to hold a development session on carers in advance of the introduction of new legislation. The Chair confirmed that a session for IJB members had been arranged for 28 September 2017 and he encouraged all members to attend.

3. CHAIR'S REPORT (VERBAL)

The Chair drew members' attention to recently published reports from Audit Scotland and NHS Health Scotland relating to Self Directed Support and achieving excellence in pharmaceutical care.

He reported that he and Mr Small continued to meet regularly with key stakeholder groups to encourage their engagement with the strategic planning process.

Lastly, the Chair referred to the active communities/fitness agenda and how the IJB could better support preventative services in East Lothian. He said he was keen to include this issue more prominently in the IJB's future plans.

Dr Jon Turvill advised that the Physical Activity Planning Group were also focused more towards the preventative agenda and increasing participation in physical activity. The aspiration of a population with better health and wellbeing was also part of the Scottish Government's strategy for health.

4. NHS HEALTHCARE GOVERNANCE COMMITTEE

Fiona Ireland reported on two issues of relevance to the IJB: the requirement for each IJB to have in place a Workforce Plan by the end of 2017; and the proposals for the development of a 'fragile services' register. She explained that the register would allow them to identify where services were very fragile and the reasons for this, e.g. staffing issues, environmental factors, patients not receiving the expected standard of care. It would also allow for the development of strategies to make these services more robust. Ms Ireland advised that she would report back to the IJB when the register was complete.

Dr Turvill asked how the register would be constructed and the proposals for consultation with services. Ms Ireland indicated that things were at an early stage and that the proposals would be discussed at the Strategic Planning Group.

Dr Richard Fairclough said that the register should look at those services provided out with the NHS and not just primary care services. The Chair agreed that it was important to recognise the range of service provision.

5. EAST LOTHIAN COUNCIL POLICY & PERFORMANCE REVIEW COMMITTEE AND AUDIT & GOVERNANCE COMMITTEE

Mr Small stated that, as there was no longer a voting member of the IJB who was also a member of these committees, he would provide members with a brief summary of any items of relevance.

He reported on the agenda for the Audit & Governance Committee meeting on 20 June 2017. Highlighting an Internal Audit Report on Workforce Planning, he advised that this issue would have implications for the IJB going forward. From the meeting of the Policy & Performance Review Committee on 14 June, he referred to the performance reports but remarked that any information they contained on delayed discharges would have already been reported to the IJB.

Mr Small advised members that a further update on the work of these Committees would be provided to the IJB at its October meeting.

6. INTEGRATION JOINT BOARD ANNUAL REPORT 2016/17

A report had been submitted by the Chief Officer presenting to the IJB the first annual performance report for 2016-17, covering the first year of operation of the IJB.

The Chair advised members that this was a reflective report which would provide the benchmark for future reports and would show how lessons could be learned and applied to improve future performance.

Mr Currie presented the report. He reminded members of the reasons for the delay in publication and he outlined the background to the report and the key content. He stated that, in addition to the full report, a two page summary document would be available and he proposed that the documents be published via the internet and social media, with printed copies being produced on request.

Councillor Currie queried whether the report should include information on the members of the IJB and whether the summary document could be printed and made available in GP waiting rooms and other public areas.

Mr Currie confirmed that a link to the website containing details of the IJB membership could be inserted into the report and that paper copies of the summary document could be provided if the IJB requested it.

Fiona Duncan pointed out that there was no reference to criminal justice services in the report. Mr Small agreed that this should be included and suggested that Mr Currie and Ms Duncan agree a form of words.

Mrs McKay said that the report was very readable but emphasised the importance of equality of access for those who did not use the internet or social media. She suggested that the summary might be produced in a poster format.

Dr Turvill noted that the report was driven by national criteria and asked when the IJB envisaged adding their own criteria and more detail about the variation in experience of services across East Lothian. The Chair suggested that this be discussed during agenda Item 7.

Councillor O'Donnell requested some additions around drug and alcohol prevention, the older people's day care review, carers, information on the financial risk strategy and the Integration Fund. She also suggested reviewing some of the language in the report to make it clearer.

Ms Duncan said that she found it a very readable report and that the only query she had was in relation to Outcome 7 where she suggested further clarity was needed on the dataset and the referrals.

Dr Fairclough felt that the report was well constructed with good quality graphics. Referring to the statistic that 30% of children in East Lothian were living in poverty and the impact this had on mortality rates, he asked how the IJB intended to address this issue. The Chair stated that he would return to this issue later in the meeting.

Mr Currie confirmed that it would be a relatively easy matter to produce printed copies of the summary document in report and poster formats for community outlets. He said he was also look at Dr Turvill's point about providing more detail on variations in results across the county.

The Chair proposed that the IJB approve the publication of the report subject to their comments being taken on board and other options being explored to ensure equal access to the report out with the internet or social media.

Decision

The IJB agreed to:

- (i) Approve the draft annual report for 2016/17, prepared in line with Scottish Government guidance, noting that East Lothian HSCP exceeds Scottish and peer performance on a number of measures.
- (ii) Approve the publication of the draft annual report on the internet and that other options are explored to ensure equal access to the document for those who do not use the internet/social media.
- (iii) Approve the draft summary version of the report and that other options are explored to ensure equal access to the document for those who do not use the internet/social media, taking into account the comments and suggestions of IJB members.

7. HEALTH AND SOCIAL CARE PARTNERSHIP PERFORMANCE

The Chief Officer had submitted a report updating the IJB on the East Lothian Health and Social Care Partnership's (HSCP) performance against an agreed suite of national indicators. The report also informed the IJB of the introduction of new performance measures which were being incorporated into local performance monitoring processes.

Mr Currie presented the report highlighting East Lothian's performance against certain measures and comparisons with national results and peer HSCPs. He said that the report presented analysis on 19 of the 23 national indicators but that data was not yet available for some of the newer indicators. He explained that the indicators could be

added to in future as and when the Partners or the Scottish Government felt that areas of performance required looking into more closely. He invited members' comments on the HSCP's progress against the national indicators and with the Directions.

The Chair said that it was frustrating that some of the performance information was not available and that the reporting timetable did not fit with the life of the IJB: it needed time for the IJB to catch up.

Members raised a number of questions relating to aspects of performance on delayed discharges, access to and satisfaction with GP services, unplanned admissions and mental health services. Mr Currie, Mr Small, Ms MacDonald and Dr Turvill expanded on the results shown and the work being undertaken to address continuing challenges. They also acknowledged that there were variations in experience across the county which needed to be taken into account.

The Chair referred to the solutions being proposed to address issues such as access to GP services and that it would take time to determine the level of their success and whether additional measures were needed.

In response to questions, Mr Small advised that although the performance report was not submitted officially to the Scottish Government, officials did monitor progress and national networks such as CoSLA and SOLACE also kept an overview and engaged with key topics. The Chair added that an event would be held on 31 October 2017 for chairs and depute chairs of IJBs.

Councillor Currie accepted that figures needed to be looked at in the round and that performance on different issues may be interconnected, e.g. access to GP services and increased A&E presentations. However, he said it was also important to look at what the performance figures meant for people in East Lothian, the actions proposed by the IJB and whether performance had improved as a result.

Mr Small reminded members that there was some of the work underway would not show results until next year. Referring to the recommendation contained in the report on extra care housing and re-provision of Abbey and Eskgreen Care Homes and Edington and Belhaven Hospitals, he advised that there was a need to modernise these aspects of care of the elderly in East Lothian. He said that work would be undertaken over the next four months and proposed that arrangements be put in place to ensure full consultation with stakeholders and IJB members in advance of a report being submitted to the IJB in December. He suggested the reintroduction of community engagement fora for North Berwick and Eskgreen, in addition to the current forum at Belhaven.

Mr Small confirmed that neither the Health Board nor the Council could make any changes without the IJB first reaching a decision on its strategic direction for the service.

Decision

The IJB agreed to:

- (i) Note the June 2017 performance report and the progress made against the indicators between the August 2016 and February 2017 reports and this most recent report.
- (ii) Note the work underway with NHS Lothian to support delivery of the Directions for 2017/18 and to monitor progress.

- (iii) Receive a report on the extra care housing and the way forward with re-provision of Abbey and Eskgreen Care Homes and Edington and Belhaven Hospitals at the December 2017 meeting and to ask the Chief Officer to establish engagement fora for this work.
- (iv) Note the development at national level of further performance measures and monitoring processes to incorporate priority need outcomes announced by the Scottish Government and CoSLA. There is an expectation that further measures will be developed as integration work continues.

8. THIRD SECTOR MEMBERSHIP, PARTICIPATION AND DELEGATES IN EAST Lothian

The Chief Officer had submitted a report informing the IJB of the new Third Sector delegate structure facilitated by STRiVE and seeking support for this structure moving forward.

Eliot Stark presented the report outlining the reasons behind the development of the delegate system and how it was intended to work in practice.

Mrs McKay said that she was supportive of the proposal for elected delegates and asked if there would be a pool of people identified. Mr Stark indicated that this was the intention and that the pool would ensure that the Third Sector could benefit from a wide range of expertise.

Responding to questions from Councillor O'Donnell, Mr Stark acknowledged that there would be resource implications for STRiVE and that delegates would need to be provided with training in their roles and responsibilities in relation to community planning and the IJB. He added that while the system was about identifying the right person for the right role, STRiVE were mindful of issues such as diversity and longer term capacity to offer representation in key areas. These issues would be monitored and adjustments would be made as and when necessary.

Decision

The IJB agreed:

- (i) To adopt the Third Sector delegate system with elected Third Sector delegates serving:
 - The Integration Joint Board
 - The Strategic Planning Group
 - The Planning Groups below that
- (ii) That the Strategic Planning Project Teams and further working groups requiring a Third Sector perspective to be serviced by specialist delegates from a delegate pool facilitated by STRiVE
- (iii) That a review of the success of this system should be undertaken after 12 months.

9. IJB AUDIT AND RISK COMMITTEE – MEMBERSHIP AND CHAIRING

The Chief Finance Officer had submitted a report proposing the membership of the IJB's Audit and Risk Committee including a proposition to have as its Chair a non-voting member of the IJB.

David King summarised the background to the report and the proposed changes to the membership and terms of reference for the Audit and Risk Committee.

Councillor Currie expressed concerns about his availability for meetings and the effect that this may have on the quorum for each meeting. The Clerk advised that the quorum was three out of the five members which would allow for the occasional absence of members. Councillor Currie agreed to remain a member of the Committee.

Decision

The IJB agreed to:

- (i) Approve the revised terms of reference for the Audit and Risk Committee;
- (ii) Approve the membership of the Audit and Risk Committee; and
- (iii) Approve the appointment of the Chair of the Audit and Risk Committee.

10. FINANCIAL POSITION – 2017/18 UPDATE AND FUTURE PLANNING

The Chief Finance Officer had submitted a report updating the IJB on the year to date (June 2017) financial position; putting forward propositions in relation to a review of the health budget setting model for the IJB and around the financial planning model for 2018/19; and a proposal to develop a multi-year financial plan to support the IJB's Strategic Plan.

Mr King presented the report outlining the financial position as at June 2017, the current forecast overspend for 2017/18 and proposals for recovery actions. He also invited members' views on proposals for a review of the health budget setting model and future financial planning, including the production of a multi-year financial plan.

The Chair encouraged members to give their support to the continuation of a dialogue between officers and the Partners to improve financial processes and consider how the IJB could better support its transformational programme and ensure that the right priorities are set for the community it serves.

Ms Ireland noted that despite the requirement for the IJB to understand the potential impact of recovery plans on services, there still appeared to be a lack of detail in the report. Looking ahead to 2017/18 she agreed that there was a need to understand the costs of the services the IJB wanted to deliver, as well as how the plans at Board, IJB and national level interact. Without this knowledge the IJB would not get to the point of service transformation.

Councillor Currie commented on the importance of getting the necessary resource transfer, however challenging, to support the transformation of services. He noted that in the current financial year the IJB was already at the point of implementing recovery plans and he wondered when they would get to the point of doing things differently.

However, he agreed with the proposals for multi-year financial planning as a way of setting out how the IJB intended to achieve improvements in the longer term and where it was looking to make future efficiency savings.

Councillor O'Donnell observed that unless the IJB began to invest in public health and prevention, services would not be sustainable in the longer term but that this would mean spending money in the short term. She also asked when further information would be available regarding pressures within set aside services.

Mr King acknowledged the members' concerns about recovery plans, budget transfers and moving from managing pressures to service transformation. He agreed that further information was required on these issues. He added that dialogue was underway regarding future health budget modelling which he viewed this as a positive step.

In response to a further question from Councillor O'Donnell regarding social care policy, Mr Small stated that the IJB's role was to set the vision and the Council's role was to procure it. However, the IJB was mindful of the need to ensure that there was no conflict between the two.

Decision

The IJB agreed to:

- (i) Note the outline financial position for the first three months of the current financial year.
- (ii) Support the proposal to review the health budget setting model and consider a review of the adult social care budget setting model.
- (iii) Support the proposal to redesign the financial planning model in 2018/19.
- (iv) Support the development of a multi-year financial plan.

Agenda Item 6 – Additional Note

Referring to Dr Fairclough's point about child poverty which he raised during Item 6, Mr Small said that he would review the East Lothian Child Poverty Commission report published in 2016 and consider whether the IJB needed to reset its priorities.

Signed

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Peter Murray
Chair of the East Lothian Integration Joint Board

East Lothian
Integration Joint Board



**MINUTES OF THE MEETING OF THE
EAST LOTHIAN INTEGRATION JOINT BOARD**

**THURSDAY 28 SEPTEMBER 2017
ESK ROOMS 1 & 2, BRUNTON HALL, MUSSELBURGH**

Voting Members Present:

Mr P Murray (Chair)
Councillor S Currie
Councillor S Kempson
Councillor F O'Donnell
Councillor Akhtar
Mr A Joyce

Non-voting Members Present:

Dr M Flynn
Mr D King
Mrs M McKay
Ms M McNeill
Mr D Small
Mr A Wilson

ELC/NHS Officers Present:

Mr B Davies

Clerk:

Ms F Currie

Apologies:

Ms F Duncan
Dr R Fairclough
Mr E Stark
Dr J Turvill
Prof. M Whyte

Declarations of Interest:

None

1. CLINICAL DIRECTOR MEMBERSHIP OF THE IJB

A report was submitted by the Chief Officer asking the IJB to agree to the replacement of Dr Jon Turvill, NHS Lothian Clinical Director non-voting member of the IJB, on a temporary basis. David Small presented the report outlining the reasons for the change in membership.

Decision

The IJB agreed to the appointment of Dr Morgan Flynn as the Clinical Director non-voting member of the IJB in place of Dr Turvill, on a temporary basis.

2. IJB ANNUAL ACCOUNTS 2016/17

A report was submitted by the Chief Finance Officer advising that the IJB had prepared accounts for the financial year 2016/17, that these had been audited by the IJB's independent auditors and that the auditors had reported their view to the IJB's Audit & Risk Committee at their meeting on 12 September 2017.

David King presented the report and summarised the content and procedure for preparation and sign off of the annual accounts for 2016/17. As chair of the Audit & Risk Committee, Margaret McKay acknowledged the unqualified audit opinion and the complimentary comments received from the external auditors on the preparatory work undertaken by staff and their engagement with the audit process. Mrs McKay noted the recommendations contained within the auditors' report and that these would form the basis of work going forward.

Mr King added that action plan prepared by the external auditors, including reflections from officers, would be reviewed in detail by the Audit & Risk Committee and an update on progress would be presented to the IJB next year.

The Chair confirmed that following discussions with Mrs McKay, Mr King and Mr Small it had been agreed that the Audit & Risk Committee would have oversight of these matters.

Responding to a question from Marilyn McNeill, Mr King explained that the IJB did not own any assets and therefore the figure shown on the accounts was 'nil'.

Decision

The IJB agreed to:

- (i) Note the opinion of the Independent Auditors on the IJB's annual accounts for 2016/17.
- (ii) Note the recommendation of the IJB's Audit & Risk Committee that the annual accounts be approved by the IJB.
- (iii) Approve the IJB's annual accounts for 2016/17.

Signed

.....
Peter Murray
Chair of the East Lothian Integration Joint Board

APPOINTMENT OF MEMBERS TO COMMITTEES

1 Purpose of the Report

- 1.1 [Lothian NHS Board's Standing Orders](#) state that “The Board shall appoint all Committee members”. This report has been presented to the Board so that it may consider the recommendations from the Chairman on committee appointments.

Any member wishing additional information should contact the Chairman in advance of the meeting.

2 Recommendations

The Board is recommended to:

- 2.1 Appoint Martin Hill as the Vice-Chair of the Board with effect from 1 January 2018.
- 2.2 Appoint Professor Tracy Humphrey as Chair of the Healthcare Governance Committee with effect from 1 March 2018.
- 2.3 Nominate Martin Hill to replace Dr Williams as a voting member of the City of Edinburgh Integration Joint Board with effect from 1 March 2018.
- 2.4 Appoint Peter Murray as a member of the Information Governance Assurance Board with effect from 1 March 2018.
- 2.5 Appoint Martin Connor as a member and as the chair of the Information Governance Assurance Board with immediate effect.
- 2.6 Nominate Martin Connor to replace Susan Goldsmith as a voting member of the West Lothian Integration Joint Board with immediate effect.
- 2.7 Appoint Councillor John McGinty to replace Carolyn Hirst as a member of the Audit & Risk Committee.

3 Discussion of Key Issues

Vice-Chair of the Board

- 3.1 The Standing Orders require the Board to appoint a member to be the Vice-Chair. The current Vice-Chair's (Shulah Allan) term of office ends on 31 December 2017. It is recommended that Martin Hill be appointed as the Vice-Chair with effect from 1 January 2018.

Dr Richard Williams

- 3.2 Dr Richard Williams' term of office ends on 28 February 2018.
- 3.3 The Board appointed Professor Tracy Humphrey as a member of the Healthcare Governance Committee on 4 October 2017, with the membership taking effect on 1 January 2018. It is recommended that Professor Tracy Humphrey be appointed as the chair of the committee with effect from 1 March 2018.
- 3.4 Dr Williams is also a member of the City of Edinburgh Integration Joint Board. It is recommended that the Board nominate Martin Hill to replace Dr Williams with effect from 1 March 2018.
- 3.5 Dr Williams is also a member of the Information Governance Assurance Board, which is a sub-committee of the Healthcare Governance Committee. It is recommended that the Board appoints Peter Murray to replace Dr Williams with effect from 1 March 2018.

Information Governance Assurance Board

- 3.6 Professor Alison McCallum chairs the Information Governance Assurance Board, and a process is currently underway to review its terms of reference. Recognising that this is a governance committee, it is appropriate that a non-executive Board member should chair it. It is recommended that Martin Connor replace Professor McCallum as the chair with immediate effect.

West Lothian Integration Joint Board

- 3.7 It is recommended that the Board nominate Martin Connor to replace Susan Goldsmith as a voting member with immediate effect.

Audit & Risk Committee

- 3.8 It is recommended that Councillor John McGinty replaces Carolyn Hirst as a member of this Committee.

4 Key Risks

- 4.1 A committee does not meet due to not achieving quorum, leading to a disruption and delay in the conduct of the Board's governance activities.
- 4.2 The Board does not make the most effective use of the knowledge, skills and experience of its membership, leading to the system of governance not being as efficient and effective as it could be.

5 Risk Register

- 5.1 This report attends to gaps in committee membership, and it is not anticipated that there needs to be an entry on a risk register.

6 Impact on Inequality, Including Health Inequalities

- 6.1 This report does not relate to a specific proposal which has an impact on an identifiable group of people.

7 Duty to Inform, Engage and Consult People who use our Services

- 7.1 This report does not relate to the planning and development of specific health services, nor any decisions that would significantly affect groups of people. Consequently public involvement is not required.

8 Resource Implications

- 8.1 This report contains proposals on committee membership. It is probable that some of the members may require further training and development to support them in their new roles. This will be addressed as part of normal business within existing resources.

Alan Payne
Head of Corporate Governance
29 November 2017
alan.payne@luht.scot.nhs.uk

Board Meeting
06 December 2017

Deputy Chief Executive

EMERGENCY ACCESS STANDARD: REVIEW OF PERFORMANCE REPORTING COMPLIANCE

1 Purpose of the Report

- 1.1 The purpose of this report is to update the board on progress with the investigation into specific concerns raised under the board's whistleblowing arrangements about the alleged mismanagement of waiting times reporting and an alleged culture of bullying and intimidation in the emergency department at St John's Hospital;
- 1.2 To provide the board with the final report of the Internal Audit investigation into these allegations, attached as Appendix 1 to this paper;
- 1.3 To outline to the board the actions which have been taken and are proposed in light of the conclusions and recommendations of the Internal Audit Investigation;
- 1.4 To advise the board on the process and timescale of the external investigation which the Cabinet Secretary for Health and Well being has commissioned the Royal College of Physicians of Edinburgh to undertake

Any member wishing additional information should contact the Executive Lead in advance of the meeting.

2 Recommendations

The Board is recommended to;

- 2.1 **Receive the report of the internal audit investigation and consider its conclusions and recommendations;**
- 2.2 **Confirm support for the actions which have been taken and are proposed in light of the conclusions and recommendations of the internal audit investigation;**
- 2.3 **Agree that the Access and Governance Committee should formally report into the Board's Audit and Risk Committee;**
- 2.4 **Agree to receive a further report at the Board meeting in February 2018 following the external investigation undertaken by the Royal College of Physicians**

3 Discussion of Key Issues

Performance Management in NHS Scotland

- 3.1 The paragraphs below in 3.2-3.4 are excerpts from the recent review by Harry Burns "Targets and Indicators in Health and Social Care in Scotland". This review aims to refine what and how targets and standards are used across Health and Social Care in Scotland. A theme throughout the review is the need to avoid focusing on targets or standards in isolation, rather looking at performance across the whole system.
- 3.2 A target (or standard) is a way of expressing the priority of an organisation. Setting a target lets members of the organisation know what is expected of them in terms of delivery of a service to the public. Indicators show how an organisation is progressing in pursuit of its aims.
- 3.3 Experience with existing targets and indicators has been positive in many respects... However, frontline staff and managers have often expressed frustration at the way in which targets have affected their priorities.
- 3.4 In 2010, The Kings Fund, examining the impact of targets in the NHS in England concluded: "enforced targets do appear to have been successful in improving aspects of NHS performance, particularly in relation to waiting times, but there is some evidence of unintended consequences – for example, distortion of priorities or neglect of other non-targeted activities. However, it is important to recognise that such unintended consequences may not be the inevitable result of targets in themselves, but rather of the way in which those targets were designed or implemented.
- 3.5 For the purposes of this paper, the standard where reporting has undergone scrutiny is the **4-Hour Emergency Care Standard**. Information Services Division (ISD) define the standard as *"No patient should spend longer **than 4 hours between arriving at the A&E unit and admission, discharge or transfer, unless there are stated clinical reasons for keeping the patient in the unit.... The clock should stop only when the patient is admitted to a bed, transferred to another hospital, discharged or dies.**"*

Background and finding of Internal Audit report

- 3.6 On 6 October the Chief Officer, Acute Services was alerted to some concerns raised by an Emergency Department Consultant and members of the nursing team relating to the culture and management relating to the 4 hour emergency care standard in the Emergency Department at the Royal Infirmary of Edinburgh. It was agreed that the General Manager for unscheduled care at the Royal Infirmary of Edinburgh would meet with the staff that raised these concerns to ascertain the detail behind the concerns and agree improvement actions. Following this meeting it was agreed that there was ambiguity in the NHS Lothian 4 hour emergency care standard operating procedure (SOP) and that this required to be reviewed and revised.
- 3.7 On 11 October 2017 the Chief Executive received an email containing allegations of misconduct and wrongdoing in relation to the management of the 4 hour emergency care standard in the Emergency Department at St John's Hospital. In view of the nature of the concerns being raised it was decided that an investigation should be launched under the auspices of the Board's Whistleblowing Policy. As per the Board's Whistleblowing arrangements, Alison Mitchell, Non-Executive Whistleblowing Champion was advised of the complaint on 12 October 2017. The Board's Chief

Internal Auditor was asked by the Deputy Chief Executive on 13 October 2017 to lead the investigation process, supported by members of her team and a Public Health consultant. The Chairman asked Peter Murray, a non-executive Board member, to provide oversight of the investigation

- 3.8 The concerns raised about both sites were discussed by the Executive Team and Board Chair at the Patient Safety / Experience Action Group on 12 October 2017.
- 3.9 In view of the concerns raised informally as referenced in 3.6 regarding culture and practices at the Royal Infirmary of Edinburgh it was agreed that the scope of the investigation described above would be extended to all four Emergency Departments/Front Door Departments, thereby including the Royal Hospital for Sick Children and the Western General Hospital.
- 3.10 The Board was appraised of the situation at the Board Development session on 01 November 2017 and advised that a full report would be brought back to the public Board meeting on 6 December 2017.
- 3.11 The purpose of the investigation was three-fold:
 - 1. To investigate the specific whistleblowing concerns relating to the alleged mis-management of waiting times and associated breaches in the Emergency Department, St John's Hospital.
 - 2. To investigate the specific whistleblowing concerns relating to the alleged culture of bullying and intimidation in the Emergency Department, St John's Hospital associated with the application of pressure to manipulate performance data
 - 3. To investigate the operation and compliance with extant policies, standard operating procedures and performance management arrangements relating to the management, recording and performance reporting of waiting times and access breaches in the four Emergency/Front Door Departments in NHS Lothian.

Transparency throughout the process

- 3.12 In the lead up to and during the process of investigation the Executive Team, Non-Executive Whistleblowing Champion, Board members, Partnership Leads and Scottish Government have been appraised of the process for investigation, timelines and progress.
- 3.13 From the commencement of the review, the Chairman, Chief Executive, Deputy Chief Executive were committed to ensure the output would be subject to review, discussion and agreement at the public NHS Lothian Board meeting on 06 December 2017.

Internal Audit Findings (Full report attached as Appendix 1)

Recording of the 4 hour emergency care standard

- 3.14 The review team concluded NHS Lothian is not consistently complying with the guidance set out in the A&E Data Recording Reference Manual (2013) and the further clarification from the Scottish Government on ambulance waits (2015). In addition, NHS Lothian created its own SOP to support complete and accurate data recording around the 4 hour emergency care standard, however the review team found that this procedure was not being implemented properly.

- 3.15 In addition to the NHS Lothian SOP, local guidance was developed by staff to offer clarity in the recording of the standard. They also concluded that there has been a reduced focus by NHS Lothian on the completeness and accurate recording of unscheduled care performance, when compared to scheduled care. This is clarified in section 3.27

Pressures on front door staff

- 3.16 Each adult site has a Site and Capacity team that are responsible for supporting safe and effective patient flow in both emergency and planned care. They contribute to both individual site and pan Lothian patient flow management. At the Royal Hospital for Sick Children site this role is performed by Clinical coordinators.
- 3.17 The staff in the Emergency Department at St John's Hospital reported that "pressure" exists and it is not simply the pressure that which you would expect from working within a highly pressurised clinical environment. The common factor cited for this pressure were the interactions with teams out with the emergency departments, including the Site and Capacity team. The staff experience in this regard would appear in part to be directly related to the approach of some site personnel whose roles and responsibilities were unclear.
- 3.18 The audit into the practice and culture at the Royal Infirmary of Edinburgh and Western General Hospital cite a similar sense of "pressure", particularly in the more junior graded staff.

Cultural findings from the report

- 3.19 It is clear from the report that the culture in the Emergency Department at St John's Hospital is somewhat different to the other 3 sites. It was also apparent from the review findings there appeared to be ambiguity of roles and responsibilities and this absence of clarity added to the pressures perceived by staff. When asked about accountability for achieving the emergency care access standard, the message that it was a hospital measure did not come across in the same way as it did at the other sites. The report indicates that individuals in the ED at St John's Hospital "felt personally accountable for achieving the standard, and this could then create a different culture and contribute to the sources of pressure referred to."
- 3.20 At both the Royal Infirmary of Edinburgh and Western General Hospital the report characterises a greater sense of the emergency care access standard as a reflection of the whole system of managing unscheduled care (not just the front door, and not just hospital care)

Contributing factors

- 3.21 It is evident from the report that there are a number of contributing factors;
- accountability for the leadership of the emergency care access standard on the St John's Hospital site was and unclear to staff
 - the policy guidance relating to what is a breach and when the clock can be stopped existed in several different documents, over different time periods and was unclear
 - creation of local site guidance (as referenced in 3.15) on the definition of a breach to fill a perceived gap
 - poor system of assurance and governance for the 4 hour emergency care standard (the Board's Access and Governance Group focused on scrutiny and assurance of the scheduled care targets and standards)
 - the job description for members of the site and capacity team unreasonably states: *"In relation to patient flow, the team is responsible for daily operations on each site which supports delivery of safe clinical practice and the national access targets for waiting times"* and *"Ensuring all patients who require admission to hospital via an emergency route are assessed and allocated to a bed within a 4-hour period"*, these are whole system responsibilities and not the sole responsibility of individuals within the Site and Capacity Team as the job description suggests
 - the intensity of the daily reporting and monitoring of the emergency care access standard
 - interim Site Director leadership arrangements, which saw the Site Director cover both the St John's Hospital Site and the pan-Lothian Diagnostics, Anaesthetics, Theatres, and Critical Care Services for a period of time

Access and Governance Committee

Background: Establishment of the Committee

- 3.22 A number of recommendations arose from the consideration by Audit Scotland and others of the management of patients on NHS waiting lists in 2013. Chief amongst these was the implementation of a controls framework for the management of waiting lists.
- 3.23 Progress on implementing these recommendations was overseen through the Waiting Times Group chaired by the Chief Executive, as was the recovery of the waiting list position for outpatients and those under the Treatment Time Guarantee. In November 2013, both of these elements became the focus of what was then called the Access, Performance and Governance Committee. This was led by the current Deputy Chief Executive in his then capacity as Director of Scheduled Care. This committee is not, and has never been a governance committee of the Board. It is a vehicle for executive oversight.

- 3.24 In June 2015, responsibility for the committee transferred to the then Director of Strategic Planning, who had also taken responsibility of the Waiting Times Governance Team the previous September. With the shift in responsibility and the separation of governance oversight from the operational line, the focus of the committee was no longer matters of performance. Accordingly the group became the Access and Governance Committee.
- 3.25 In April 2017 responsibility for the committee was passed to the Chief Quality Officer. Since taking ownership of the committee, the Chief Quality Officer has been consulting on the membership and remit of the group and seeking to improve the group's function.
- 3.26 Updates on the work of Access and Governance have been provided to Board subcommittees. Initially progress on the 2013 recommendations were reported up to February 2014 to the Audit and Risk Committee and thereafter, to the Acute Hospitals Committee, which continues to receive six monthly updates. The most recent paper in July 2017 included the status against 2013 recommendations. All but one, relating to patients with additional needs, is met.
- 3.27 The Acute Senior Management Team also receives minutes of the committee's proceedings.

Access and Governance consideration of Four Hour Emergency Care Standard

- 3.28 The Access and Governance Committee maintained a focus on scheduled care performance and scrutiny and did not evolve a similar approach or focus to unscheduled care to the same level.
- 3.29 Despite this, the changing of discharge times in the Emergency Department was identified at a number of Access and Governance meetings. Discrepancies were identified by this work and subject to further review, however despite the findings being noted in the minutes there was little effective follow up action.

Future Role of Access and Governance Committee

- 3.30 A detailed review of the focus, processes, and reporting is currently underway. This process will also review current membership and improvement recommendations will be actioned in December 2017 and January 2018 to ensure the committees ability to scrutinise governance and ensure compliance – see action plan in section 3.34.
- 3.31 A process for escalation to the Corporate Management Team will also be introduced if insufficient progress on matters has been made after a maximum of two meetings, with the Corporate Management Team receiving detailed quarterly reports.
- 3.32 It is also recommended that the Access and Governance Committee provide quarterly reports to the Audit and Risk Committee as well as the Corporate Management Team.

Internal improvement plan and Next Steps

- 3.33 An interim Standard Operating Procedure (SOP) has been developed for staff to use in all sites, designed to ensure equitable and consistent recording and reporting of 4 hour emergency care performance in compliance with national guidance. This will be subject to review pending feedback from operational staff elicited at staff training sessions and the output of the external review. All copies of the old SOP have been removed from sites and replaced with the new version. Accompanying the new SOP, training has

started provided by the Waiting Times Governance Team supported by a Clinical Nurse Manager. The interim SOP is attached as Appendix 2.

3.34 There will also be the deployment of a comprehensive Organisational Development programme to support both clarity of role and remit, and as importantly, the approach within a number of key departments including the Emergency Departments and Site and Capacity teams.

3.35 The following table summarises the internal improvement plan to address the issues identified within the audit report;

What	Who	When
Compliance with A&E Data Recording Manual (2013) and further amendments on transport waits (2015)		
Develop an Interim NHS Lothian 4 hour emergency care standard SOP, aligned to National Guidance.	J Campbell	Completed 27/11/17 Shared with Scottish Government 27/11/17
Implement staff training for interim NHS Lothian 4 hour emergency care standard SOP	Led by Waiting Times Governance Team and supported by Clinical Nurse Manager	Started 29 Nov
Removal of all old SOP/guidance across ED and front door areas	J Campbell / Site Directors	Completed 29/11/17
Clarifying role of Site and Capacity Team and Improving Interactions		
Immediate interim action to clarify line reporting arrangements for the Site and Capacity Teams.	J Campbell	Complete. As of 28 November Site and Capacity teams on the 3 adult sites report into the General Manager for unscheduled care on the site.
Work with the Site and Capacity Team to redefine role and remit.	J Campbell (supported by OD Team & Partnership Leads)	December 2017 – work commenced 5 th December 2017
OD programme to support values based team interactions and build resilience		December 2017 and January 2018
Improving Emergency Department Staff Experience (St John's Hospital)		
Initial scoping and conversation with local site leadership team to agree priorities, initial actions and communications.	Site Director & OD Team	January 18
Co-creating an action plan with short, medium and long term goals.		February 18
Offer staff one to one supportive conversations to understand what matters to them, what's working well and what would make a difference to make it even better using an appreciative inquiry approach.	OD Team	January 18

Improving staff relationships with management at St John's Hospital		
Themes from the conversations with staff will support the representative staff group to co-create actions that support the organisation's values.	Facilitated by OD Team with local leader	February 18
Explore and reflect with leaders their learning from this situation with an aim to rebuild trust and respect, and effective relationships with the ED Team.	Facilitated by OD Team	January 18
In conjunction with the Site Director facilitate senior leadership development events focusing on setting priorities and expectations in terms of behaviours and working together, and across the organisation. Reflecting on learning from this report.	Site Director / Site Management Team facilitated by OD Team	February 18
Staff Engagement and Experience Focus Groups		
As part of the overall development of our Staff Engagement and Experience Development Plan a series of focus groups will take place across a number of locations including SJH, RIE, WGH and RHSC. These focus groups aim to enhance our understanding of staff's perception of iMatter Survey, subsequent report and actions. With a specific focus on the questions in relation to My Organisation.	OD consultant / iMatter Programme Lead / Communications Officer	January/February/March 2018
Access and Governance Committee		
Revised reporting arrangements for the Access and Governance Committee to be implemented	CQO	December 2017
That the remit of Access and Governance Committee is extended to include both (a) the Four Hour Waiting Time Standard and (b) Data Quality	CQO and Governance Committee Chair	December 2017
That the Four Hour Waiting Time data recording is subject to the elements of the governance framework applied to Elective waiting lists	WTGT Managers, eHealth Director, Site Directors, CQO and CMT	March 2018
That the membership of the committee be restricted to Directors (routinely attending) and their immediate reports (as needed)	CQO, Directors, CMT	December 2017
That Access and Governance's Operational Subgroup focuses on audit outcomes, training and problem solving	WGTG Manager, Assoc Director - LAS, CQO	December 2017
That any matter showing insufficient progress after a maximum of two meetings be escalated to the responsible Executive with the Corporate Management Team receiving the minutes and regular updates on the work of Access and Governance	CQO	December 2017
<i>WTGT = Waiting Time Governance Team</i> <i>LAS = Lothian Analytical Services</i> <i>CQO = Chief Quality Officer</i>		

- 3.36 Additionally, the Scottish Government has commissioned the Royal College of Physicians to investigate the whistleblowing allegations. It is anticipated that the output of this will be available mid January 2018. This review began on 1 December, with individual interviews with some of the executive management team, a walk through the emergency department at SJH on 2 December and planned staff interviews at SJH starting the week beginning 18 December.

4 Key Risks

- 4.1 Compliance with the new SOP will result in a drop in recorded performance for the 4 hour emergency care standard. Performance will continue to be scrutinised through NHS Lothian's performance management framework and assurance levels will be provided to the Board by the Acute Hospitals Committee. It is likely that the drop in performance will prompt current assurance levels to be reviewed by the Acute Hospitals Committee.
- 4.2 The Scottish Government's commissioned Royal College of Physicians review may identify additional issues and make recommendations that contradict or go beyond the internal audit report.
- 4.3 Some staff may feel under undue pressure from this process of internal and external investigation. From a patient's perspective, evidence shows that higher staff engagement and improved staff experience results in: lower mortality, fewer errors, lower infection rates, enhanced patient experience.

5 Risk Register

- 5.1 Acute Risk Register: Risk ID: 3398, "A&E four hour performance" has been updated detailing the Internal and External audits and the introduction of the new SOP.

6 Impact on Inequality, Including Health Inequalities

- 6.1 As the measures in the paper propose to take remedial action that will affect an existing process, an Integrated Impact Assessment is not required.

7 Duty to Inform, Engage and Consult People who use our Services

- 7.1 As this paper does not relate to the planning and development of specific health services there was no requirement to involve the public in its preparation.

8 Resource Implications

- 8.1 If it is deemed that additional interim leadership capacity is required at St John's Hospital, this will incur short term revenue expenditure.

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30/11/2017
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List of Appendices

Appendix 1: Internal Audit Report: Review of access and governance processes in the 4 Emergency departments (Front Door) at NHS Lothian

Appendix 2: Revised interim SOP for 4 hour emergency care standard

APPENDIX 1

Strictly Private and Confidential

Final Internal Audit Report

Review of access and governance processes in the 3 Emergency departments (Edinburgh Royal Infirmary, Royal Hospital for Sick Children and St John's Hospital) and the front door service at the Western General Hospital within NHS Lothian

30 November 2017

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Overall Conclusions

1. Summary of work undertaken
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3. Overview of the 4 hour emergency care standard processes established across the 4 emergency/front door sites
4. Key observations from our interviews at each of the 4 emergency department/front door sites within NHS Lothian
5. Governance of unscheduled care data
6. Analysis of data extracted from TrakCare across the 4 emergency departments/front door sites
7. Control and process observations based on interviews and work done in respect of data
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Appendices

1. Full scope of the investigation
2. Questions asked of the interviewees
3. Standard Operating Procedure – E hour emergency care
4. St John's Hospital ED Breach Analysis
5. Western General Hospital Breach analysis guidance
6. Frequent reasons entered on TrakCare for why a patient in the ED/Front door would have their time/clock changed

Overall conclusions

The scope of our review was to consider the controls, processes and governance in place within NHS Lothian related to the 4 hour emergency care standard.

NHS Lothian operates three emergency departments (Royal Infirmary Edinburgh, St John's Hospital and the Royal Hospital for Sick Children) and a front door emergency service provided at the Western General Hospital. This review arose out of a whistle blowing allegation, which we investigated in accordance with the Significant Adverse Events NHS Lothian protocol. Our full scope is set out in Appendix 1 for information.

We sought to understand the controls, processes and governance arrangements in place over the accurate recording of data related to the reporting of the achievement of the 4 hour emergency care standard through interviews, review of TrakCare data and review of supporting documentation including policies and procedures. Through our sample interviews in particular we have considered the wider management culture in place within the three Emergency Departments and one front door site, and where changes in practice might be needed.

Based on our review of the TrakCare data we would emphasise that for a significant proportion of patients who present themselves at an emergency department/front door in NHS Lothian they are seen, treated and leave the emergency department within 4 hours.

Our review focused on the reasons for patients staying over 4 hours in the three emergency departments and the front door at the Western General Hospital, but who were not subsequently recorded as a "breach" against the 4 hour emergency care standard, and how this was recorded and validated in TrakCare.

Throughout our interviews we noted a commitment and desire by staff to treat patients safely and patient care was their first priority. We only reviewed the data contained within TrakCare and we did not drill down further into individual patient notes, given the clinical expertise required. Therefore we cannot verify whether the 4 hour emergency care standard recording of data impacted in an adverse way on patient care across any of the three emergency departments and one front door site. Further information on the interviews conducted is available at Section 4.

Overall based on our work we conclude that NHS Lothian is not consistently complying with the guidance set out in the A&E Data Recording Reference Manual (2013) and the further clarification from the Scottish Government on ambulance waits (2015). In addition, NHS Lothian are not complying with the standard operating procedure (SOP) established by NHS Lothian to ensure compliance with complete and accurate data recording around the 4 hour emergency care standard.

In relation to the specific whistleblowing allegations we concluded that the allegations set out in the whistleblowing letter dated 12 October 2017 are partially upheld. In accordance with NHS Lothian's Adverse Events Policy we have conducted an investigation through 21 interviews of staff at St John's Hospital Livingston, follow up interviews and a review of the data recorded in Trakcare over a 2 year period. The findings from this work are reflected in this report and we have summarised in appendix 7 our assessment against the 3 allegations set out in the letter dated 12 October 2017.

Over time there has been the development of local guidance to respond to developments within the emergency departments/front door, such as the use of Ambulatory Care Pathways – these may well be legitimate treatment pathways, but they are not covered in the national guidance or the local SOP. The result has been that the list of reasons for non breaches has gradually been stretched through custom and practice. For example the A&E Data Recording Reference Manual allows for a 4 hour 2 minute window, over time this has been stretched to be understood as up to 4 hours 15 minutes and then applied in the recording of the breach data.

We undertook data analysis on the amount of changes being made from a breach (i.e. the patient has not been seen within 4 hours) to a non-breach over a two year period for the four sites and across NHS Lothian as a whole. This indicated that there is an upward trend in the proportion of discharges being changed from a breach to a non-breach over this time period at all four sites (and consequently also for NHS Lothian as a whole). This was most pronounced at the Royal Infirmary of Edinburgh where the proportion of discharges being changed from a breach to a non-breach increased from 12% of discharges in October 2015 to over 21% in September 2017.

Through our interviews we did not evidence bullying, harassment or intimidation related to the recording of data. However, we did observe poorer management culture/experience at St John's Hospital with staff reporting a consistent experience of feeling undue pressure beyond that of working in a busy emergency department. We also identified that nursing and administrative staff who are Band 6 or below have a different experience than the perception of those of the senior staff at the Royal Infirmary Edinburgh, and the Western General Hospital. This pressure on lower grade nursing staff was observed and recognised by medical staff at the Royal Infirmary and St John's Hospital.

Compared to the focus NHS Lothian places on the complete and accurate recording of elective care performance, unscheduled care has, unintentionally, received a lower focus and attention.

We consider the following to be the root causes of the various governance and control failures based on our interviews, review of policies and procedures and the data extracted from TrakCare:

Controls

Overall the intended control environment has fundamental weaknesses.

There are three documents providing guidance to NHS Lothian staff on the 4 hour emergency care standard:

- National guidance in the A&E Data Recording Reference Manual (2013) supplemented by a clarification letter from the Scottish Government dated November 2015 around patient transport waits
- An NHS Lothian Standard Operating Procedure (SOP), the most recent update being dated June 2016
- Locally developed lists of breach reasons or instances where it is considered acceptable to alter a patient's clock, in use within two emergency departments (St John's Hospital and the Western General Hospital) and at the Royal Infirmary Edinburgh where a list is not visible, but is used to train nursing staff, as we understand it.

The Standard Operating Procedure (SOP) lacks clarity, and is not a document that staff are trained on or refer to on a routine basis. Although in interviews some staff were aware of the national A&E Data Recording Reference Manual and the 2015 letter from Scottish Government on ambulance waits, not all staff had seen these – we might not have expected junior staff to have seen the national guidance, but we would have expected them to have seen the Lothian SOP -which suggests that this guidance does not directly influence how they work on a daily basis.

In summary we would highlight the following control deficiencies:

1. A poorly-worded SOP which is not supported by training.
2. There is no requirement for staff to state that they have read and understood the SOP and understand that the SOP needs to be complied with at all times.
3. Working practices that have been allowed to develop over time resulting in a “stretch” of the guidelines. Working practices that appear to have originated at the Royal Infirmary Edinburgh were then applied in St John’s Hospital and the Western General Hospital as staff who worked across these sites shared practices, in particular via the Site and Capacity teams. We were unable to evidence how or whether these local guidelines were approved.
4. Local procedures created to fill a perceived gap (in the SOP; in Training; in the high level Scottish Government guidance; and potentially differing operational guidance with applies across the emergency department/front door site) without adequate oversight or approval.
5. Lack of clarity over ownership and accountability for the SOP and where approval rests in the NHS Lothian structure.
6. Individuals are not always selecting a TrakCare drop down box and entering comments within the free text box, as set out within the SOP, when changing breaches to non-breaches. (Royal Hospital for Sick Children and the Western General Hospital)

Governance

Governance structures were initially set up to focus on elective/scheduled care following the 2012 waiting times’ standard report. The remit of the Access & Governance Committee did not explicitly state this, but this is where the group focused time and attention. Over time attendance at this group varied and diluted. This is the key group within the NHS Lothian governance structure that has a remit on overseeing data quality.

The Access & Governance Committee reports into the Acute Hospitals Committee every 6 months via the provision of minutes. Escalation routes are unclear and whether this is now the correct governance structure needs to be considered. The separation of operational agenda items and those of overarching data quality is not clear.

Two limited data audits were undertaken by the Site and Capacity Team in respect of unscheduled care recording of data in TrakCare and the results of these audits were reported to the Access- & Governance Committee in October 2016 and the follow up audit April 2017. However, based on a sample validated, despite reporting a high percentage of non-compliance with the SOP (59% non-compliance across NHS Lothian in October 2016) these findings were not further investigated or escalated.

Particular governance findings that we have identified are:

1. A governance group (Access & Governance) which focused predominantly on elective/scheduled waiting times standards. This resulted in no formal governance structure to monitor unscheduled care data.
2. No effective follow up of the “audit” of unscheduled care data in October 2016 which highlighted non-compliance at the three emergency departments/one front door site, with the SOP and recording reasons for amending a breach to a non-breach and data validation. This may have picked up earlier the issues we have identified.
3. Data is produced from TrakCare to report to NHS National Services Scotland (Information Services Division) but does not necessarily support teams to understand trends in underlying data or identify non-compliance with the SOP or national guidance.
4. A lack of clarity over the role of the Site and Capacity teams including reporting lines, in relation to the accurate recording and treatment of patients in respect of the 4 hour emergency care standard.

Culture:

We interviewed a sample of staff across the three emergency departments and one front door site in NHS Lothian. In two of the emergency departments (the Royal Infirmary Edinburgh and the Royal Hospital for Sick Children) and the one front door site (the Western General Hospital) staff we interviewed spoke about the 4 hour emergency care standard as being a measure of the standard of care, not a target. This then drives the thinking within that department. All staff were clear that the standard is a measure of performance of the whole hospital site, and it is about the “front door” working effectively with the “back door” and all teams working together to ensure good, timely care for patients.

Coming through the interviews was a strong commitment to patient safety, the teams’ safety and providing the right care to patients in the best way.

However, there were some reports of poorer staff experience relating to the culture of the departments that could be improved, in particular it was cited that some of this pressure and negative cultural impact stemmed from Site and Capacity. This was particularly noted in the interviews we held with nursing staff who were graded at a band 6 or below; and as a recurring theme in our interviews specifically at the St John’s Hospital site.

In particular we would highlight the following considerations:

1. Lines of accountability are at times blurred or not understood as intended, in particular line manager responsibility and professional reporting lines (within the Site and Capacity team and also at St John’s Hospital)
2. Differing approaches to patient breaches at the morning Safety Huddles and the Site Debrief meetings – most focus on lessons learned and correct coding of breaches but for St John’s Hospital it appears to be reviewing individual breaches and then subsequent changes to turn them into non-breaches

3. A sense of pressure felt by staff, over and above the pressures of working in an emergency department team, to ensure patients do not breach the 4 hour emergency care standard and how this results in behaviours and recording of data (St John's Hospital and a theme from the interviews of nurses graded band 6 and below at the Royal Infirmary Edinburgh and the Western General Hospital emergency departments). Although this pressure was felt at all three sites on occasion, staff at the Royal Infirmary of Edinburgh and the Western General Hospital felt able to resist this pressure whereas staff at St John's Hospital did not always feel able to do this.
4. A sense of "over control"/"micro-management" particularly when a patient has been in the emergency department/front door site for 3 hours or more. The Senior Charge Nurse, the Nursing team and Site and Capacity all have access to the same live patient data directly recorded in TrakCare. Escalations happen routinely, but can then result in text communications and calls every 2 minutes with a view to agreeing a patient care plan. This can add to the pressure of the situation and could divert focus from patient care, particularly at Charge Nurse Level.
5. The feeling that the achievement of the 4 hour emergency care standard rests on one individual/group of individuals as opposed to the 4 hour standard being seen as a hospital standard and a measure of the whole hospital that was the case at other sites (St John's Hospital)
6. Significant time is spent on reviewing and validating breaches (and non-breaches) which involves experienced staff time (predominately Senior Charge Nurse and Clinical Nurse Manager); numerous TrakCare screens at an individual patient level and at times review of patient notes and discussions on specific patients. This should be reviewed with the nursing/clinical teams to see how this can be done more effectively, and what changes in working practices would be needed to support this.
7. Further work should be done specifically related to improving the staff experience and reducing unnecessary pressure of reporting that isn't focused on patient care. In particular, band 6 nurses and below and medical staff identified pressure and a potential to overly focus on the achievement of the 4 hour emergency care standard and therefore less about the patient. This could link to enhanced training but it is also to cascade learning throughout the teams including why and why not data is changed in relation to the reporting of the standard.

Section 1 Summary of work undertaken

We have undertaken the agreed scope set out in Appendix 1 of this report. Our work included interviews with a range of staff at all three emergency departments and the one front door site across NHS Lothian; extraction of data from TrakCare and data analysis; review of Access & Governance Committee remit and minutes; and review of policies and procedures related to unscheduled care.

Our work started at St John's Hospital and evolved over the other two Emergency Departments (Royal Infirmary Edinburgh and the Royal Hospital for Sick Children) and the front door site (Western General Hospital) as we gained an understanding of the arrangements.

At St John's Hospital we undertook 21 Interviews of staff who work within the Emergency Department and/or have a wider management role at the hospital which will include the Emergency Department. This allowed us to understand the processes in place, and provide an opportunity for staff to feedback on their experiences. Grades of staff we interviewed were:

- two doctors
- four band 6 nurses
- four band 5 nurses
- two band 2 clinical support workers
- two administrative staff
- the Senior Charge Nurse
- Associate Nurse Director
- two Clinical Site Co-ordinators (Site and Capacity Team)
- The Clinical Services Manager
- The Site Director

At the Royal Infirmary Edinburgh, Western General Hospital and the Royal Hospital for Sick Children we interviewed the following grades of staff:

- Senior Charge Nurse (Band 7)
- Charge Nurse (Band 6)
- Emergency Department nurses (Band 5)
- Clinical Director
- 2 team members from Site and Capacity (except at the Royal Hospital for Sick Children as Site and Capacity do not operate here, so a Clinical Coordinator was interviewed as they fulfil a similar role)
- Clinical Nurse Manager
- General Service Manager
- Clinical Services Manager
- Associate Nurse Director or their Deputy
- Site Director

Included for information in Appendix 2 is a list of the questions asked within the interviews.

Following the initial interviews at St John's Hospital, we undertook follow up interviews with some of the St John's Hospital team to further clarify our understanding of the process.

These interviews were with those that were nursing band 6 and above.

We then conducted the interviews at the three other sites using a refined set of questions (Appendix 2) which were based on our understanding of the process and from an analysis of the data.

Section 2 Background

NHS Lothian for Emergency Departments/Front door site

Shown below is the admissions for the three emergency departments and one front door site at NHS Lothian:

	Royal infirmary of Edinburgh Emergency Department	St John's Hospital Emergency Department	Royal Hospital for Sick Children Emergency department	Western General Hospital (front door site)
Number of admissions in 2016	119,365	55,406	49,065	45,111
% of total emergency department/front door admissions	44%	21%	18%	17%
Emergency department opening hours	24 hours	24 hours	24 hours	Not an emergency department, however Minor Injury Unit open from 8am to 9pm is included in the 4 hour standard

The pan-NHS Lothian Site and Capacity team operate across the Edinburgh Royal Infirmary, St John's Hospital and the Western General. However, they operate 24 hours in the Edinburgh Royal Infirmary, only until 10pm in the Western General and 11pm in St John's hospital, when the overnight team takes over.

Each hospital site is managed by a Site Director and supported by senior management teams.

Recording of patient admissions and discharges in TrakCare

All patient activity in the emergency departments/front door site is recorded on the IT system TrakCare including an optional field for additional commentary related to each patient. Access to TrakCare is restricted. All staff (clinical and non-clinical) are aware of the 4 hour standard and patients when presenting to the Emergency Department/front door are prioritised based on considered clinical need, with the priority of agreeing and suitably treating each patient within the 4 hour window where possible.

TrakCare has a number of drop-down boxes which can be selected. One drop-down box is “other” and where staff use this box they are encouraged to enter supporting narrative as an explanation.

4 Hour emergency care standard – recording guidance

In accordance with the 4 hour emergency care standard NHS Lothian plan to treat all patients presenting in the Emergency Department/front door within 4 hours. Guidance is in place in the A&E Data Recording Reference Manual produced by ISD (October 2013) which sets out the reasoning for why a “clock” can be stopped, and the circumstances in which a patient who is in the emergency department/front door site for a period longer than 4 hours would not be classed as a “breach” of the access standard. This sets out:

“Hence for the purposes of the standard the clock continues to run until one of the following conditions has been satisfied:

1. The patient is discharged and the A&E staff no longer has any direct responsibility for the care of the patient:
 - a. The clock stops when the patient is actually uplifted. The clock is not stopped for patients who are required to wait in the A&E department for transport and who may require continuing clinical support,
 - b. If a patient dies then the discharge time is the time of death
 - c. For those patients that discharge themselves the date and time of the discharge is recorded as the time when the patient departed (or when staff become aware the patient has departed). In such circumstances if the patient subsequently returns to the department then the clock is re-set and the 4 hour time period starts again – such patients are not counted as planned return patients.
2. The patient has been formally admitted as an inpatient on the hospital’s PAS/HIS system to either an ordinary ward or to a staffed bed in an assessment or emergency admission unit. Patients who are simply moved to other trolleyed areas within a hospital, for example day surgery units are not regarded as admitted and are not considered to have been discharged from A&E and the clock continues to run.
3. The patient is to be transferred directly to another hospital or other healthcare provider. The clock stops when the patients transfer actually starts, waiting for ambulance staff does not cause the clock to stop.

It is expected that for a few patients a period of assessment and/or observation greater than 4 hours before a decision to admit or discharge will be clinically appropriate. This group of patients may include patients who suddenly deteriorate and patients recovering following reduction of fractures/dislocations. The number of true clinical exceptions to the 4-hour emergency access standard is very small. The operational standard of 98% to allow for 2% of these cases. Every effort should be made to accommodate these patients for their safety, comfort, away from the main A&E department, for example in dedicated observation or assessment ward. If the patient is formally admitted to this ward (and the ward has appropriate facilities) then the clock stops. Otherwise the time spent by these patients is to be counted until one of the 3 conditions are met. Note that simply moving a patient to a ward which is integral to A&E will not stop the clock unless the patient is formally admitted as an inpatient.

Extracted from Page 7 AE2 A&E Data Recording Reference Manual, October 2013, Version 2

Additional guidance issued to NHS Boards in November 2015

Following the 2013 guidance, in November 2015 a letter was issued to all NHS Boards from NHS National Services Scotland (ISD) with the intention of clarifying the rules surrounding ambulance waits and how they should be captured in TrakCare, and when a wait did and didn't constitute a breach. This letter set out the following:

The "date and time of discharge" is used to calculate the length of time that patients spend in the A&E department and measure compliance with the 4 hour emergency care standard. Patients who have been discharged from any further care in A&E may sit in the department's reception area waiting on transport (either private or Scottish Ambulance Service). These patients are no longer on the clock and the time of discharge is the time the A&E care ended.

However, if it is not safe for the patient to be discharged from A&E care whilst waiting on transport (private or Scottish Ambulance Service) then they remain on the clock until they leave the department.

Letter dated 12 November 2015 – Recording specific A&E data items

The letter then cross-referred NHS Boards back to the A&E Data Recording Referencing Manual providing a link directly to the guidance.

Standard Operating Procedure

Common practice across NHS Lothian is to take national guidance and set out in a Standard Operating Procedures (SOP) document how the national guidance is to be applied in NHS Lothian. The reasoning for this is the national guidance can be at a higher level and therefore needs to be interpreted, setting out how the guidance will apply at an operational level, with the intention of providing clarity over the national guidance. All emergency department/front door staff should then follow the SOP.

The Standard Operating Procedure (SOP) "4 Hour Emergency Care Breach Review Management" is intended to consider the recording of accurate and complete data on the TrakCare system related to performance against the 4 hour emergency care standard.

We received two slightly different copies of the SOP, the first one looks to have been produced during 2011. This was then superseded by the June 2016 version which was approved by the Access - Performance and Governance Committee in June 2016 but it is not clear how this was then distributed to departments and subsequently to staff.

A final version of the SOP that was appropriately signed off by Senior Management was not available. This version of the SOP is set out in **Appendix 4** of this report for information.

Other relevant procedures

During our interviews and review of documentation we noted two other publications which relate to unscheduled care. The first one is a Scottish Government publication dated 2015 produced by the Royal College of Emergency Medicine entitled “ED capacity management guidance”. This does not cross refer to the recording of patients in Trakcare against the 4 hour emergency care standard but talks about flow through the hospital and in particular the importance of daily huddles and site debriefs. This is the methodology that has been adopted at all emergency department/Front door sites in NHS Lothian.

We were also provided with a copy of the Royal Infirmary Edinburgh’s SOP “Ambulatory care”. This sets out a number of Ambulatory care pathways. Again this does not explicitly link to the breaches SOP, or how these pathways impact on the recording of patients in the emergency department/front door. Although these documents are operational in nature, and the breaches SOP is designed to relate to data recording they do link and to ensure clarity over understanding the respective links need to be clear.

Section 3 Overview of the 4 Hour emergency care standard processes established across the four Emergency department/front door sites

TrakCare

In order to provide a record of how long a patient has spent in an Emergency Department/front door site the TrakCare system is utilised. This records when a patient arrives at the emergency department/front door, is triaged, is seen by the doctor or nurse, and is then discharged from the emergency department.

Different members of staff will be involved in updating TrakCare throughout the length of a patient's stay, from the reception staff recording the arrival time to the time of discharge being recorded by the doctor or nurse responsible for the patient.

The time of discharge can subsequently be amended, to allow for instances where the discharge time in TrakCare does not accurately reflect actual discharge time. Based on our understanding, reasons for this will be limited but could include the nurse or the doctor not closing the "screen" in TrakCare at the time of discharge but at a later date potentially due to a busy shift, and the need to complete the write-up of patient notes.

Instances where a patient has remained within the Emergency Department/front door site for in excess of the four hour standard are referred to as 'breaches' and captured in TrakCare as a breach, and the subsequent "BOXI" reports that are produced.

Amendments to time

The national A&E Data Recording Reference Manual sets out the exceptional circumstances where a patient may be in the emergency department for longer than 4 hours but would not constitute a breach. This is supplemented by the 2015 guidance on patient transfers from the emergency department.

The NHS Lothian Standard Operating Procedure (SOP) is intended to clarify amendments to times, with a "flow chart" which follows the patient journey through emergency department/front door site, and supports staff in coding patients within TrakCare. There is a lack of clarity over whether this SOP is to support coding of patients in TrakCare or support decisions on whether the patient should be classified as a breach or a non-breach related to the 4 hour standard. It appears to do both.

Responsibility

There is collective responsibility within all three Emergency departments and one front door site for meeting the 4 hour standard, without compromising patient care. In order to achieve this standard, it is essential that the "front" and "back door" (unscheduled and scheduled care) of the hospital work together.

There is a pan-NHS Lothian Team for Site and Capacity who support the emergency departments/front door site and the Hospital "back door" with patient flow. Site and Capacity have a presence at St John's, the Edinburgh Royal Infirmary and the Western General Hospital but do not operate at the Royal Hospital for Sick Children, who have Clinical Coordinators providing the same function.

Daily reporting and escalation process

The ongoing performance of the department compared to the emergency care standard is visible on TrakCare, and this can be viewed by all nursing staff and doctors within the emergency standard. Broadly a similar process is followed across each of the three emergency departments and one front door site, with some variations which are noted below:

1. For each shift the Nurse in Charge updates a summary sheet detailing the performance of the department at that moment in time. This is updated on an hourly basis.
2. A text is sent by the Nurse in Charge every two hours to the Site and Capacity team, the Clinical Nurse Manager, the Senior Charge Nurse, the Associate Nurse Director, the Clinical Services Manager and the Site Director. This highlights particular “pressure” on the emergency department for example increased attendances, patients which require complex care and therefore impact on the availability of nurses and/or doctors on the emergency department floor e.g. resus patients.
3. As well as being monitored by the nursing staff the “clocks” are also monitored by the Site and Capacity team, who will contact the nurse in charge when a patient’s clock reaches 3 hours. This contact focuses on the “patient plan” and following this a continuous ongoing dialogue is held between an individual in Site and Capacity and the nurse in charge with the overall aim of treating and discharging the patient within the 4 hour window (this does not happen at the Royal Hospital for Sick Children as Site and Capacity do not operate there).

Adjustments to patients who are recorded as having breached the 4 hour standard on a real time basis

All data is captured “live” in TrakCare. At various points in a shift this data will be reviewed, usually by the nurse in charge. This review may result in a change being recorded in Trak moving the patient from a “breach” to a “non-breach”.

We note that at the Edinburgh Royal Infirmary and the Western General Hospital that this is only undertaken by the Senior Charge Nurse (Band 7). The nurse in-charge of the shift is not necessarily the Senior Charge Nurse, it could be a band 6 nurse, and therefore the validation of TrakCare data and breaches to non-breaches is performed when the Senior Charge Nurse comes on shift.

During our interviews examples were given where a patient may stay in the emergency department over 4 hours but not be counted as a breach, for example: following the 2015 guidance the patient is in the emergency department waiting for a relative to collect them or an ambulance to take them home but treatment has finished.

However we were also given examples in the interviews when a patient would be changed from a breach to a non-breach incorrectly. These changes are based on local guidance/understanding created firstly at the Edinburgh Royal Infirmary and then adopted by St John’s Hospital and the Western General Hospital who created variations of this guidance (see Appendices 5 and 6).

Reviewing patient breaches and validating data

Every morning the previous day's breaches of the 4 hour emergency care standard are reported as part of the daily BOXI (Business Objects 11) report. This provides an opportunity for the breaches to be reviewed and any adjustments that are required to the discharge time to be made.

Below is a summary of the review process that takes place at each of the Sites, as we understand it based on our interviews:

St John's Hospital

Time	Action
Throughout the night	The Nurse in Charge or Charge Nurse will review breaches from the day and make any required adjustments within TrakCare using the free text box.
5am – 6am	A Band 6 nurse (in-charge at the time) looks at overnight breaches and makes any required adjustments
7.30am	The Senior Charge Nurse reviews the list and removes other non-breaches based on their experience and understanding of what can be classified as a non-breach or corrects breach reasons for accuracy.
8.30am	"Site Huddle" led by the Associate Nurse Director – overnight review and plan for day. A number of people attend this meeting and the meeting is predominantly focused on patient flow and patient safety. Breaches may be discussed at this meeting.
9am	Site debrief led by Associate Nurse Director between the Emergency Department and Medical Admissions Unit. Attendees typically include: Site and Capacity, the Clinical Service Manager, and the Senior Charge Nurse, as well as others. Further review of breaches takes place and further information on specific patients may be requested and/or decisions taken to change breaches to non-breaches.

Royal Infirmary of Edinburgh:

Time	Action
Throughout the shift	The Senior Charge nurse will review TrakCare data on a routine basis during the shift based on patient activity.
If the Senior Charge nurse is not overseeing the shift	Only Senior Charge nurses (band 7) can review and validate breaches. If a Band 7 has not been in charge of the shift, the Band 7 will review and validate breaches when they come back on shift – usually the first activity they do, and at times they come on shift early to be able to do this. The Senior Charge Nurse, based on their experience, can change patients to non-breaches.
8.30am	“Site Huddle” led by the Site Director– overnight review and plan for day. A number of people attend this meeting and the meeting is predominantly focused on patient flow and patient safety. Based on our understanding from the interviews individual breaches are not discussed at this meeting, more the overall performance of ED and particular areas of pressure that day.
10am	Site debrief led by Clinical Services Manager. Attendees typically include: Site and Capacity, the Clinical Nurse Manager, and the Senior Charge Nurse, as well as others for example clinical specialities. The focus at this meeting is on the correct coding of breaches, as opposed to making amendments to show a breach as a non-breach.

Western General Hospital:

Time	Action
Throughout the shift	The Senior Charge nurse will review TrakCare data on a routine basis during the shift based on patient activity.
If the Senior Charge nurse is not overseeing the shift	Only Senior Charge nurses (band 7) can review and validate breaches. If a Band 7 has not been in-charge of the shift, the Band 7 will review and validate breaches when they come back on shift – usually the first activity they do, and at times they come on shift early to be able to do this. The Senior Charge Nurse, based on their experience, can change patients to non-breaches.
8.30am	“Site Huddle” led by the Clinical Services Manager – overnight review and plan for day. A number of people attend this meeting including a member of the senior management team and the meeting is predominantly focused on patient flow and patient safety. Based on our understanding from the interviews individual breaches are not discussed at this meeting, more the overall performance of the emergency department and particular areas of pressure that day.
12 noon and then 15.00pm	Site safety huddles led by Clinical Services Manager.

Royal Hospital for Sick Children:

Time	Action
Throughout the shift	Senior Charge Nurse and Senior medical staff update records on TrakCare.
If the Senior Charge nurse is not overseeing the shift	Clinical Director reviews all breaches, considers if reason is accurate and adjusts to non breaches where appropriate.
8.30am	Safety huddle is led by the Clinical Co-ordinator (Nursing) and is attended by Associate Nurse Director, Associate Medical Director and Service Manager routinely (as well as Clinical Leads, Clinical Nurse Manager and many others).
15.00	Safety huddle led by Clinical Co-ordinator (Nursing).

Per the SOP, all data changes need to be made by 12pm each day at the latest to enable the accurate production and release of the daily performance information across NHS Lothian. This then allows performance data to be shared with the Scottish Government.

Section 4 Key observations from our interviews at each of the three Emergency Departments and one front door site within NHS Lothian

As part of our work we undertook interviews with a number of staff across all three emergency departments and the one front door site. These interviews explored the processes in place to record patient emergency department/front door times as well as exploring staff understanding of these processes and the culture within each emergency department.

Overall the nursing and clinical staff we interviewed in particular stressed throughout the interviews the importance of patient care, and keeping their team and patients safe and the emergency department running effectively.

Based on our interviews we got a sense of the team working that takes place within the emergency department, a clear focus and commitment to patient care, a desire and enjoyment of working within the emergency department. There was an acceptance that the emergency departments are pressured environments, but that was why staff wanted to work in the emergency department for the fast pace and diverse patients.

Our observations are set out for each of the three emergency departments and one front door site below:

St John's Hospital

Reflecting on all interviews the management culture at St John's Hospital does feel different to the others, and was talked about and referred to differently by those we interviewed.

Through the interviews everyone was clear that when they were talking about pressure they were referring to pressure that was not related to the general emergency department pressured environment (which was accepted).

Most described the pressure as not being from the patients but from the reporting around the 4 hour standard, hourly report, 2 hourly texts, calls from the Site and Capacity team when there was a red clock asking what the plan is for that patient.

In relation to the pressure, and how this related to "taking time back" (breaches to non-breaches being recorded) we noted out of the 14 staff we interviewed at St John's Hospital who were in effect working directly within the emergency department we noted:

- 9/14 (four Band 5, three Band 6, one Doctor and one receptionist) felt there was an environment where pressure is put on people to amend figures, to show an improved performance. This pressure was felt to come from more senior staff members both within the nursing staff and within the Site and Capacity team.
- 7/14 (one Doctor, three Band 6, three Band 5) had been directly asked to amend data
- 4/14 (one Band 6, three Band 5) felt requests that they had received to amend data had been unreasonable

- 2/14 (two Band 5) said they had received requests to enter false data or data that they didn't agree with (with a caveat mentioned by one respondent that the definition of 'false' is subjective).

All had a good understanding of the procedures for recording patient attendances, however three (one Doctor, one Band 5 nurse and one Band 2 clinical support worker) identified that they don't agree with, or understand the reasons given for taking time back.

In relation to the Site and Capacity team at St John's Hospital we would highlight that in interviews with two members of Site and Capacity team, one said they would never change the figures as it isn't part of their role, while the other saw it as part of their job to explain to junior staff when figures could be amended, and that they themselves would amend figures if they felt it was necessary.

One individual was quite open about altering figures and asking junior staff to amend breaches. The individual commented 'There is pressure to keep the number of breaches low ... I might say to a colleague that the breach could have been saved and it is a disappointment ... There are people who feel that it (the 4 hour standard) isn't as important to them'.

Based on our interviews, in relation to the Site Huddle and the daily de-brief we noted that whilst these focused on patient safety they would also look at individual patient breaches and explore why that patient was a breach. We were given examples of when this could then lead to a further change in the data to show the patient as not breaching the standard.

Lastly when asked about accountability for achieving the 4 hour emergency care standard, the message that it was a hospital-wide measure did not come across in the same way as it did at the other sites. Individuals felt personally accountable for achieving the standard, and this could then create a different culture and contribute to the sources of pressure referred to.

Royal Infirmary of Edinburgh and Western General Hospital

In all our of interviews at these two sites a consistent message came across that the 4 hour emergency care standard was a standard and not a target. Everyone articulated that they very much saw this as a measure of the whole hospital site's performance, and it was about the front and back door working effectively together to deliver the right patient care.

The articulation of pressure that we noted in the interviews at St John's did not come through in these interviews.

The daily huddle and site debrief were discussed positively as an opportunity to learn and reflect on what worked and did not work the day before. As in St John's Hospital these are guided by data captured in a standard template which considers statistics for example: delayed discharges; number of people at emergency department; number of admissions and by patient type; and beds available.

With a focus on lessons learnt, examples were given where reasons for breaches were considered but that was more to ensure that the breach categorisation was the correct, for example when a breach was initially coded as surgical but surgical were not given adequate notice, so that breach would be coded differently. However, they would still be recorded as breaches.

No one said that they had been pressured to change data on the system inaccurately or change patient breaches to non-breaches. Although some staff had heard of situations where members of the Site and Capacity team had made suggestions to avoid breaches that they didn't agree with.

Lastly we interviewed a sample of band 5 nurses at both these sites. In these instances this group of staff did highlight particular pressures, similar to those at St John's hospital related to the sense of pressure to potentially amend data to show a non-breach.

Royal Hospital for Sick Children

The Royal Hospital for Sick Children is a contained site and has differing operating practices that work for them as a site and the types of patients they care for. For example the Site and Capacity team are not involved there, and the Clinical Director has ultimate responsibility for validating breaches. There is a clear sense that all specialities work very closely as a tight unit.

Overall observations

It is clear there are a number of administration tasks that need to take place routinely throughout the day to maintain the completeness and accuracy of the data being recorded. Based on our observations there is an opportunity to review this, and also who is currently responsible for which part of the process. One Senior Change nurse observed they were a band 7 well qualified nurse but when in-charge of the emergency department much of the day was spent on sending escalation texts; and reviewing and validating breaches in TrakCare. This was also articulated by other senior nurses coordinating the emergency/front door sites. These administration tasks by in large apply consistently across the emergency department/front door sites.

The culture at St John's Hospital appears to be different to the other sites and the senior management team should explore why this is different and what works in the Royal Infirmary of Edinburgh and the General Western Hospital in particular that should be thought about in the context of St John's Hospital. There is a good opportunity to spend time with staff at all sites exploring the culture and processes in place and what changes could be made to improve the working practices within the emergency departments.

Involvement by management

In general the Site Directors and Service Managers at each site were not involved in discussing individual breach cases or the reasons for those, they were more likely to look at the overall numbers such as number of breaches related to bed delays.

St John's Hospital appeared to have a greater involvement of the Associate Nurse Director and Service Manager in these discussions than elsewhere.

Section 5 Access and Governance and overall governance of unscheduled care data

The NHS Lothian Waiting Times Governance Team (WTGT) analyse and report performance data. However, the Waiting Times Governance Team do not at present undertake compliance audits of the emergency department data and then provide reports.

Data Compliance audits

An initial compliance audit was undertaken in September 2016 by a member of the Site and Capacity team, which is set out in the SOP as being a requirement. This was the first audit that was undertaken over unscheduled care data recorded in TrakCare. Usually data audits of these nature are done by the NHS Lothian Waiting Times Governance Team who are independent, but in this case the 2016 audit and the April 2017 audit were undertaken by a member of the Site and Capacity team.

The report in September 2016 reflected data sampled between March and August 2016 and showed:

Details of Exceptions*

A - Inappropriate breach adjustment or no reason for adjustment recorded
B - No written record of actual time of readiness for transfer or discharge
C - Altered discharge time does not match time reported in LUHD 4hr Report
D - No evidence of adjustment to discharge date / time

Exceptions by type



*Percentage calculations are based on total number of exceptions.

Exceptions by hospital

Site	Number Sampled	Number of Exceptions	% Compliant
Royal Infirmary of Edinburgh	34	72	64.7%
St John's Hospital at Howden	5	13	56.7%
Western General Hospital	8	26	45.8%
Royal Hospital for Sick Children	3	12	33.3%
Total	50	123	59.0%

Exceptions by hospital and type

Site	A	B	C	D	Total
Royal Infirmary of Edinburgh	31	19	22	0	72
St John's Hospital at Howden	7	3	3	0	13
Western General Hospital	13	8	5	0	26
Royal Hospital for Sick Children	6	3	3	0	12
Total	57	33	33	0	123

This showed a 59.1% compliance rate across NHS Lothian, albeit the sample sizes selected were small. The most common reason for non-compliance was category A “inappropriate breach adjustment or no reason for adjustment recorded”. Accompanying this data were observations which recommended further action, in particular at the Royal Hospital for Sick Children to discuss better practice of completing patient notes and across the other three sites, in particular the Royal Infirmary of Edinburgh to “the site would benefit from written information in the ED pre 4 hours to ensure compliance with the 4 hour breach audit SOP”.

At the time this was presented to the Access & Governance Committee where from the minutes it was flagged that there may be issues with the accuracy/completeness of the data. No follow up actions were identified by the group and this was not escalated.

The second audit was done for the period September 2016 to February 2017. In this report the classification/categorisation of findings differ, but highlight for the sample in 31% of cases there was an inappropriate breach adjustment which is further defined as the patient clock should not have been stopped.

Date of Audit: March 2017

Data Audited: Sep 2016 - Feb 2017

LEGEND**Under 95% Compliant****95% - 99% Compliant****100% Compliant**

	Current Month	Last Audit	2nd Last Audit
Total	75.0%	59.0%	N/A

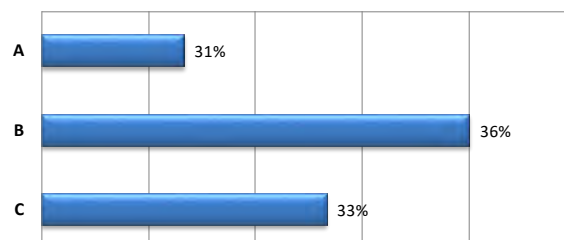
Details of Exceptions*

A - Inappropriate breach adjustment / no justified reason for adjustment was recorded. (This should only be used if the patients clock should never have been adjusted.)

B - The patient's clock was reasonably adjusted, however there was no written record of the actual time of readiness for discharge or transfer.

C - Altered discharge time does not match time reported in LUHD 4hr Report (time when the 'door icon' was selected in TRAK).

*Percentage calculations are based on total number of exceptions.

Exceptions by type**Exceptions by hospital**

Site	Number Sampled	Number of Exceptions	% Compliant
Royal Infirmary of Edinburgh	45	62	77.0%
St John's Hospital at Howden	1	3	50.0%
Western General Hospital	3	9	50.0%
Royal Hospital for Sick Children	1	1	83.3%
Total	50	75	75.0%

Exceptions by hospital and type

Site	A	B	C	Total
Royal Infirmary of Edinburgh	19	22	21	62
St John's Hospital at Howden	1	1	1	3
Western General Hospital	3	3	3	9
Royal Hospital for Sick Children	0	1	0	1
Total	23	27	25	75

Although it represents a slightly improved position, overall compliance based on this sample was 75%. This report has a column for further improvements but that is blank. This report was noted by the Access & Governance Committee, but similar to the first one, it did not trigger additional review or escalation.

Access & Governance Committee

The Access & Governance Committee meets on a monthly basis and has an overall remit of:

“Will be part of NHS Lothian’s assurance framework to deliver **all** waiting times within Scottish Government’s targets and standards and to clinically appropriate timescales”.

Although the remit says all, this has been interpreted and formed as custom and practice to be solely related to elective care waiting times.

Key aspects of this remit were expanded to include:

- Ensure full compliance with both Scottish Government’s and NHS Lothian’s extant policies and Operational procedures;
- Provide routine and formal reports to relevant NHS Lothian’s committees and to NHS Lothian Board, ensuring that sufficient information is provided to enable them to perform their governance function;

Based on our review of the remit and the minutes we would highlight:

1. Although the remit talks about routine and formal reports to relevant NHS Lothian committees this typically resulted in a reporting line up to the Acute Hospitals Committee, and by the presentation of the minutes on the agenda of this group.
2. The updated SOP June 2016 was presented to the Access & Governance Committee. However, it was presented by someone from the Waiting Times Governance Team rather than the planned Site and Capacity individual as they did not attend the meeting. Based on the minutes we are unable to see whether the full SOP was presented, whether there were any questions and/or observations and the minutes do not capture any follow up actions.
3. The “local” emergency department lists do not seem to have gone to the group for approval.
4. The attendance list for the Access & Governance Committee is long, and on a number of occasions a number of deputies or nominated replacements are in attendance.
5. In October 2016 you can see in the minutes the unscheduled care audit report was discussed but it is the only item in the minute which does not have a named “owner” and an owner for the subsequent action.
6. The minutes show the discussion focused on the challenge to the accuracy of the data. However, no additional work was considered necessary at that point in time to review/understand potential root causes. The level of non-compliance noted did not result in any escalation.

Based on interviews we noted that certain individuals, who we would have expected based on role, were aware of the 2 audits undertaken. However, not everyone was, and no one was clear on what further actions were taken as a result of the audits.

Section 6 Analysis of data extracted from TrakCare across the 4 emergency departments/front door sites

Narrative recorded in free text box

Drop-down boxes can be selected in TrakCare reflecting the reasons for breaches. If the reason is not there, there is another “other” box which can be selected. Where “other” is used, it is expected that more detail is entered in the free text narrative box.

From review of the data across the 4 emergency department sites it was noted nearly in all instances at both St John’s Hospital and the Edinburgh Royal Infirmary when selecting other, entered a reason in the free text box. This was not the case for the Sick Kids Hospital and the Western General. This makes it difficult, based on the data in TrakCare, to form a judgement on whether the coding of a breach to a non-breach is appropriate.

In appendix 6 we have set out the more frequently occurring explanations that have appeared in the “Other” TrakCare comments box, for the 4 emergency departments. In particular we have highlighted those that do not appear to be in accordance with the 2013 A&E Data Recording Reference Manual guidance or the information provided in 2015 related to patient transfers.

There is a degree of correlation between the reasons shown and the local lists in each of the ED departments.

For our interviews at the Royal Infirmary of Edinburgh, the Western General Hospital and the Royal Hospital for Sick Children we asked the following question to clarify understanding:

Interviewee question: Should the clock be stopped in any of the following circumstances?

- a. When a bed has become available (even if the patient is still in the ED waiting for it)
- b. When a patient is waiting for transfer by ambulance to another hospital
- c. When a patient's treatment has finished but they are waiting for lab or radiology results?
- d. When a patient is waiting to be seen by a specialist doctor, e.g. cardiology or respiratory
- e. When a patient is waiting on a porter

Site	Question a	Question b	Question c	Question d	Question e
Royal Infirmary Edinburgh (11 Interviewees)	Yes – 2 No - 9	Yes – 1 No – 6 Maybe it depends - 4	Yes – 1 No – 10	Yes – 1 No – 10	Yes – 1 No – 9 Maybe it depends - 1
Western General Hospital (10 interviewees)	Yes – 0 No – 10	Yes – 0 No – 8 Maybe it depends - 2	Yes – 0 No – 10	Yes – 0 No – 10	Yes – 0 No – 10
Royal Hospital for Sick Children (9 Interviewees)	Yes – 0 No – 9	Yes – 0 No - 9	Yes – 0 No – 9	Yes – 0 No – 9	Yes – 0 No – 9

*Reasons for the response “maybe it depends” included: At the Royal Infirmary Edinburgh the understanding the clock was 4 hours and 15 minutes; or it depended on the ongoing care needs.

Based on the above there was consensus that in these circumstances the clock should not be stopped. However, based on the data we reviewed it is being stopped in these circumstances.

Unscheduled care data shown in performance reporting

Greater data checking takes place at the moment on elective patient data. Data captured for unscheduled care is reported daily, weekly and monthly but does not necessarily explore longer-term trends. Data is at quite a high level, predominantly: number of admissions to emergency departments, percentage of patients treated in 4 hours, percentage of patient breaches. Data like we have extracted below is not available e.g. percentages of breaches changed to non-breaches, cleansed breaches to non-breaches and reasons for changes in TrakCare. The two audits by Site and Capacity did look at this data but it is not commonly available to management teams. If the data was cut this way, the increasing trend would have been identified.

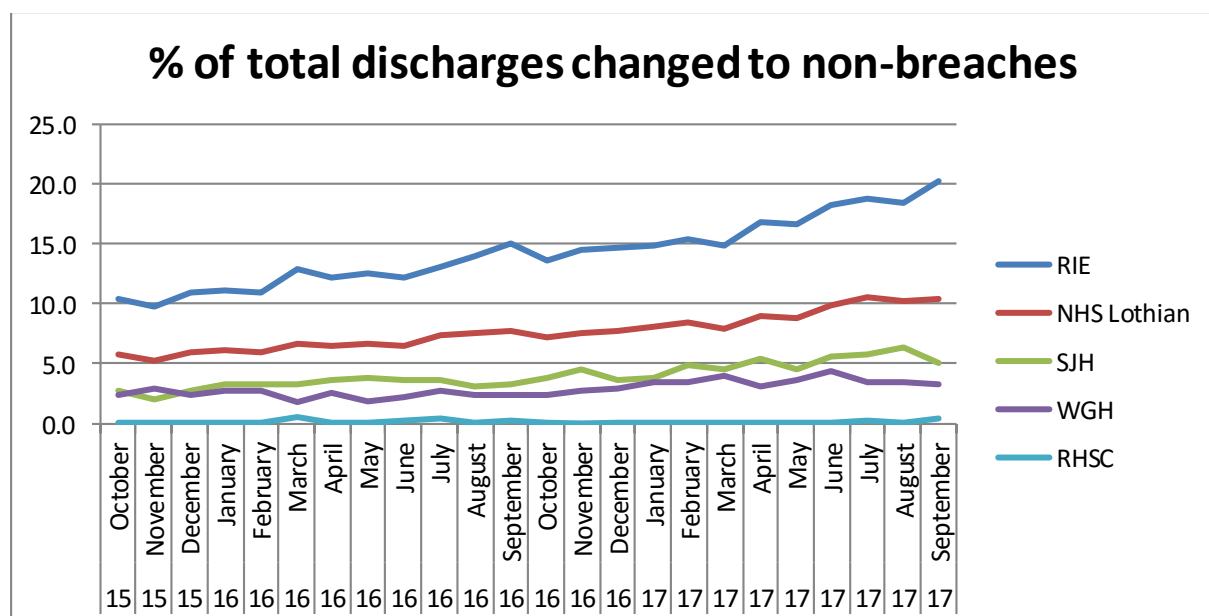
Analysis of data – comparison of reported figures with TrakCare

During the initial stages of our review we noted that there were differences between the 4-hour standard statistics stated on ISD's website and those reported within NHS Lothian (as part of the TrakCare system and Tableau reporting system). In discussion with Analytical Services, they stated that the differences were due to problems with the data for Emergency Department episodes which were initially referred by the Flow Centre. This was resulting in the discharge time taken as being the time of a final transaction in TrakCare for each patient, instead of the stated discharge time. These can be different, due to members of staff going in to a patient's TrakCare record after discharge. However, Analytical Services have stated that this issue has now been resolved and the data in Tableau / TrakCare retrospectively changed. We have undertaken a comparison of the updated data in Tableau / TrakCare and the statistics stated on ISD's website for the period October 2016 to September 2017 shows that there are now only minor differences between the statistics. There are expected to be some difference on an ongoing basis as TrakCare is a 'live' system that will show the figures in real time, whereas the figures reported to ISD will be at a specific point in time. This does mean that any differences between the publically available figures on ISD and the figures used internally within NHS Lothian should be minimal.

Analysis of data – review of changes from a breach to a non-breach, and a reason selected

When a breach is changed to a non-breach the individual making the change should indicate the reason for the change by either selecting a reason from a drop down box, or by entering the reason in a free text field. This requirement is not system enforced. We therefore undertook data analysis on the TrakCare output for each of the four sites, covering a period of two years (1st October 2015 – 30th September 2017) to identify where breaches have been changed to a non-breaches by analysing the reasons either selected from the drop down box option for changing a breach to a non-breach, or where data has been entered in to the free text box to explain why a breach has been changed.

This analysis showed that the % of total discharges which are being changed from a breach to a non-breach has increased over the last 2 years, with the Royal Infirmary of Edinburgh (RIE) having a higher proportion of total discharges being changed to non-breach than the other sites:



For the Royal Infirmary of Edinburgh the increase has gone from 10.4% of discharges being changed to a non-breach in October 2015 to 20.3% being changed in September 2017, while for NHS Lothian as a whole the proportion has increased from 5.7% in October 2015 to 10.5% in September 2017. This may correlate to the changes to the SOP in June 2016 and the local reason listing which was in place. For the months of August 2017 and September 2017 we have included below the numbers of changes from a breach to a non-breach using a free text box or drop-down option, and the % of discharges, which were used to show the graph above.

	August 2017	September 2017
RIE – Changes to a non-breach (selecting drop down option or free text field)	1893	2030
RIE – Volume of patient discharges	10311	10019
RIE - % of discharges	18.4	20.3
SJH – Changes to a non-breach (selecting drop down option or free text field)	301	250
SJH – Volume of patient discharges	4715	4839
SJH - % of discharges	6.4	5.2
WGH– Changes to a non-breach (selecting drop down option or free text field)	144	132
WGH – Volume of patient discharges	4179	4060
WGH - % of discharges	3.4	3.3
RHSC – Changes to a non-breach (selecting drop down option or free text field)	6	17
RHSC – Volume of patient discharges	3772	4280
RHSC - % of discharges	0.2	0.4
NHS Lothian – Changes to a non-breach (selecting drop down option or free text field)	2344	2429
NHS Lothian – Volume of patient discharges	22977	23198
NHS Lothian - % of discharges	10.2	10.5

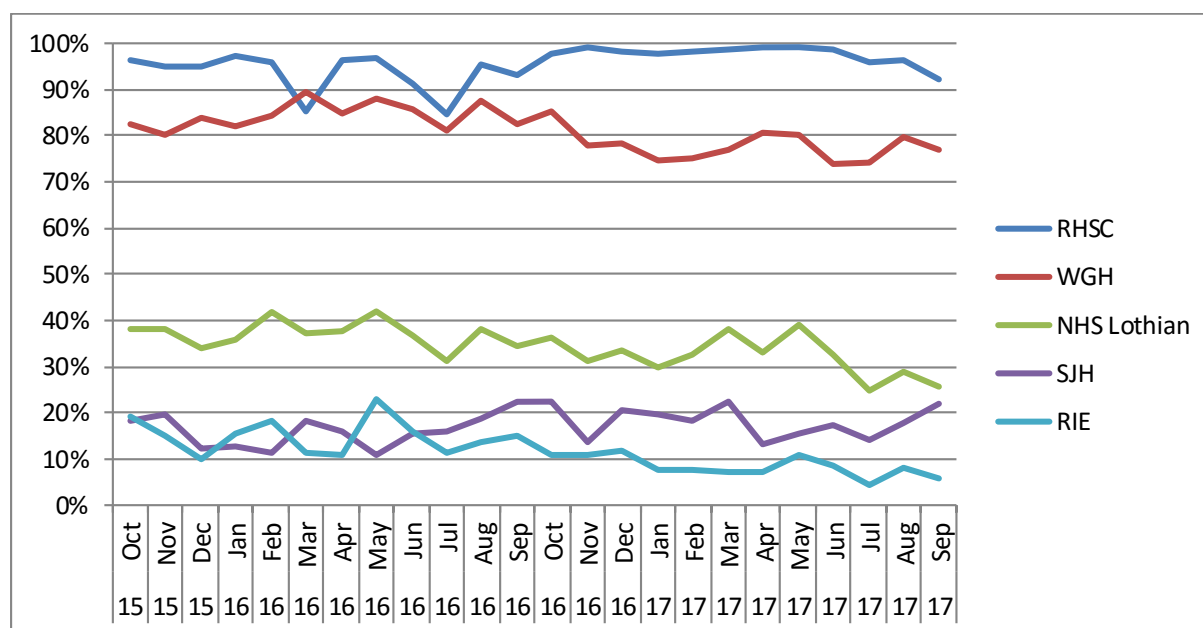
Analysis of data – review of changes from a breach to a non-breach, and no reason selected

We also looked to identify where there had been changes from a breach to a non-breach, but no selection had been made either in the free text field or the drop down box.

This identified a large difference in working practices between the four sites, with the Royal Hospital for Sick Children not entering a reason for making a change to a non-breach in the vast majority of cases, with most months having over 90% of changes to a non-breach with no reason entered on TrakCare.

At the Royal Infirmary of Edinburgh between 5% and 20% of changes on a monthly basis did not have a reason entered on TrakCare.

The graph below shows the percentage of changes from a breach to a non-breach on TrakCare which did not have a reason entered in either the drop down box, or in the free text field:



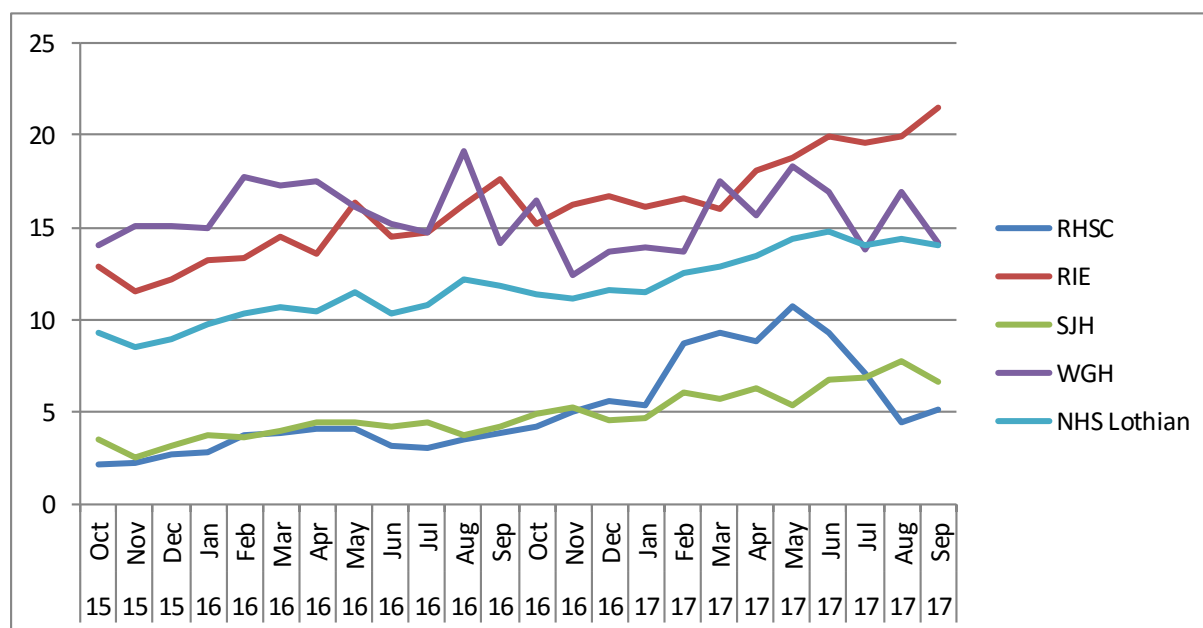
For the months of August 2017 and September 2017 we have included the numbers relating to the above graph below:

	August 2017	September 2017
RIE – Changes to a non-breach (no drop down selection or text in free text field)	163	124
RIE – Changes to a non-breach (selecting drop down option or free text field)	1893	2030
RIE – Total changes from breach to non-breach	2056	2154
RIE - % of changes with no drop down reason selected or text in free text field	7.9	5.8
SJH – Changes to a non-breach (no drop down selection or text in free text field)	65	70
SJH – Changes to a non-breach (selecting drop down option or free text field)	301	250
SJH – Total changes from breach to non-breach	366	320
SJH - % of changes with no drop down reason selected or text in free text field	17.8	21.9
WGH – Changes to a non-breach (no drop down selection or text in free text field)	566	442
WGH– Changes to a non-breach (selecting drop down option or free text field)	144	132
WGH – Total changes from breach to non-breach	710	574
WGH - % of changes with no drop down reason selected or text in free text field	79.7	77.0
RHSC – Changes to a non-breach (no drop down selection or text in free text field)	160	205
RHSC – Changes to a non-breach (selecting drop down option or free text field)	6	17
RHSC – Total changes from breach to non-breach	166	222
RHSC - % of changes with no drop down reason selected or text in free text field	96.4	92.3

NHS Lothian – Changes to a non-breach (no drop down selection or text in free text field)	954	841
NHS Lothian – Changes to a non-breach (selecting drop down option or free text field)	2344	2429
NHS Lothian – Total changes from breach to non-breach	3298	3270
NHS Lothian - % of changes with no drop down reason selected or text in free text field	28.9	25.7

Analysis of data – total changes from a breach to a non-breach

If we combine the 'changes from a breach to a non-breach with a reason entered', with the 'changes from a breach to a non-breach with no reason entered' we can still see an upward trend in the proportion of discharges which are being amended. The graph below shows the overall results for NHS Lothian across all sites:



The results show that the Royal Infirmary has increased from 12% of discharges being changed from a breach to a non-breach in October 2015 to over 21% of discharges being changed from a breach to a non-breach in September 2017. For NHS Lothian as a whole the increase has gone from 9% of discharges being changed to a non-breach in October 2015 to 14% in September 2017.

The table below shows the figures for August 2017 and September 2017:

	August 2017	September 2017
RIE – Total combined changes to a non-breach	2056	2154
RIE – Volume of patient discharges	10311	10019
RIE - % of discharges	19.9	21.5
SJH – Total combined changes to a non-breach	366	320
SJH – Volume of patient discharges	4715	4839
SJH - % of discharges	7.8	6.6

WGH– Total combined changes to a non-breach	710	574
WGH – Volume of patient discharges	4179	4060
WGH - % of discharges	17.0	14.1
RHSC – Total combined changes to a non-breach	166	222
RHSC – Volume of patient discharges	3772	4280
RHSC - % of discharges	4.4	5.2
NHS Lothian – Total combined changes to a non-breach	3298	3270
NHS Lothian – Volume of patient discharges	22977	23198
NHS Lothian - % of discharges	14.4	14.1

Analysis of data – reasons given for changes

Across the four sites there were different reasons given within the free text boxes to justify why breaches were being changed to a non-breach, with the most common reason given at the Western General Hospital being related to waiting for a bed, the most common reason at St John's Hospital being 'late off screen' and the most common reasons at the Royal Infirmary of Edinburgh being 'AMU' and 'bed ready'. The most common reason at the Royal Hospital for Sick Children was waiting for medics.

We conducted analysis across the sites of the reasons given for August 2017 and September 2017 to identify if reasons given for changing a breach to a non-breach were appropriate. We have highlighted below the number and percentage of changes which we consider to have been inappropriate for each site, based on the understanding of the Scottish Government guidance:

	Aug-17	Sep-17
RIE - No. of free text changes which are not appropriate	896	870
RIE - Total changes in the month	2056	2154
RIE - % of changes which were inappropriate	44 %	40 %
SJH - No. of free text changes which are not appropriate	72	64
SJH - Total changes in the month	366	320
SJH - % of changes which were inappropriate	20%	20%
WGH - No. of free text changes which are not appropriate	57	56
WGH - Total changes in the month	710	574
WGH - % of changes which were inappropriate	8%	10%
RHSC - No. of free text changes which are not appropriate	1	0
RHSC - Total changes in the month	166	222
RHSC - % of changes which were inappropriate	1%	0%
NHS Lothian – No. of free text changes which are not appropriate	1026	990
NHS Lothian – Total changes in month	3298	3270
NHS Lothian - % of changes which were inappropriate	31.1	30.3

*note per previous comment as free text narrative is not always entered at the Western General Hospital and the Royal Hospital for Sick Children and therefore it is difficult to make a judgement and this may make their figures look lower comparatively lower to the other two sites.

Analysis of data – impact on unscheduled care performance

We have highlighted in the below table the impact on the unscheduled care performance figures reported to ISD if these inappropriate changes were to be removed. This shows that, for both months selected and based on the comments available within TrakCare for changing breaches to non-breaches, the available figures on ISD are overstating NHS Lothian performance in regards to the 4 hour unscheduled care performance standard.

	August 2017	September 2017
RIE - % within 4 hours as per ISD figures	93.6	93.4
RIE – performance % against 4 hour standard if those identified as incorrect amendments, based on TrakCare comments, were removed from ISD figures	84.9	84.7
SJH - % within 4 hours as per ISD figures	96.4	96.0
SJH – performance against 4 hour standard if those identified as incorrect amendments, based on TrakCare comments, were removed from ISD figures	94.9	94.7
WGH - % within 4 hours as per ISD figures	95.2	94.3
WGH – performance against 4 hour standard if those identified as incorrect amendments, based on TrakCare comments, were removed from ISD figures	93.8	92.9
RHSC - % within 4 hours as per ISD figures	97.9	98.2
RHSC – performance against 4 hour standard if those identified as incorrect amendments, based on TrakCare comments, were removed from ISD figures	97.9	98.2
NHS Lothian - % within 4 hours as per ISD figures	95.2	94.3
NHS Lothian – performance against 4 hour standard if those identified as incorrect amendments, based on TrakCare comments, were removed from ISD figures	90.7	90.0

BOXI Reports

BOXI reports are produced from data held within TrakCare. These are business object reports which show patient admission times to the emergency department and discharge times. These are typically considered first by the Senior Charge Nurse and/or the Clinical Nurse Manager to ensure that the data captured is accurate. This data is then used at the morning Site Huddle which focuses on patient safety, and then the debrief meetings.

The reports capture patient admission time, discharge time and a summary of the notes recorded on TrakCare. The final versions of these reports are retained, but the initial ones produced and subsequently data-cleansed are not retained.

Therefore we are unable to evidence the trail of potential data changes that happen at these various stages and who instigated the changes.

Section 7 Control and process observations based on interviews and work done in respect of data

The Statement of Operating Procedures (SOP)

The SOP is 11 pages and designed to set out when a breach can be treated as a non-breach and the recording of this in TrakCare. The SOP was created to help clarify the national guidance for NHS Lothian staff. We understand it has been updated on subsequent occasions but the most up to date version is dated June 2016.

The first page sets out the importance of accurate data and reporting against the 4 hour emergency care standard. This may create an impression that the most important element to NHS Lothian is meeting the standard over patient care.

From our review of the SOP we note:

- There is no obvious link between the clear guidance set out in the A&E Data Recording Reference Manual guidance (what does not constitute a breach) and the SOP and how the A&E Data Recording Reference Manual guidance is applied and achieved in practice.
- The flow chart is very ambiguous, difficult to follow and to understand how arrangements are put in place in practice
- The SOP lists a number of roles that have a responsibility for data recording. In one version individual roles are named which may create a view that as an individual they are solely responsible and accountable for accurate reporting and meeting the standard
- From reading the SOP it is implied there are reasons why a breach can be changed to a non-breach but it lacks clarity of when this would apply in practice and what is not acceptable.
- We received two slightly different versions of the SOP. There is a lack of version control as one version has no dates.
- The 2016 June version states that it is Final and the author is the Clinical Services Manager at the Royal Infirmary of Edinburgh on behalf of the Short Life 4 Hour SOP group. There are two headings for Approved by and date of Approval – neither of which are signed or dated. Therefore it is unclear what approval process took place and where ultimate ownership of the SOP rests.

We noted through interviews that the SOP was felt to be confusing and hard to follow. Although certain individuals we interviewed were aware of the SOP they noted no process to inform them when (or if) the SOP changed or any training on the SOP.

Local Emergency Department guidance – lists on breaches/non-breaches related to the 4 hour emergency care standard

Based on our review we identified that each emergency department had created a form of local guidelines to support staff in recording patient details within TrakCare and determining whether the patient did or did not breach the 4 hour emergency care standard.

We understand that this local guidance/understanding originated at the Royal Edinburgh of Infirmary and was subsequently tailored and used within the Western General Hospital and St John's Hospital. No such listing was used/or in place within the Royal Hospital for Sick Children's Emergency Department.

Based on our understanding:

- The list at St John's Hospital is on the wall of the emergency department next to the computers where patient details are entered. We understand a previous list was in place but we have been unable to locate this. The most recent version is shown in Appendix 4 and was updated in May 2017.
- At the Western General Hospital a similar local list is in place. This is shown in Appendix 5. This one is held on the Senior Charge Nurse's clipboard
- We understand the local list in place at the Royal Infirmary Edinburgh was never formally retained or held within the emergency department. This information was used by the Clinical Nurse Manager when training staff working in the Emergency department but was not a formal document. From our understanding through interviews we think the information/understanding at the Royal Infirmary Edinburgh was subsequently translated into the list established at St John's Hospital via team members in the Site and Capacity team. When the list was created at St John's hospital the Clinical Nurse Manager at the Royal Edinburgh Infirmary was contacted but did not meet with St John's Hospital and did not contribute to the creation of the local list.

St John's Hospital listing additional information

The most recent list was created in May 2017 by the Senior Charge Nurse, who we understand was supported by the Clinical Lead, a named person within Site and capacity and then emailed to the Clinical Nurse Manager and a number of other team members for their comments.

We were informed this list was developed using the SOP, in particular the flow chart, to support nursing staff in defining breaches and to support staff in making decisions as to whether something was or wasn't a breach of the 4 hour standard.

Our understanding through the interview with the Senior Charge Nurse is that this list came about as a member of the Site and Capacity Team who was previously based at the Royal Infirmary of Edinburgh noted that St John's Hospital did not "take time back" (stop the clock) for the same reasons that the Royal Infirmary of Edinburgh did. The Senior Charge Nurse outlined a number of conversations that took place with the member of the Site and Capacity team where they were saying that the time should be taken back, which was not necessarily the Senior Charge Nurse's understanding.

The Senior Charge Nurse highlighted there was confusion and they were aware of the SOP and the A&E Data Recording Reference Manual (October 2013). This is evidenced in various email exchanges involving a Site and Capacity Team member and the Clinical Services Manager, where practices at the Royal Infirmary of Edinburgh were referenced and in one email it notes "we may have missed a trick" referencing the differing practices between the Royal Infirmary of Edinburgh and St John's Hospital.

This list is the reference point for all emergency department staff in St John's Hospital and informs the team how to record data in TrakCare and the reasons for changing patients who do breach to non-breaches or to change a breach reason.

Comparison of local guidance created to the national guidance

We compared the October 2013 A&E Data Recording Reference Manual with this list. For the 15 reasons in the list, only 2 directly cross back to the 2013 guidance.

1 out of the 15 does relate to the updated guidance in 2015 on patient waits (treatment finishes) although is not explicit as it could be on the difference between when and when not patient treatment is considered complete.

For the remaining 12 we would not consider these to be valid reasons to effectively "stop the clock" or change a recorded breach to a non-breach.

Lastly the local lists in places sets out an understanding of a breach definition and defining a breach and in other places what would then not constitute a breach, which is confusing.

Site and Capacity Team

Based on our interviews and a review of the Site and Capacity team standard job description, there appears to be differing understandings of the role of the Site and Capacity team, their remit and whether they can or cannot (or should) directly change data in TrakCare.

Based on the job description we would highlight a key role as being set out:

"Ensuring all patients who require admission to hospital via an emergency route are assessed and allocated to a bed within a 4-hour period".

This could lead to the creation of certain behaviours and culture as it does imply that Site and Capacity are responsible for ensuring the 4 hour care emergency standard is met, which in turn could create some of the "pressure" referred to in the interviews.

The Site and Capacity team fulfil a wide role around patient flow. They are a pan-NHS Lothian team. Over the last year NHS Lothian has restructured a number of the roles and functions within the Acute Hospitals. This has resulted in uncertainty over where Site and Capacity effectively sit in the new structure, and their reporting lines. We understand that they have a direct reporting line into the Chief Officer Acute Services.

The Site and Capacity team is currently managed on a daily basis by a Band 8 Senior Nurse. They report up to the Chief Officer Acute Services but also have a professional reporting line to the Associate Nurse Director at each site. The individual in-charge of the Site and Capacity Team is based at the Royal Infirmary of Edinburgh and attends the Site Huddle, Daily debrief and the Royal Infirmary of Edinburgh senior management team meetings. From our interviews with members of the Site and Capacity team we noted that certain team members commented that they did not agree with what was set out in these local lists.

Based on our interviews there were certain positive comments on the role of the Site and Capacity team and how individuals in the team supported the emergency departments with patient flow and dealing with any particular issues arising between the front door and back door of the hospital. Some described how particular team members were very hands on, and recognised the Senior Charge Nurse and Nursing team were able to manage their own team.

However, we also heard comments on how depending on the individuals involved the experience of staff may differ and that the Site and Capacity team had the potential to become a barrier or get in the way of patient treatment. We were given a number of examples where staff felt they were inappropriately spoken to by Site and Capacity Team members and vice-versa. This could add to the pressure already in existence.

Section 8 Recommendations

Following our investigation we note the following recommendations for Management to consider:

Process and procedures

1. We recognise the need for an SOP to clarify procedures for staff at NHS Lothian, however this should be clear, subject to proper approval and version control and staff training and compliance monitored.
2. In this case local procedures were developed to mitigate for an unclear and perhaps out of date SOP. Local procedures should not be allowed to be developed – if they are developed to fill a gap then the SOP and/or guidance needs updated. There is a wider question on the use of SOP's across NHS Lothian, and underlying compliance and monitoring.
3. The Waiting Times Governance Team should take responsibility for undertaking routine audits of the data recorded in Trak in respect of the 4 hour unscheduled care standard. Similar to other compliance audits around elective care waiting times standards, this time should focus on system changes, particularly changes from a breach to a non-breach and share lessons learned to improve working practices.
4. There should be greater reporting and transparency over emergency department performance at appropriate levels of the organisation, including some of the data we have reflected in this report to help teams understand better the position, investigate unusual practices or misunderstanding, and share lessons, without this understanding managers are unable to identify problems and seek effective solutions.
5. The “List of reasons for amending data in Trak in respect of the 4 hour target” on the wall in St John’s Hospital should be removed, as should the list in place at the Western General Hospital and the Royal Infirmary of Edinburgh, and be replaced with a more comprehensive Standing Operating Procedure. This should inform all decisions and be applied uniformly across NHS Lothian.
6. There is an opportunity to look at the role of the “Site and Capacity” function. Given the duplication particularly when a clock hits 3 hours and the various administration tasks between Site, the Senior Charge Nurse and other clinicians there is scope to eliminate or reduce this. Based on the interviews, staff have proposals to how this can be changed to alleviate the pressure. This should be explored, and a new, reduced bureaucratic model followed as a pilot for a defined period of time. Lessons can then be learnt from this, including the impact on pressure and whether this has resulted in a positive improvement.
7. The retrospective changes in the Trak system from a breach to a non-breach should only be made in accordance with the standard operating procedure. All relevant staff should be trained on this and sign to confirm their understanding.
8. Alongside the Waiting Times Governance Team a review should be undertaken to consider how to better record decisions in TrakCare given some of the uncleansed/pre-cleansed data is not retained via the retention of the BOXI reports.
9. TrakCare should require that, where a change to a discharge time results in a breach being changed to a non-breach, a reason must be selected either from the drop down list or a minimum number of characters entered in to the free text box

10. The remit of the Access-Performance and Governance team needs to be re-considered, in particular membership, reporting lines and area of focus. If this groups focus is on accurately capturing data and has overall responsibility for data quality this needs to be clarified.

Cultural and behavioural

1. The emergency department at St John's Hospital is small – 12 beds - and is experiencing increasing patient flows resulting in patients waiting on trolleys in a confined space. At the weekend this is exacerbated as one of the beds is dedicated to children, which are often more complex clinical cases that take a longer time to treat. Management should review whether additional space can be made or the layout improved.
2. Throughout the interviews there were clear differences in views between those considered "management or in a more senior leadership role" and "clinicians". These should be further explored in the context of NHS Lothian values and ensuring a consistent staff experience across the emergency departments/front door site. All but one of the staff members at St John's Hospital reported feeling part of a team that works well and is respectful of each other, this should be built upon to enhance the working environment for staff.
3. Throughout the interviews we identified areas which clearly are impacting on culture, whether that is an intended or unintended consequence of actions and/or behaviours. In the majority of interviews the interviewees stated at some point they felt pressure and for some this resulted in them not wishing to undertake an increased role such as nurse in charge for the shift. Further work should be undertaken with the team to understand the source of the pressure, what can be done to remedy that pressure (St John's Hospital)
4. The job description for a member of the team within Site and Capacity should be reviewed. Currently the job description states that "to actively achieve the 4 hour access target". This may set inappropriate conscious or unconscious behaviours and actions.
5. Based on interviews we noted that performance against access standards although not explicitly in clinical care job descriptions will be discussed as part of on-going performance appraisals. This should be reviewed, particularly as to whether this creates pressure in an unhelpful or misconceived manner.
6. A number of the nurses banded at grade 5 or 6 at St John's Hospital stated that they did not want to "take the keys" given how they perceived the pressure of those in charge of the department at times and the associated blame culture. This should be further explored from a perspective of succession planning but also how to better support those in charge so the role is seen as a valuable role and a supported role.
7. Interviews mentioned that they only heard from "management" when something was wrong rather than receiving thanks or praise for doing a good job. As part of the culture review this should be considered, and a mechanism/process put in place to ensure the focus is changed to the positive rather than negative and staff are actively thanked and made to feel like they have done a good job, delivering important patient care (St John's Hospital)
8. The management and reporting lines for Site and Capacity should be clarified. In addition, overall lines of accountability need clarified for St John's Hospital particularly between line management and professional reporting lines.

Appendix 1 – Agreed full scope for the investigation

TERMS OF REFERENCE FOR THE INVESTIGATION INTO WHISTLEBLOWING ALLEGATIONS CONCERNING THE EMERGENCY DEPARTMENT, ST JOHN'S HOSPITAL AND REVIEW OF ACCESS AND GOVERNANCE PROCESSES IN THE FOUR EMERGENCY/FRONT DOOR DEPARTMENTS ACROSS NHS Lothian

1. Introduction

These are the terms of reference for the investigation commissioned by Jim Crombie, Deputy Chief Executive.

2. Background

On 11th October 2017, Tim Davison, Chief Executive received an email containing allegations of misconduct and wrongdoing in relation to the management of 4 hour unscheduled care performance measures in the Emergency Department at St John's Hospital. The member of staff who raised these issues has been advised that their concerns will be investigated under the auspices of the Board's Whistleblowing Policy.

On 6th October 2017 the Chief Officer, Acute Services was also alerted to some concerns relating to the culture and management relating to the 4 hour unscheduled care performance measures in the Emergency Department at the Royal Infirmary of Edinburgh. The origin of these concerns was raised by an Emergency Department Consultant and nursing staff and notified to Acute Chief Officer, verbally via the General Manager, unscheduled care.

3. Purpose

The purpose of the investigation is three-fold:-

- a) To investigate the specific whistleblowing concerns relating to the alleged mis-management of waiting times and associated breaches in the Emergency Department, St John's Hospital
- b) To investigate the specific whistleblowing concerns relating to the alleged culture of bullying and intimidation in the Emergency Department, St John's Hospital associated with the application of pressure to manipulate performance data

- c) To investigate the operation and compliance with the extant policies, standard operating procedures and performance management arrangements relating to the management, recording and performance reporting of waiting times and access breaches in the 4 Emergency/Front door Departments in NHS Lothian.

4. Scope

The four Emergency/Front Door Departments in NHS Lothian: Royal Infirmary of Edinburgh, Western General Hospital, St John's Hospital and the Royal Hospital for Sick Children.

5. Investigatory Team

The investigation will be led by Joanne Brown as Chief Internal Auditor, supported by the internal audit team and Dona Milne, Public Health. They will be supported by data extraction from TrakCare by the Analytical Services team.

Other appropriate technical experts may be asked to assist the investigation team to ensure that a full and proper investigation can be carried out.

Peter Murray, Non-Executive Board Member will provide support and guidance to the investigatory team but will not actively participate in the investigation process.

6. Method of Investigation

The investigation into the Whistleblowing Concerns will be undertaken in line with the Board's Whistleblowing Policy, which includes scrutiny and oversight by the Non-Executive Whistleblowing Champion.

The process of investigation will follow the principles set out in the '*Adverse Events Management Operational Procedure*', specifically sections 3.4.4, 3.4.5, 3.4.7 and 3.4.8.

In order, to properly carry out its investigation, the team will examine all appropriate written and digital records, policies and standard operating procedures. The team will also interview staff.

The team will compile a written report of their investigation process, findings and recommendations. In the respect of the whistleblowing concerns relating to St John's Hospital the report will specify if the allegations are upheld, not upheld or partially upheld.

Phase 1 of the investigation will concentrate on the Whistleblowing Concerns at St John's Hospital, i.e. points 3 a) and b) above.

Phase 2 of the investigation will concentrate on point 3(c) above.

If as part of their investigation the team identify any immediate or ongoing risks to patients or staff, these must be escalated to the Deputy Chief Executive as soon as possible.

7. Timescales

It is anticipated that Phase 1 of the investigation will be completed by no later than 27 October (early if possible) and that Phase 2 of the investigation will be concluded by no later than 15 November 2017.

The Deputy Chief Executive as the Commissioning Officer will receive a weekly update on progress against these timescales. The investigation team will also be expected to flag any risks to the timescales as soon as they are identified.

8. Investigatory Outcome

The investigatory outcome report will be submitted to the Deputy Chief Executive and part 1 of the report relating to the Whistleblowing concerns will also be shared with the Non-Executive Whistleblowing Champion. In terms of Board Governance parts 1 and 2 of the investigation report and a commentary of the management response and actions will be shared with the Audit & Risk Committee and Healthcare Governance Committee.

Appendix 2: Questions asked of the interviewees

We asked the same questions of all interviewees. These are set out below. Following our data analysis and the initial interviews we had a number of follow up interviews to further clarify our understanding. Typically these follow up interviews were with staff who were band 6 or above, and also members of the Site and Capacity team. As we went through our investigation we were also able to refine our questions, specifically asking direct questions on the understanding of the SOP and what would/would not constitute a breach of the 4 hour standard. These questions are also shown below for information.

Broad understanding questions over process and culture:

1. Can you talk me through your understanding of the standard operating procedure for recording the 4 hour standard?
2. What is the process for entering data in the system related to the 4 hour wait - from when someone arrives through until the clock stops?
3. What is your understanding of when the 4 hour wait can be altered or changed?
4. Who is able to enter this data?
5. Who supervises/checks the data entered?
6. Is data retrospectively changed/can data be retrospectively changed?
7. Whose responsibility is it to achieve the 4 hour standard?
8. Do you have any responsibility for monitoring and/or reporting data against the 4 hour standard?
9. Do you feel that unreasonable requests are made to alter data in order to achieve the 4hr standard?
10. Has anyone ever asked you to alter data that has been entered?
11. Has anyone asked you to enter false data?
12. Has anyone asked you to treat a patient differently specifically to allow for the 4 hour standard to be met?
13. It has been suggested that people might feel under pressure to amend the figures, does that fit with your experience?
14. How would you describe the culture of the ED team/department?

Specific follow up questions included:

- A. Should the clock be stopped in any of the following circumstances?
 - i. When a bed has become available (even if the patient is still in the ED waiting for it)
 - ii. When a patient is waiting for transfer by ambulance to another hospital
 - iii. When a patient's treatment has finished but they are waiting for lab or radiology results?
 - iv. When a patient is waiting to be seen by a specialist doctor, e.g. cardiology or respiratory
 - v. When a patient is waiting on a porter

- B. Has anyone ever asked you to alter data that has been entered? OR if senior person, have you ever asked anyone to alter data that has been entered?
- C. Do you feel that unreasonable requests are made to alter data in order to achieve the 4 hour standard?
- D. Are you aware of the SOP (shown copy) 4 Hour Emergency Care Breach Review Management? When do you refer to it?
- E. This is a copy of the ED Breach definition analysis that is displayed in different locations in the ED. Can you explain to us how it was developed? Do you know where it was approved?
- F. There are differences between the national guidance and the local list on the ED wall, can you tell us why they are different? Do you know who agreed that they could be different?
- G. Who's responsibility do you think it is to achieve the 4 hour standard
- H. How would you describe the culture of the ED team/department?
- I. If relevant to job position: to ask about if they have seen the output from the audits undertaken in Sept 2016 and March 2017 for their ED

**Appendix 3 – SOP June 2016 “Standard Operating Procedure – 4
Hour Emergency Care Breach Management Review”**

**STANDARD
OPERATING
PROCEDURE**

**4 HOUR EMERGENCY CARE
BREACH REVIEW MANAGEMENT**

DATE APPROVED: _____

Version: **Final**

Effective Date:

Revision Date: **June 2016**

Author: **Clinical Service Manager, on behalf of Short Life 4 Hour SOP group**

APPROVED BY (1):

DATE APPROVED: _____

APPROVED BY (2): _____

(Name, Designation)

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1. Introduction

The Scottish Government have set the standard that '95 per cent of patients (are) to wait no longer than 4 hours from arrival to admission, discharge or transfer for A&E treatment'. There is an expectation that Health Boards 'will work towards 98 per cent'.

The standard is regarded as the most important overall measure of patient flow and safety through a healthcare system.

Information on this standard is reviewed within NHSL on a daily, weekly and monthly basis. In addition information is reported to ISD and the Scottish Government as part of national reporting.

It is important that the reporting of the information is consistent, accurate and reliable.

The purpose of this document is to provide clarity about the process for classifying breaches and also for appropriate retrospective data correction where breaches have been incorrectly recorded and need to be altered.

The document also describes the audit process in place to provide quality assurance about the standard of data.

NHS Lothian's three emergency receiving sites have developed governance structures to support delivery against this SOP and ultimately the 4-hour standard. Operational forums including Safety Huddles, Bed Planning Meetings and Daily Debriefs ensure day-to-day management of the standard. Strategic management of the standard is achieved through routine review of 4-hour performance and planning at various levels of the organisation, including the Board, Acute Services Senior Management Team and local Site/Clinical Management Team forums.

2. Aim/Purpose

The aim of this document is to establish a consistent approach to recording and reviewing 4 hour breach information across NHS Lothian.

2.1 4 hour Emergency Care Standard.

The Scottish Government waiting time standard for Accident and Emergency sites is that a minimum of 98% of all attendances should be seen within 4 hours.

The waiting time is defined as the time of arrival until the time of discharge (when the patient is informed that they are able to leave and do not require further clinical support), admission or transfer.

There will be times when a patient has been told they no longer require clinical support and are free to leave (discharged). However, the patient may remain in the building if they are awaiting private transport, prescriptions or for the safety governance of the patient they are required to remain in the department. . In this case, the patient is not actually discharged from Trak for fire safety reasons but their waiting times clock is considered to have stopped at the time clinical support was no longer required.

The target applies to new presentations and excludes planned return and recall attendances and scheduled appointments for investigation.

There are three types of site that provide Accident and Emergency Services:

1. Emergency Departments (ED's) - a consultant-led, 24 hour service with full resuscitation facilities and designated accommodation for the reception of emergency patients
2. MIU's/other – small sites such as Minor Injury Units (MIUs), community A&E's or community casualty departments that are GP or nurse led.
3. Receiving Units - led by Acute Physicians or Surgical teams receiving GP referrals for assessment and investigation:-
 - RIE PAA & SOU
 - WGH, MAU-E & SAU
 - SJH PAA

2.2 Responsibilities

All staff involved in the administration of patient activities and Clinicians involved in the delivery of that healthcare need to understand and ensure that their practices are consistent with the content of this policy and ensure systems are in place to support effective recording of 4 hour information.

2.3 Delivery of Policy and Support

Throughout the 4 hour emergency care standard pathway many people will have a role in delivering the policy and supporting staff within their roles. These include:

- Clinical Nurse Managers
- Charge & Deputy Charge Nurses
- Medical Staff
- Site & Capacity Team
- Assistant Service Managers
- Clinical Service Managers
- Associate Nurse Directors
- Operational managers
- General Managers
- Site Directors
- Information Analysts
- Director of Acute Services

All of the above mentioned may be involved in maintaining accurate TRAK records.

The responsibility for the process of breach review and classification is restricted to a more limited group and is regarded as a management task. The individuals with lead responsibility for this task are

- Clinical Nurse Managers and their identified deputy when on leave or unavailable.

For the avoidance of doubt no other member of staff e.g. Site and Capacity team is authorised to undertake retrospective changes to breach classification without the agreement of the relevant Site Director or General Manager.

2.5 General Principles

General Principles are applied throughout the policy:

- All staff will have a clear understanding of their roles, responsibilities and procedures to ensure breach information and classification is undertaken appropriately across NHS Lothian.
- The administration and management of breach information and classification will be patient focused and consistent.

2.6 Training

TRAK training will be available for all staff to ensure accurate and consistent breach information and classification, to enable NHS Lothian to meet targets and to ensure high quality administration and continual maintenance of data quality. All staff involved in breach information management and classification will be trained to a standard level, tailored to the individual's responsibilities.

3 Relevant sites within NHS Lothian

Department	Site	Responsible CNM
Emergency Department	Royal Infirmary of Edinburgh	Emergency Department, RIE
Primary Assessment Area	Royal infirmary of Edinburgh	Acute / General Medicine, RIE
Surgical Observation Unit	Royal Infirmary of Edinburgh	Surgical / Orthopaedics, RIE
MAU-E	Western General Hospital	Medicine, WGH
Minor Injuries Clinic	Western General Hospital	Medicine, WGH
Surgical Assessment Unit	Western General Hospital	Surgery, WGH
Emergency Department	St John's Hospital	Medicine, SJH
Emergency Department	Royal Hospital for Sick Children	Medicine, RHSC

4 Process for breach review

In order to ensure accurate recording of breach information, a daily review of 4 hour breaches from the previous 24 hours is required.

This should be undertaken by the Clinical Nurse Manager (CNM) for the relevant department or their nominated deputy.

Breach analysis should occur in real-time where possible to ensure the recording for breach reasons is as accurate as possible.

The review should be completed at the start of **each day by 12.00hrs at the latest** to enable the accurate production and release of the daily performance information by the Information Analyst to the wider organisation, or in as real time as possible on any given day.

A BOXI report will be generated each morning for breaches from the previous 24 hours to enable review by the responsible person for the clinical area (CNM or Deputy)

The responsible CNM undertakes a review of each breach to determine if the breach should be reclassified to either a different breach reason or removed as a breach.

For any change made to the breach reason, the rationale for the change must be recorded. The recorded reason will be drawn from an agreed list of reasons to ensure consistent recording across sites.

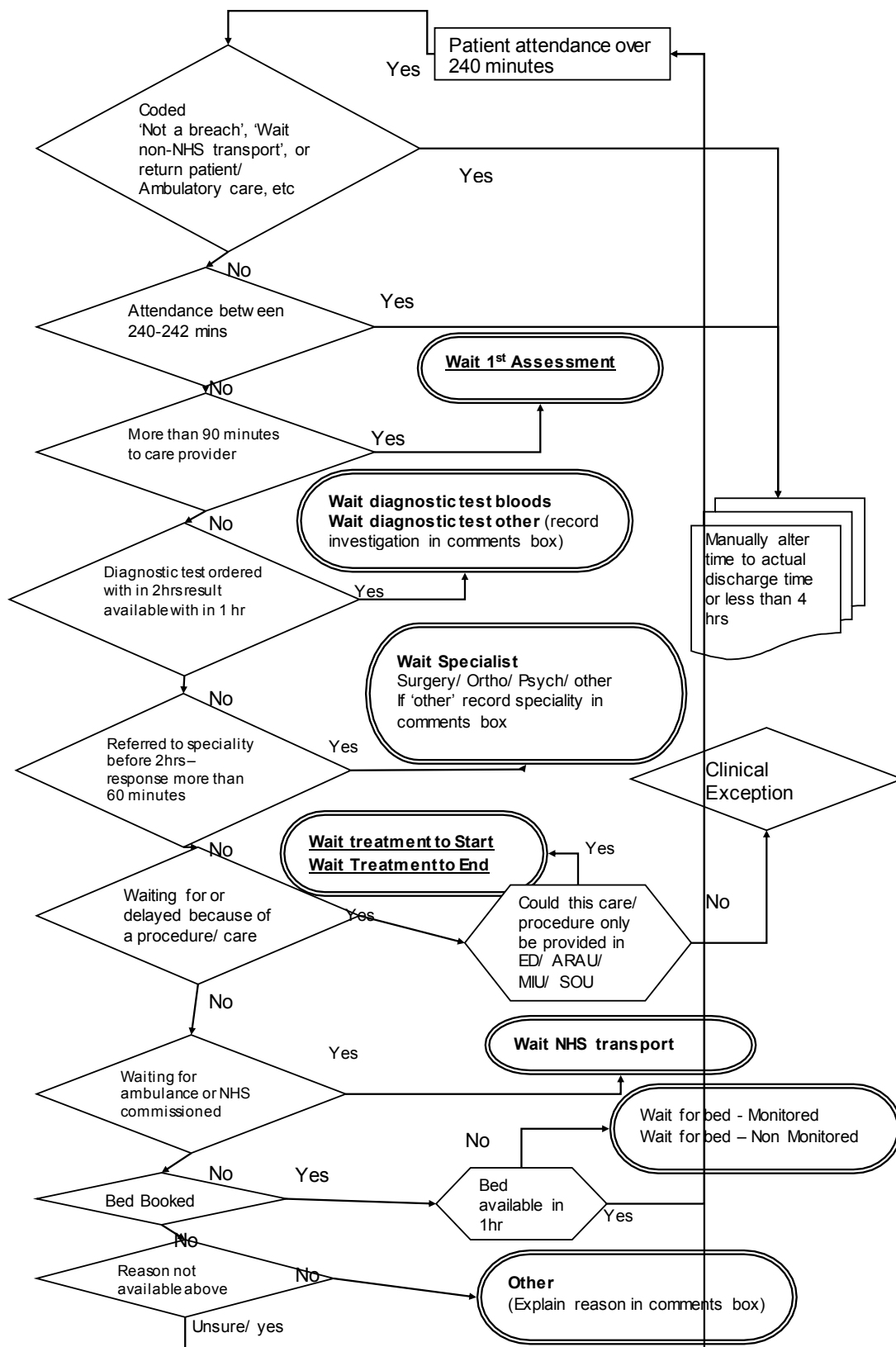
For a breach to be reclassified as having met the 4 hour target, the discharge time has to be manually adjusted in Trak. This is due to the fact that the patient was not actually 'discharged' on Trak until they left the building which is not always when they no longer require clinical support (which is the actual discharge time). The correct discharge time will be obtained from the BOXI report which will provide the time that the patient was notified they no longer required clinical support. This time is recorded in Trak by applying an icon to the patient record that indicates the status of the patient:

- a) 'Wait for NHS Transport - Ongoing care'. Link to national code 02.
- b) 'Wait for NHS Transport - No ongoing care'. Link to national code 02.
- c) 'Patient became non-compliant'. Link to national code 98.
- d) 'Wait for personal care'. Link to national code 98.

This status update must be in place prior to 4 hours for all appropriate patients to ensure that they are not counted as a breach; otherwise the patient will be classed as a breach by default.

Time back changes

In certain specific circumstances it is legitimate for the time of the recorded breach to be adjusted. The maximum period where this can reasonably be done is limited to 2 minutes. This is to reflect operational reasons for why staff may not have been able to change the TRAK screen immediately. Where there are other reasons where staff were unable to update the TRAK screen i.e. the patient was escorted to X-ray en route to the ward, staff may document on TRAK why they believe the patient is not a breach. However this will only be confirmed as not a breach after review by the nominated CNM or their authorised deputy. For the avoidance of doubt, the episode will always be regarded as a breach unless confirmed to the contrary by the CNM.



Each of the three emergency receiving sites will have local variations on this process designed to reflect local variation in practice. These local variations will all be in keeping with delivery of the 4-hour standard.

5 Audit process for review of breach classification

In order to provide patients, NHS Lothian and the public with confidence that information is accurate and robust, a quality assurance process for the audit of 4 hour breach classification will be undertaken.

5.1 Bi-annual monitoring

A twice yearly sample of reclassified breaches will be taken and reviewed by the Site and Capacity Service Manager to assess consistency with the described process and variation of the process between sites.

Results will be reported to the Access and Governance Committee at the monthly meeting following the completion of the audit. A summary of findings will also be reported in the Waiting Times Governance Update Report that is submitted to the Acute Hospitals Committee on a bi-annual basis.

Reference: ISD Data Dictionary

The official guidance on 4 hour measurement can be found here:

<http://www.datadictionary.scot.nhs.uk/Dictionary-A-Z/Definitions/index.asp?Search=A&ID=32&Title=AandE%20-%20Guidance%20on%20Recording>

Appendix 4 – ED Breaches Analysis Local Guidance Draft May 2017 (St John's)

Breach definition	Reason for breach	Comments
1st Assessment	Wait for >90 min to be seen by care provider	
Wait for diagnostic tests/other	Was diagnostic test ordered within 2h? Was result available within 1h?	Record investigation in free text comments box E.g. wait for CT
Wait for diagnostic tests/bloods	Was diagnostic test ordered within 2h? Was result available within 1h?	Record investigation in free text comments box E.g. wait for D-dimer
Wait for Specialist Surgery/Ortho/Psych/other	Was pt. referred to speciality before 2h? Did response take more than 1h?	If "other" record speciality in comments box
Waiting for treatment to start	When the patient is waiting for a procedure or care to start	Could this care or procedure only be done in ED? If so then appropriate. E.g. waiting for consultant to be free to do knee aspiration
Waiting for treatment to end	When the patient is delayed because of a procedure or care to finish	Could this care or procedure only be done in ED? If so then appropriate. E.g. waiting for suturing to end
Wait for NHS transport	Patient is waiting for ambulance or NHS commissioned transport	Clock stops when SAS or other booked and there is no on-going care (exception is IVI)

Wait for non-NHS transport	Patient is waiting for family to pick them up	Clock stops when fit to go home whether still in dept. or not
Bed wait	Was the bed available within 1h?	If > 1h delay then breach reason is "wait for bed-monitored or non-monitored"
Other	Reason not available above	Explain reason in comments box
Clinical exception	Clinical reason pt. could not leave the dept.	E.g. on-going treatment/care in resus or became hyposensitive or collapse

Not a breach	<p>Non-compliance patient would not comply with treatment or admission</p> <p>Bed available and patient ready to leave dept.</p> <p>Non-compliance – waiting for sobriety</p>	<p>E.g. refused cannulation or bloods or medication or wants to go home and needs OT assessment first and this is delayed</p> <p>If pt. vomits or needs toilet they can be put down as no breach</p> <p>Medical staff are waiting for pt. to "sober up"</p>
Not a breach	<p>Return patient who have come back to see a specific consultant</p> <p>CTKUB or other patients who are waiting in dpt. For investigation</p> <p>Patients who are waiting for paracetamol levels to come back</p>	<p>They are booked in but are "not a breach" as they should not be on the clock and do not breach</p> <p>These pt. are ambulatory – it is their interests to wait for test but they are well and will go home</p>

		Patients who have overdosed on paracetamol will need to wait to have their levels checked and so come under “not a breach” umbrella
Chest pain protocol	Walk in chest pain who are clinically well	These patients need investigation to exclude underlying problem The clock stops when the first troponin is taken
“Open door on screen”	Patients who have to wait in dept. but their treatment is complete	The waiting time clock is considered to have stopped at the time clinical support was no longer required but for fire and safety reasons they stay on TRAK as they are still in the dept.
Patient deceased	Patients who die in the department	The clock stops at the time of death

NOTES:

- The 4 hour target applies to new presentations and **excluded planned return and recall attendances and schedules appointments for investigation.**
- When changes are to be made to breach reason then the rationale for the change must be recorded.
- **Time back changes:** in certain specific circumstances it is legitimate for the time of the recorded breach to be adjusted. The maximum period where this can be reasonably done is limited to 2 minutes. This is to reflect operational reasons for why staff may not have been able to change the TRAK screen immediately. E.g. dealing with an emergency or on the phone etc.

Appendix 5 ED Breach Analysis guidance for the Western Hospital (held on a clipboard in ED)

Breach Definition	Reason for Breach	Description
1 st Assessment	Wait for >90 minutes to be seen by care provider	
Wait for diagnostics tests/other	Was Diagnostic Test Ordered within 2hr? What Results available within 1 hour	Record investigation in free text comments box eg wait for CT
Wait for diagnostic test/bloods	Was diagnostic test ordered within 2 hours? Were results available within 1 hour?	Record investigation in free text comments box eg wait for D-dimer
Wait for Specialist Surgery/Ortho/Psych/other	Was pt referred to speciality before 2 hrs? Did response take more than 1 hr?	If "other" record speciality in comments box
Waiting for treatment to start	When the patient is waiting for a procedure or care to start	Could this care or procedure only be done in ED? If so then appropriate e.g. waiting for consultants to be free to do knee aspiration There was a delay in treatment starting?
Waiting for treatment to end	When the patient is delayed because of a procedure or care to finish	Could this care or procedure only be done in ED? If so then appropriate. E.g. waiting for suturing to end
Wait for NHS transport	Patient is waiting for ambulance or NHS commissioned transport	Clock stops when SAS or other booked and there is no-ongoing care (exception is IVI)
Bed wait	Was the bed available within the 1hr?	If >1hr delay then breach reason is "wait for bed-monitored or non-monitored"
Other	Reason to not available above	Explain reason in comments box
Clinical Exception	Clinical reason patient could not leave department	The patient's condition mandates a stay in the ED >4 hours e.g. on-going treatment/care in resus or became hypertensive or collapsed
Not a breach	Non-compliance: Patient would not comply with treatment or admission	e.g. refused cannulation/bloods/medicine or wants to go home and needs OT assessment first and this is delayed.

	<p>Bed available and patient ready to leave department</p> <p>Non-compliance – waiting for sobriety</p>	<p>If patient vomits or needs toilet the can be put down as not a breach</p> <p>Medical staff are waiting for patient to “sober up”</p>
Not a breach	<p>Return patients who have come back to see a specific consultant</p> <p>CTKUB or other patients who are waiting in department for investigation</p>	<p>They are booked in but are “not a breach” as they should not be on the clock and do not breach</p> <p>These patients are ambulatory – it is their interests to wait for test but they are well and will come home</p>
Chest pain protocol	Walk in chest paints who are clinically well	These patients need investigation to exclude underlying problems
“open door on screen”	Patients who have to wait in the department but their treatment is complete	The waiting time clock is considered to have stopped a the time clinical support was no longer requited. But for fire safety reasons they stay on TRAK as they are still within the department.
Patient deceased	Patients who die in the department	The clock stops at the time of death

NOTES:

- 4 hour target applies to new presentations and excludes planned return, recall attendances and scheduled appointments for investigation.
- When changes are to be made to breach reason, then the rational for the change must be recorded.
- Time back changes: in certain specific circumstance it is legitimate for the time of the recorded breach to be adjusted. The maximum period where this can be reasonable done is limited to 2 minutes. This is to reflect operations reasons for why staff may not have been able to change the TRAL screen immediately.

Appendix 6 - Frequent reasons entered into TrakCare for why a patient in the emergency department would have their time/clock changed

ROYAL HOSPITAL FOR SICK CHILDREN- Reasons	Commentary
Wait for medical reg	The Royal Hospital for Sick Children, based on our review of the TrakCare data, don't typically enter text in the free box. This makes it difficult to analyse whether the reasons in changing the clock in TrakCare is valid.
Awaiting medics	
Late Referral to Medics	
Awaiting HDU Bed	
Wait for cubicle	
Deterioration in condition	
Late referral	

WESTERN GENERAL HOSPITAL - Reasons	Commentary
Wait for bed	<p>For some of these it may be that the patients' treatment has ended and that the patient is awaiting transport – therefore allowable under the 2015 guidance.</p> <p>Our understanding is that examples such as "wait for bloods" and "significant bed wait" would not be reasons to stop the patient clock.</p>
Wait for side room	
Not taken off screen in error	
Wait for monitored bed	
Timeline revised as per SOP	
Wait for blood results	
Significant bed wait	
Not a breach await own transport	
Late decision to admit	
Hospital at capacity	
Plan made pre 4 hours	
High acuity in department	
Return patients	
Uro	
Surgical	
Significant bed wait	

ST. JOHN'S HOSPITAL - Reasons	Commentary
Late off screen/late off computer	<p>For some of these it may be that the patient's treatment has ended and that the patient is awaiting transport – therefore allowable under the 2015 guidance.</p> <p>Other examples in here don't explain why time has been taken back.</p> <p>In interviews ambulatory care pathways were referenced but it is unclear how these are to be accounted for within the 4 hour emergency care standard.</p>
Chest pain protocol	
Department busy	
Cardiac protocol	
Door up before 4 hours	
Busy department	
Bed ready prior to 4 hours	
No beds	
Chest pain pathway	
No medical beds/wait for medical beds	
Waiting on transport	
Discharged to SAU WGH	
Await ambulance	
Unable to get to computer on time	
Time taken back	
Transferred to PAA	

ROYAL INFIRMARY OF EDINBURGH - Reasons	Commentary
Bed ready	<p>In interviews ambulatory care pathways were referenced but it is unclear how these are to be accounted for within the 4 hour emergency care standard.</p> <p>Reviewing the list of common reasons at the Royal the 2 most common are bed ready pre 4 hours, but we cannot validate when the patient left the emergency department to be transferred to the bed.</p> <p>Other reasons imply the patient was still in the emergency department at 4 hours for example likely home, TrakCare downtime.</p>
AMU	
Ambulatory	
Bed ready before 4 hours/bed allocated before 4 hours	
PT transferred to ward with nurse escort	
CT Head	
Plan for Home	
Ambulatory bloods	
TrakCare downtime	
Cardiac protocol	
Pick up post 3 hours	
Likely home	
Ambulatory plan for home	
Awaiting CT Results	
Awaiting Trop	
Medics	

Appendix 7 – Whistleblowing allegations summary

A summary of our findings based on the 3 areas outlined within the agreed scope are:

<p>a) To investigate the specific whistleblowing concerns related to the mismanagement of waiting times and associated breaches in the ED St John's Hospital</p>	<p>Upheld</p> <p>Based on the data there is an increasing trend of classifying breaches to non-breaches over the two year period rising from 2.8% up to over 6% of monthly attendances at A&E. Based on the free text boxes in Trakcare, there are a number of comments for amendments which have taken place not in accordance with the A&E data manual October 2013 for example patient waiting on ambulance. This manual is clear in when a patient who stays longer than 4 hours in A&E can subsequently not be counted as a "breach".</p> <p>Local procedures have been created, which are not in line with the SOP, but have been created with the best intentions of clarifying arrangements. The SOP is ambiguous, lacks clarity and is confusing, and cannot be clearly linked back to the A&E data manual. The local procedures are misinformed, and do stretch to a significant degree the underlying ISD/SG Guidance in the A&E Manual. This resulted in staff following local procedures and therefore inaccurately recording patients as non-breaches.</p>
<p>b) To investigate the specific whistleblowing concerns related to the alleged culture of bullying and intimidation in the ED department, St John's Hospital associated with the application of pressure to manipulate performance data</p>	<p>Partially upheld</p> <p>From the interviews there is a clear articulation that "pressure" exists and this is not simply the pressure you would expect from working within a highly pressured environment. The common factor cited for this pressure was the Site and Capacity team and their role in managing patient flow, particularly in respect of the communication and protocols that kicks in at the 3 hour wait mark.</p>

	<p>However, throughout all 21 interviews no staff stated that they felt bullied or harassed and a number set out the clear sense of working as a team within the Emergency department and pulling together.</p>
<p>c) To investigate the operation and compliance of the extant policies, standard operating procedures and performance management arrangements relating to the management, recording and performance reporting of waiting times and access breaches in the 4 Emergency/Front door departments in NHS Lothian.</p>	<p>Upheld – as set out in our report there were a number of control weaknesses related to NHS Lothian’s policies and procedures and how these were applied in practice across all emergency department/front door sites.</p>

NHS Lothian- Acute Services

4 HOUR EMERGENCY CARE STANDARD SOP

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1. Introduction

NHS Lothian is committed to ensuring that patients receive treatment in accordance with national and local standards and targets. This document defines NHS Lothian's standing operating procedure regarding the recording of the national 4 hour waiting time standard. This procedure is designed to ensure equitable and consistent recording and reporting of 4 hour performance in compliance with national guidance.

This procedure provides guidance for staff involved in the operational management of 4 hour performance recording. It sets out the roles and responsibilities and processes to be followed, with specific guidance on the recording and classifying of breaches and also for appropriate retrospective data correction where breaches have been reviewed in line with guidance and need to be altered.

The Scottish Government has set the standard that 95 per cent (95%) of patients (are) to wait no longer than 4 hours from arrival to admission, discharge or transfer for A&E treatment'.

There is an expectation that Health Boards 'will work towards 98 per cent (98%)'.

The standard is regarded as the most important overall measure of patient flow and safety through a healthcare system.

Information on this standard is reviewed within NHS Lothian on a daily, weekly and monthly basis. In addition information is reported to ISD and the Scottish Government as part of national reporting.

It is important that the reporting of the information is consistent, accurate and reliable.

This document also describes the audit process in place to provide quality assurance about the standard, consistency and compliance of data with national guidance.

In accordance with NHS Lothian values, this document should guide the recording of performance against the 4-hour standard with openness, honesty and integrity.

Performance against the standard is considered by the Board, Acute Hospitals' Committee, Corporate Management Team, Acute Senior Management Team and local Site/Clinical Management Team forums. Access and Governance Committee considers the appropriateness of the recording relevant to the standard, reports formally into the Acute Hospitals Committee.

2. Scope

This document outlines the way in which NHS Lothian records an unscheduled patient's journey, including both the appropriate and accurate recording of arrival and discharge times and as the identification of the main reason patients have gone past the 4 hour standard. This applies to operational staff working within NHS Lothian's Emergency Department and defined 'front door' services and managerial staff involved in the recording, classification and amendment of 4 hour performance and breaches.

This document should be used in conjunction with:

<http://isdscotland.org/Health-Topics/Emergency-Care/Emergency-Department-Activity/Data-Collection/>

<http://www.isdscotland.org/Health-Topics/Emergency-Care/Emergency-Department-Activity/Data-Quality/AE2-User-Guide.pdf>

http://www.isdscotland.org/Health-Topics/Emergency-Care/Emergency-Department-Activity/Data-Quality/Data_Recording_Manual_Oct13.pdf

The standard applies to new presentations and excludes planned return and recall attendances and scheduled appointments for investigation.

There are three types of areas that provide services falling under the 4 hour standard:

1. Emergency Departments (ED's) - a consultant-led, 24 hour service with full resuscitation facilities and designated accommodation for the reception of emergency patients
2. MIU's/Other – small sites such as Minor Injury Units (MIUs), community A&E's or community casualty departments that are GP or nurse led.
3. Receiving Units - led by Acute Physicians or Surgical teams receiving GP referrals for assessment and investigation:-
 - RIE-Interface Team & Surgical Observation Unit
 - WGH- medical assessment unit (MAU-E) & surgical assessment unit (SAU)
 - SJH- primary assessment area (PAA)

3. Purpose

The aim of this document is to establish a consistent approach, provide guidance and outline the rules for recording the patient's journey. This procedure specifically aims to help direct staff to appropriately categorise, review and report the length of wait including those patients whose wait goes beyond 4 hours to ensure the breach is recorded correctly for analysis and reporting. This procedure also outlines the governance framework that will be used to ensure this is in line with national guidance.

4. Objective

The intention of this document is to ensure that all staff involved in the recording, categorisation, reviewing and reporting of wait data have a consistent approach, taking into account national rules and guidelines.

Key aims of the document are:

- Improve patient experience throughout their journey, minimising delays where possible.
- Ensure patients receive treatment according to clinical priority
- Provide timely, consistent and accurate recording of all data related to the patient 4 hour pathway.

5. 4 - hour Emergency Care Standard

The Scottish Government waiting time standard for Accident and Emergency Department sites is that a minimum of 95% of all attendances should be seen within 4 hours.

The waiting time is defined as the time of arrival until the time of discharge (when the patient is informed that they are able to leave and do not require further clinical support), admission or transfer (ISD 'A&E data recording reference manual October 2013 version 2.0').

5.1. General Recording Guidance from the ISD 'A&E data recording reference manual 2013

This section attempts to clarify the recording expected from when the patient arrives at the front door until they leave. It deals with the recording of arrivals, admission, discharge, transfer and referral using guidance from the ISD A&E Data Recording Reference Manual 2013

Arrival Date & Time

This is the date and time the patient arrives at A&E reception or is received into the A&E department, for example from an ambulance.

Patients arriving by ambulance will be deemed to arrive at the time when the ambulance arrives at the A&E facility and not the (later) time when the patient is then brought in to the reception

Admission, discharge, referral and transfer

The term 'discharge' is used in two senses. In the first, broader sense all patients who leave A&E are discharged from A&E. This sense is used in the titles of the data items **Discharge Destination** and **Discharge Type**. However in the second, more specific sense used in this document, discharge means **either** that there is no need for immediately continuing care, the patient being 'sent home', **or** that the patient leaves A&E before investigation/treatment is complete.

Details of admission, transfer and discharge should be recorded in **Discharge Destination** (mandatory) and **Discharge Type** (optional).

Admission – the patient is formally admitted as an inpatient to the same hospital. The admission may be to a ward or it may be to the staffed bed area of an assessment or emergency admission unit.

Transfer – the patient is transferred to a ward in another hospital, to A&E in another hospital, or to another emergency department in the same hospital.

Discharge – if there is no need for immediately continuing care the patient is discharged. If the patient leaves A&E before investigation or treatment are complete - i.e. as a 'self-discharge' - this can be recorded in **Discharge Type** as 'incomplete'.

As well as being admitted, transferred or discharged, a patient may be referred for subsequent investigation or treatment.

Referral - Discharged patients may be referred by A&E staff for a subsequent appointment for care in a hospital clinic, in another healthcare facility elsewhere or in A&E itself (a planned return attendance). The type of healthcare provider to which the patient is being referred should be recorded in the data item **Referred to**.

Note that **Referred to** should **NOT** be used to record the ward of admission, the healthcare provider to which the patient is being transferred or the discharge destination.

Date & Time of discharge or Transfer

The National data definition states that the **date and time of discharge or transfer** is when the patient leaves the A&E department after an A&E attendance has concluded and/or the department is no longer responsible for the care of the patient. This is different to the **date and time of completion of treatment** (see the **Alphabetical list of AE2 data items** below).

Hence for the purposes of the standard the clock continues to run until one of the following conditions has been satisfied:

1. The patient is discharged and the A&E staff no longer has any direct responsibility for the care of the patient:
 - The clock stops when the patient is actually uplifted. The clock is not stopped for patients who are required to wait in the A&E department for transport and who may require continuing clinical support,
 - If a patient dies then the discharge time is the time of death,
 - For those patients who discharge themselves the date and time of discharge is recorded as the time when the patient departed (or when staff have become aware that the patient has departed). In such circumstances if a patient subsequently returns to the department then the clock is reset and the 4-hour time period starts again – such patients are not to be counted as planned return patients.

2. The patient has been formally admitted as an inpatient on the hospital's PAS/HIS system to either an ordinary ward or to a staffed bed in an assessment or emergency admission unit. Patients who are simply moved to other trolleyed areas within a hospital, for example day surgery units are not regarded as admitted and are not considered to have been discharged from A&E and the clock continues to run.

Patients admitted to staffed beds in Assessment or Acute Medical Units are regarded as admitted and should be recorded instead on the Scottish Morbidity Record SMR01 Inpatient Record.

3. The patient is to be transferred directly to another hospital or other healthcare provider. The clock stops when the patient's transfer actually starts; waiting for ambulance staff does not cause the clock to stop.

Patients who need more than 4 hour's observation/assessment:

It is expected that for a few patients a period of assessment and/or observation of greater than 4 hours before a decision to admit or discharge will be clinically appropriate. This group of patients may include patients who suddenly deteriorate and patients recovering following reduction of fractures/dislocations.

The number of true clinical exceptions to the 4-hour emergency access standard is very small. The operational standard has been set at 95% with to allow 5% for these cases, with an ambition to work towards 98% allowing 2% for these cases.

Every effort should be made to accommodate these patients, for their safety comfort, away from the main A&E department, for example in a dedicated observation or assessment ward. If the patient is formally admitted to this ward (and the ward provides appropriate facilities) then the clock stops. Otherwise the time spent by these patients is to be counted until one of the three conditions above has been met. Note that simply moving a patient to a ward which is integral to A&E will not stop the clock unless the patient is formally admitted as an inpatient and the ward has appropriate facilities.

6. Responsibilities

All staff involved in the administration of patient activities and Clinicians involved in the delivery of healthcare need to understand and ensure that their practices are consistent with the content of this SOP and ensure systems are in place to support effective recording of the patient's pathway.

7. Delivery of SOP and Support

Throughout the 4 hour emergency care standard pathway many people will have a role in delivering the SOP and supporting staff within their roles. These include:

- Clinical Nurse Managers
- Charge & Deputy Charge Nurses
- Medical Staff
- Site & Capacity Team
- Assistant Service Managers
- Clinical Service Managers
- Associate Nurse Directors
- General Managers
- Site Directors
- Information Analysts
- Access and Governance
- Chief Officer Acute Services

The responsibility for the process of breach review and classification is restricted to a more limited group and is regarded as a management task. The individuals with lead responsibility for this task are

- Clinical Nurse Managers and their identified deputy when on leave or unavailable.

No other member of staff, with the exception of the clinical nurse manager or identified deputy for the emergency department/Medical Admissions Unit, is authorised to undertake retrospective changes to breach classification without the agreement of the relevant Site Director or General Manager.

8. General Principles

General Principles are applied throughout the SOP:

- All staff will have a clear understanding of their roles, responsibilities and procedures to ensure all 4 hour emergency access data is undertaken timeously, consistently and in line with national guidance
- All staff will have a clear understanding of their roles, responsibilities and procedures to ensure breach information and classification is undertaken appropriately and consistently across NHS Lothian, in line with national guidance.
- The administration and management of breach information and classification will be patient focused and in with national guidance

9. Training

Training on national guidance related to the 4 hour A&E standard will be delivered with support of the Access and Governance Team, to ensure consistency and independence from any site team.

All staff involved in 4 hour emergency care standard data recording will be expected to attend this training to ensure accurate and consistent 4 hour emergency care data

recording including breach information, classification and recording, and to ensure high quality administration and continual maintenance of data quality. ..

This SOP will be used as part of local staff training so that staff members involved in breach classification act in accordance with the SOP and national guidance.

10. Relevant Areas within Acute Services, NHS Lothian

Department	Site	Responsible CNM
Emergency Department	Royal Infirmary of Edinburgh	Emergency Department, RIE
Interface Team	Royal infirmary of Edinburgh	Acute / General Medicine, RIE
Surgical Observation Unit	Royal Infirmary of Edinburgh	Surgical / Orthopaedics, RIE
Medical Assessment Unit -E	Western General Hospital	Medicine, WGH
Minor Injuries Clinic	Western General Hospital	Medicine, WGH
Surgical Assessment Unit	Western General Hospital	Surgery, WGH
Emergency Department	St John's Hospital	Medicine, SJH
Emergency Department	Royal Hospital for Sick Children	Medicine, RHSC
Primary Assessment Area	St John's Hospital	Medicine SJH

11. Process for breach recording

- 11.1. Breach codes should be assigned with accurate timing wherever practicable in real time by clinical staff responsible for the individual patient's care using codes detailed in section 14
- 11.2. Breach coding should be defined using the TRAK drop down system ie with free text to provide any additional relevant information.

12. Adjustments to the Discharge Time

Adjustments to the discharge time are only appropriate if:

- The patient has died;
- If operational reasons have prevented timely recording of the discharge.

(a) The latter instance is to allow for situations where staff were unable to update the TRAK screen timeously. For example the patient was escorted to X-ray en route to the ward. In these circumstances, staff should document on TRAK why they believe the patient is not a breach. However this will only be confirmed as not a breach after review by the nominated CNM or their authorised deputy. For the avoidance of doubt, the episode will always be regarded as a breach unless confirmed to the contrary by the CNM. The maximum adjustment is 15 minutes; a maximum of 15 minutes can be taken adjusted.

13. Breach Validation process

- 13.1 Real time breach validation is carried out by the Nurse in Charge of ED or CNM. The Nurse in Charge in ED will run a BOXI report titled “unconfirmed breaches” periodically throughout their shift and at the end of the shift. The report details all patients over 4 hours and in accordance with national guidance will amend data as appropriate based on the BOXI report information.
- 13.2 In order to ensure accurate recording of breach information, a daily review of 4 hour breaches from the previous 24 hours is required.

This should be undertaken by the Clinical Nurse Manager (CNM) for the relevant department or their nominated deputy.

The review should be completed at the start of **each day by 12.00hrs at the latest** to enable the accurate production and release of the daily performance information by the Information Analyst to the wider organisation, or in as real time as possible on any given day.

13.3 CNM or deputy daily breach validation. The CNM or deputy receive a scheduled BOXI report titled “breaches to be resolved” at circa 8am. This report contains a time stamp when the patient unscheduled care journey ends. If there any data missing the CNM will access patient profile and add. Based on this additional information patients may be added or removed from the breach list.

The time stamp must be in place prior to 4 hours for all appropriate patients to ensure that they are not counted as a breach; otherwise the patient will be classed as a breach by default and the breach will not subsequently be removed.

The responsible CNM or deputy undertakes a review of each breach, using the BOXI report titles “breaches to be resolved” to determine if the breach should be reclassified to either a different breach reason or removed as a breach.

For any change made to the breach reason, the rationale for the change must be recorded. The recorded reason will be drawn from an agreed list of reasons to ensure consistent recording across sites (**see section 14 below**).

14. Breach classifications

The following table describes the breach reasons that are to be used when a patient is in the department over 4 hours to explain why the patient has gone past the 4 hour standard. The breach reason that best fits the situation should be selected. Each breach reason is defined and example scenarios are given.

The accurate classification of any breaches supports identification of specific pressures or trends and directs continuous improvement activities to support patient care.

BREACH Reason	Definition	Example scenarios	Can Discharge Time be changed in this situation?
Clinical Exception	Applied when the Medical Care Provider considers that ED is the correct place for continued treatment	Resuscitation still in progress	Discharge Time cannot be changed
		Patient has deteriorated clinically	
		Patient is too intoxicated to be assessed	
		Speciality acceptance depends on investigation results	
		Patients on agreed ambulatory pathways as defined in Section 15 below.	
Wait for 1st Assessment	Patient has breached due to waiting more than 90 minutes for first clinical assessment	Waited more than 90 minutes for Care Provider. Please select a different category if patient has been seen by Care Provider and Management plan is in situ by 3 hours.	Discharge Time cannot be changed
Wait for Monitored Bed	Patient has waited in excess of 4 hours to be placed in a monitored bed	Waiting for monitored bed - as long as bed was booked by 3 hours <i>please enter time bed booked in comments field</i>	Discharge Time cannot be changed
Wait for Non-Monitored bed	patient has waited in excess of 4 hours to be placed in a non-monitored bed	Waiting non-monitored bed - as long as bed booked by 3 hours <i>please enter time bed booked in comments box</i>	Discharge Time cannot be changed
Wait for Diagnostic (Blood) Test Result	Patient has breached due to delay in receiving results from blood test - please note routine bloods process standard is 60 minutes	Only to be assigned if test was sent prior to 3hrs - <i>please specify the test awaited in the comments box and time sample sent to Labs</i>	Discharge Time cannot be changed
Wait for Diagnostic (Other) Test Result	Patient has breached due to delay in receiving a diagnostic test result e.g. CT Scan, USS, Needle aspirate etc	Only to be assigned if test was sent prior to 3hrs - <i>please specify the test awaited in the comments box and time requested / sent.</i>	Discharge Time cannot be changed

Wait for NHS Transport (ongoing care in ED)	Patient is awaiting NHS Transport and care is ongoing in ED up to point of discharge.	Wait for Ambulance <i>please record time requested in the comments box</i>	- Discharge Time cannot be changed
Wait for NHS Transport (no -ongoing care)	Patients who have been discharged <u>from any further care in A&E</u> , may sit in the departments reception area waiting on transport (either private or Scottish Ambulance Service).	Wait for Ambulance <i>please record time requested in the comments box</i>	Discharge Time cannot be changed
Wait for Non- NHS Transport (no -ongoing care)	Patients who have been discharged <u>from any further care in A&E</u> , may sit in the departments reception area waiting on transport (either private or Scottish Ambulance Service).	Waiting for transport provided by friend / relative/ private transport e.g taxi <i>please record time requested in the comments box</i>	Discharge Time cannot be changed
Wait for Specialist Orthopaedic	Patient has breached waiting for Orthopaedic review. Must be referred before 3hrs.	No decision has been relayed by Specialist within 1 hour of referral time <i>Please state referral time in comments box</i>	- Discharge Time cannot be changed
Wait for Specialist Psychiatrist	Patient has breached waiting for Psychiatry review. Must be referred before 3hrs.	No decision has been relayed by Specialist within 1 hour of referral time <i>Please state referral time in comments box</i>	- Discharge Time cannot be changed
Wait for Specialist Surgery	Patient has breached waiting for Surgical review. Must be referred before 3hrs.	No decision has been relayed by Specialist within 1 hour of referral time <i>Please state referral time in comments box</i>	- Discharge Time cannot be changed

Wait for Specialist (Other)	Patient has breached waiting for Specialist (Other) Review. Must be referred before 3hrs.	No decision has been relayed by Specialist within 1 hour of referral time - <i>Please state referral time in comments box</i>	Discharge Time cannot be changed
Wait for Treatment to End	Patient has breached waiting for a treatment to end	Waiting to complete medication / fluid / drug infusion therapy	Discharge Time cannot be changed
		Waiting to complete clinical procedure / dressing / wound closure etc	
		Waiting for decision to be made by ED to progress :- <i>Definitive management Plan, Specialty Review or referral, Transfer, Discharge, Admission</i>	
		Waiting for Language Translator <i>Please state time requested</i>	
		Waiting for family to arrive	
		Care Provider busy in Resus and unavailable <i>Please state time requested</i>	
		Care Provider in Handover and unavailable <i>Please state time of day</i>	
		No Nurse available to facilitate transfer <i>Please state time referred to NIC</i>	
		Waiting for Typed Notes <i>Please state reason why</i>	
Categories of patients that can have their clock adjusted			
Patient Died –	Patient died in department	Patient has died after arrival at A&E.	Discharge Time should be changed to time of patient's death as shown in TRAK Electronic Patient Record.

15. Ambulatory Emergency Care

Over the previous 5 year period, a number of ambulatory care pathways have developed within NHS Lothian front door services. The Royal College of Physicians describes 'ambulatory emergency care as a streamlined way of managing patients presenting to hospital who would traditionally be admitted.'

As the national definition stands currently, these patients are covered by the 4 hour standard and no adjustment to the clock is warranted due to being on an ambulatory care pathway. Any patient that exceeds 4 hours should be recorded as a "Clinical Exception".

In some circumstances these patients may be deemed clinically fit for discharge and can be brought back as a planned return.

16. Audit process for review of breach classification

In order to provide patients, NHS Lothian and the public with confidence that information is accurate and robust, a quality assurance process for the audit of 4 hour breach classification will be undertaken.

17. Monitoring

The Waiting Times Governance Team (WTGT) will develop a governance framework to regularly monitor activity against the national 4 hour standard guidance. This will include this SOP, an A&E guidance SOP on the intranet, SOP training, monthly audits and weekly process monitoring dashboards.

The WTGT will provide the appropriate managers at all sites with results of all audits and will make the SOPs and training readily available. Additionally, managers will have access to the dashboards and will be required to review them on a weekly basis to ensure compliance with guidance. The WTGT will provide an update at the monthly Access and Governance meeting and in the bi-annual report submitted to the Acute Hospitals Committee.

18. Daily Debrief meeting

Each hospital will hold a 'Daily Debrief' meeting that builds on essential action 2 from the 6 Essential Actions Guidance. Understanding the profile, demand and flow issues for the site's emergency flow is powerful information for feedback at the hospital safety huddles and in the planning of hospital services. The daily debrief reviews the previous day's performance. A full weekend review will be held on a Monday.

This meeting will be chaired by the General Manager for Medicine or nominated deputy and will be attended by the site management team, front door team, Capacity & Site representative, and Clinical Nurse Manager responsible for breach validation (or their deputy) and the wider clinical ward & dept teams. Terms of reference is attached in Appendix A. A summary of the daily debrief will be recorded on a standard template with commentary, and will be circulated to the wider site's teams. The debrief will support the discussions at the fortnightly Emergency Access meetings of the sites.

Appendix A: Daily Debrief Terms of Reference

Daily Debrief Terms of Reference

1. Objective and Purpose of the Group

Objective

To review the previous day's unscheduled care activity and performance, seeking learning for improvement.

Purpose

Consistent patient flow provides better patient experience and outcomes. The Daily Debrief is a focussed and structured meeting aimed at understanding the detail of operational flow activities with an aim to:

- Identify learning, themes and actions to improve service delivery and deliver a high quality experience for patients
- Capture and act on any patient safety concerns
- Support staff involved in the delivery of safe and effective patient flow
- Improve patient flow and the delivery of the 4-hour emergency access standard

2. Chair

General Manager for Unscheduled Care

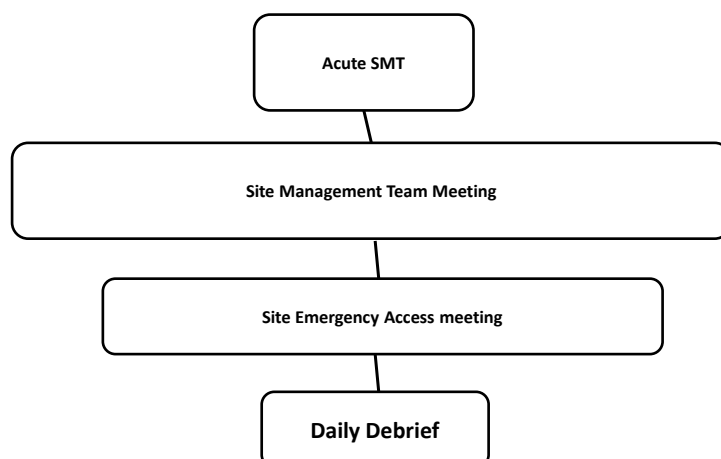
3. Meeting arrangements

- The administration support to the group will be provided by the Capacity and Site team
- Meetings will be held daily except at weekends. A detailed weekend review will occur every Monday.
- The group will work within the NHS Lothian values framework.
- Minimum membership will include the General Manager for Medicine, Capacity & Site Manager, Senior Charge Nurse for the Emergency Department, Senior Charge Nurse for the Acute Medical Unit/Medical Admissions Unit and Clinical Nurse Manager for the front door. Clinical Nurse Managers and Clinical Service Managers should attend when there is discussion relevant to their areas.
- The group is responsible for identifying leads for any improvement activities identified as required.

4. Duration

The Group will review its progress and purpose at quarterly intervals.

5. Governance



6. Membership

General Manager, Unscheduled Care (Chair)
Capacity and Site Manager
Clinical Nurse Manager, Front door
Senior Charge Nurse, Emergency Department
Senior Charge Nurse, Acute Medical Unit / Medical Admission Unit

Other Clinical Service Managers, Clinical Nurse Managers, Senior Charge Nurses, Clinical Directors/Clinical Leads and support service managers will be called on to attend as required.

7. Quorum

A quorum shall consist of 3 members including the Chair.

8. Agenda

There will be a standing structure to the meeting with key performance and activity figures considered, before feedback on performance from each flow critical service.

9. Minutes

Minutes with clear actions will be circulated by 12 midday.

10. Changes to terms of Reference (TOR)

Changes to the TOR and functions of the group may be proposed at any meeting of the group with notice given to the chair prior to the meeting.

QUALITY AND PERFORMANCE IMPROVEMENT

1 Purpose of the Report

- 1.1 This report provides an update on the most recently available information on NHS Lothian's position against a range of quality and performance improvement measures.
- 1.2 Any member wishing additional information on a particular measure should contact the specific lead director identified, having accessed to self-service pack initially. Matters relating to the monitoring and assurance process should be directed towards the Chief Quality Officer.

2 Recommendations

- 2.1 The Committee is invited to:
 - 2.1.1 Acknowledge that performance on 14 measures considered across the Board, including those relating to the Hospital Scorecard, are currently met with 19 not met. It is not possible to assess performance on dementia post-diagnostic support or complaints stage 1 or 2; and
 - 2.1.2 Accept Board Committees are continuing with the enhanced programme of assurance agreed, with a provisional timetable for remaining measures outlined in this paper. To date, 19 measures have been considered with significant, moderate and limited assurance reached on 1, 8 and 10 instances respectively. On no occasion was 'no assurance' concluded.

3 Trial of Lighter Documentation Approach

- 3.1 It is now approaching six months since the trialling the lighter documentation approach began. A summary of the approach is incorporated into the following table. Committee members will be surveyed on their opinions in the new year.
- 3.2 As in previous months an excel file has been circulated with the papers. As committee members will be aware a dashboard is under development to replace this file. Last month the Chief Quality Officer shared early draft of the dashboard with committee chairs, who have agreed to participate in its testing.

Table A – Summary of Lighter Approach Trial

Committee	Previous Approach	Lighter Approach
Board	<ul style="list-style-type: none"> • Overview for all measures • Assurance Summary • Proformas where not met 	<ul style="list-style-type: none"> • Overview for all measures • Assurance Summary • Proformas where not met • <u>Self-Service Pack</u>
Governance Committee	<ul style="list-style-type: none"> • Overview for all measures • Assurance Summary • Detailed Measure Paper • Proformas where not met 	<ul style="list-style-type: none"> • Overview for all measures • Assurance Summary • Detailed Measure Paper • Proformas where not met • <u>Self-Service Pack</u>

4 Review of Target and Indicators for Health and Social Care

- 4.1 In November the Review of Targets and Indicators for Health and Social Care was published and available at <http://www.gov.scot/Publications/2017/11/4782>.
- 4.2 Both COSLA and the Scottish Government have welcomed the work undertaken by Sir Harry Burns and have committed to taking forward the report's recommendations, amongst which are to capture and report people's wider experience of care and to involve those in the delivery of care in their design of the measurement system. Details of remit of that work and who will take it forward are to be announced.

5 Recent Performance

- 5.1 Against the measures considered, most recent information demonstrates that NHS Lothian met 14 of the 36 measures considered, whilst 19 were not met. As detailed above, it is not possible to make an assessment on Dementia Post-Diagnostic Support or Complaints Stage 1 or 2.
- 5.2 Board committees have been delegated the responsibility for seeking assurance for the measures contained in this report, seeking to conclude levels of assurance for those areas that they have examine, considering "*What assurance do you take that the actions described will deliver the outcomes you require within an acceptable timescale?*"
- 5.3 The assessments made to date are set out both in Table 1 19 have been considered with significant, moderate and limited assurance being reached on 1, 8 and 10 instances respectively. On no occasion was 'no assurance' concluded;
- 5.4 The delegation of measures to governance committee and detail behind assurance gradings are available in the appendix.

Table B – Assessed Levels of Assurance

			Assurance Level				
			Not yet assessed	None	Limited	Moderate	Significant
Board	Met	14	-	-	-	-	-
	Not Met	19	-	-	-	-	-
Acute Hospitals Committee	Met	9	8	0	1	0	0
	Not Met	9*	2	0	4	5	0
Healthcare Governance Committee	Met	5	4	0	0	1	0
	Not Met	9	2	0	5	1	1
Staff Governance Committee	Met	0	-	-	-	-	-
	Not Met	1	-	-	-	1	-

*The Diagnostic measure has been separated out in terms of assurance so although there are 8 measures not met the diagnostics has been split into 3.

Table 1: Summary of Latest Reported Position

Measure ¹	Healthcare Quality Domain ²	Type ³	Assurance Committee	Committee Assurance Level	Date Assurance Level Assigned	Performance Against Target/Standard ⁴	Trend ⁵	Published NHS Lothian vs. Scotland ⁶	Date of Published NHS Lothian vs. Scotland ⁷	Target/Standard	Latest Performance				Reporting Date	Lead Director	
Cardiac Arrest (per 1,000 discharges)	Safe	Quality	Acute Hospitals (AHC)	Limited	Aug 17	Not Met	No Change	Not Applicable	Not Applicable	0.95 per 1,000 discharges (median)	1.76 (median)				Oct 17 (Mthly)	TG	
Falls With Harm (per 1,000 occupied bed days)		Quality	Healthcare Governance (HGC)	To be reviewed (was 'Met' at time of mtg)	To be reviewed (was 'Met' at time of mtg)	Met		Not Applicable	Not Applicable	0.31 per 1,000 occupied bed days (median)	0.25 (median)				Oct 17 (Mthly)	TG	
Healthcare Acquired Infection - CDI (rate per 1,000 bed days, aged 15+)		LDP	HGC	Moderate	Jul 17	Met		Better	Jun 17 (Quarterly)	0.32 (max) (<=262)	0.22 (rate)	103 (incidences)	Oct 17 (Mthly)	TG			
Healthcare Acquired Infection - SAB (rate per 1,000 acute bed days)		LDP	HGC	Moderate	Jul 17	Not Met	No Change	Better	Jun 17 (Quarterly)	0.24 (max) (<=184)	0.28 (rate)	125 (incidences)	Oct 17 (Mthly)	TG			
Hospital Standardised Mortality Ratios (HSMR) (within limits)		Quality	AHC	TBC	TBC	Met		Not Applicable	Not Applicable	1 All sites within HS Limits	NHS L 0.77	RIE 0.81	SJH 0.62	WGH 0.63	Jun 17 (Qtrly)	TG	
48 Hour GP Access – access to healthcare prof	Timely	LDP	HGC	TBC	TBC	Met		Worse	2015/16	90% (min)	91.5%				2015/16	DS	
48 Hour GP Access – GP appt		LDP	HGC	TBC	TBC	Not Met	Deteriorating	Worse	2015/16	90% (min)	74.8%				2015/16	DS	
Four hour Unscheduled Care (% <=4 hrs)		LDP	AHC	Moderate	Feb 17	Not Met	Deteriorating	Better	Sep 17 (Monthly)	95.0% stretch to 98.0%	93.8%				Oct 17 (Mthly)	JC	
Alcohol Brief Interventions (ABIs) (Number)		LDP	HGC	To be reviewed (was 'Met' at time of mtg)	To be reviewed (was 'Met' at time of mtg)	Met		Better	2016/17	9,757 (Annual) 2,440 (per Quarter)	7,878				Sep 17 (Qtrly)	AMcM	
CAMHS ⁹ (<=18 w ks)		LDP	HGC	Limited	Sep 17	Not Met	Improving	Worse	Jun 17 (Quarterly)	90.0% (min)	57.2%				Oct 17 (Mthly)	AMcM	
Cancer (<=31-day) (% treated)		LDP	AHC	Limited	Jul 17	Met	Improving	Worse	Jun 17 (Quarterly)	95.0% (min)	96.3%				Oct 17 (Mthly)	JC	
Cancer (<=62-day) (% treated)		LDP	AHC	Limited	Jul 17	Not Met	Improving	Better	Jun 17 (Quarterly)	95.0% (min)	88.5%				Oct 17 (Mthly)	JC	
Diagnostics (<=6 w ks) - Gastroenterology/ Urology Diagnostics			AHC	Limited	Aug 17	Not Met	Deteriorating	Worse	Jun 17 (At month end)	0 (max)	3,646				Oct 17 (Mthly)	JC	
Diagnostics (<=6 w ks) - Radiology/Imaging			AHC	Moderate	May 17												
Diagnostics (<=6 w ks) – Vascular Labs			AHC	To be reviewed	To be reviewed												
Drug & Alcohol Waiting Times (% <=3 w ks) - Edinburgh IJB		LDP	HGC	Limited	Sep 17	Not Met	Improving	Worse	Jun 17 (Quarterly)	90.0% (min)	85.0%				Jun 17 (Qtrly)	MM	
Drug & Alcohol Waiting Times (% <=3 w ks) - Midlothian & East Lothian IJB (MELDAP)		LDP	HGC								EWDS						
Drug & Alcohol Waiting Times (% <=3 w ks) - West Lothian IJB		LDP	HGC								JF						
IPDC Treatment Time Guarantee (<=12 w ks)		LDP	AHC	Moderate	May 17	Not Met	Improving	Better	Jun 17 (Quarterly)	0 (max)	86.3%	1,261			Oct 17 (Mthly)	JC	
IVF (% <=12 months)		LDP	AHC	TBC	TBC	Met		Worse	Jun 17 (Quarterly)	90.0% (min)	100.0%				Oct 17 (Mthly)	JC	
Outpatients (<=12 w eeks)		LDP	AHC	Moderate	May 17	Not Met	Deteriorating	Worse	Jun 17 (at month end)	95.0% (min)	63.0%	24,262			Oct 17 (Mthly)	JC	
Psychological Therapies (% <=18 w ks)		LDP	HGC	Limited	Sep 17	Not Met	Improving	Worse	Jun 17 (Quarterly)	90.0% (min)	70.2%				Oct 17 (Mthly)	JF	
Referral to Treatment (% <=18 w ks)		LDP	AHC	Limited	Feb 17	Not Met	Deteriorating	Worse	Jun 17 (Monthly)	90.0% (min)	78.3%				Oct 17 (Mthly)	JC	
Stroke Bundle (% receiving)		Quality	AHC	Moderate	Nov 16	Not Met	Improving	Not Applicable	Not Applicable	80.0% (min)	79.2%				Aug 17 (Mthly)	JC	
Planned Repeat Surveillance Endoscopy (past due date)			AHC	To be reviewed	To be reviewed	Not Met	Improving	Not Applicable	Not Applicable	0 (max)	4,437				Oct 17 (Mthly)	JC	
Delayed Discharges (>3 days) – East Lothian IJB	Effective		HGC	Limited	Sep 17	Not Met	Deteriorating	Worse	Sep 17 (Monthly)	0 (max)	239				Oct 17 (Mthly)	DS	
Delayed Discharges (>3 days) – Edinburgh IJB			HGC								MM						
Delayed Discharges (>3 days) – Midlothian IJB			HGC								EM						
Delayed Discharges (>3 days) – West Lothian IJB			HGC								JF						
Hospital Scorecard – Standardised Surgical Readmission rate within 7 days	Efficient	Quality	AHC	TBC	TBC	Met		Not Applicable	Not Applicable	All NHS L Sites (RIE, SJH & WGH), Within Hospital Scorecard Limits	NHS L 25.17	RIE 30.89	SJH 21.91	WGH 23.96	Jan - Mar 17 (Qtrly)	TG	
Hospital Scorecard – Standardised Surgical Readmission rate within 28 days		Quality	AHC	TBC	TBC	Met					47.22	59.25	35.17	50.57		TG	
Hospital Scorecard – Standardised Medical Readmission rate within 7 days		Quality	AHC	TBC	TBC	Met					57.50	57.66	66.49	62.18		TG	
Hospital Scorecard – Standardised Medical Readmission rate within 28 days		Quality	AHC	TBC	TBC	Met					126.35	131.27	143.59	123.53		TG	
Hospital Scorecard – Average Surgical Length of Stay - Adjusted		Quality	AHC	TBC	TBC	Met					0.97	0.92	0.89	1.11		TG	
Hospital Scorecard – Average Medical Length of Stay - Adjusted		Quality	AHC	TBC	TBC	Met					1.19	0.86	1.37	1.45		TG	
Staff Sickness Absence Levels (<=4%)		LDP	Staff Governance	Moderate	Mar 17	Not Met	Improving	Better	2016/17	4.0% (max)	4.63%				Sep 17 (Mthly)	JB	
Early Access to Antenatal Care (% <=12 w ks)	Equitable	LDP	HGC	To be reviewed (was 'Met' at time of mtg)	To be reviewed (was 'Met' at time of mtg)	Met		Better	2015/16	80.0% min for each SIMD ⁹ quintile	88.4%				Sep 17 (Mthly)	AMcM	
Smoking Cessation (quits)		LDP	HGC	To be reviewed (was 'Met' at time of mtg)	To be reviewed (was 'Met' at time of mtg)	Not Met	Deteriorating	Worse	2016/17	404 (min for this quarter)	233				Jun 17 (Qtrly)	AKM	
Complaints - Stage 1 (%<=5-day)	Person-Centred	Quality	HGC	TBC	TBC	TBC ¹⁰	Improving	TBC	TBC	TBC ¹⁰	61.6%				Aug 17 (Mthly)	AMcM	
Complaints - Stage 2 (%<=20-day)		Quality	HGC	TBC	TBC	TBC ¹⁰	Deteriorating	TBC	TBC	TBC ¹⁰	61.1%				Aug 17 (Mthly)	AMcM	
Detect Cancer Early (% diagnosed)		LDP	HGC	Significant	Nov 16	Not Met	Improving	Better	2014 & 2015 (Combined Calendar Years)	29.0% (min)	26.9%				2015 & 2016 (Combined Calendar Years)	AKM	
Dementia – East Lothian IJB		LDP	HGC	To be reviewed	To be reviewed	TBC ¹¹	Not Applicable	Part 1: Worse	2014/15	TBC ¹¹ (exptd diag rate + 1 Year (min) PDS)	Part 1:	25.5%			2014/15 (TBC)	DS	
Dementia – Edinburgh IJB		LDP	HGC			TBC ¹¹						MM					
Dementia – Midlothian IJB		LDP	HGC			TBC ¹¹		Part 2: Worse			Part 2: 64.3%			EM			
Dementia – West Lothian IJB		LDP	HGC			TBC ¹¹								JF			
Patient Experience (9.0/10 – Overall Experience)		Quality	HGC	Limited	Nov 16	Not Met	No Change	Not Applicable	Not Applicable	9 (out of 10)	8.90				Aug 17 (Mthly)	AMcM	

Notes

- Much of this reporting uses management information and is therefore subject to change;
- 6 Domains of Healthcare Quality <http://www.ahta.gov/professionals/quality-patient-safety/talkingquality/create/sixdomains.html>
- This describes the standard type – 'LDP' target/standards are Local Delivery Plan (previously HEAT), target/standards; Quality standards were originally reported under a separate Quality Paper.
- Performance Against Target/Standard – describes where Latest Performance meets or does not meet Target.
- Trend - describes Improvement, No Change or Deterioration for Latest Performance, where Performance Against Target/Standard is 'Not Met', against an average of the last two relevant reported data points. Cardiac Arrest and HAI measures (as applicable) use HIS run chart assessment to ascertain trend. (Black cells indicate that a Standard is 'Met' so a Trend is not available).
- Published NHS Lothian vs. Scotland – describes most recent published Lothian position against the most recent (directly comparable) published Scotland position to comply with Official Statistics' requirements - either for rates (incl. %) or against NRAC share. These may refer to different time periods than Latest Performance.
- Date of Published NHS Lothian vs. Scotland – describes most recent published Lothian position against the most recent (directly comparable) published Scotland position to comply with Official Statistics' requirements - either for rates (incl. %) or against NRAC share. These may refer to different time periods than Latest Performance.
- Abbreviations – CAMHS - Child and Adolescent Mental Health Services; CDI- Clostridium difficile Infection; SAB Staphylococcus aureus Bacteraemia; IPDC – Inpatient and Day-case; IVF – In Vitro Fertilisation
- SIMD - Scottish Index of Multiple Deprivation, <http://www.gov.scot/Topics/Statistics/SIMD>
- From the start of April 2017 there has been a national change on assessment of the complaints process. As no historical data is available for the proposed metrics, data will only be available covering April onward. Furthermore as a new measure, there will be an absence of comparative data initially in order to consider performance against that elsewhere.
- ISD have stated in their publication of 24/1/17 "there is no specific threshold or target in which NHS Boards are expected to be attaining to as the PDS services are still within their infancy and it is anticipated there is likely further developments required". Please also see relevant IJB level Proforma below (in Section 6 Exception Proformas).
<http://www.isdscotland.org/Health-Topics/Mental-Health/Publications/2017-01-24/2017-01-24-DementiaPDS-Summary.pdf?>

7 Risk Register

7.1 Not applicable.

8 Impact on Inequality, including Health Inequalities

8.1 The production of this update do not have any direct impact on health inequalities but consideration may be required elsewhere in the delivery of the actions identified.

9 Duty to Inform, Engage and Consult People who use our Services

9.1 As the paper summarises performance, no impact assessment or consultation is expected.

10 Resource Implications

10.1 The resource implications related to the assurance programme would be considered by Board Committees are consider items under the Programme of Assurance.

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Analytical Services

27th November 2017

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Appendices

Appendix 1 – Alignment of Measures to Board Committee

Appendix 2 – Adopted Assurance Gradings

Appendix 3 – Technical Document

[Appendix 4 - Quality & Performance Improvement Reporting Repository](#)

Appendix 1 – Alignment of Measures to Board Committee

	Acute Hospitals	Healthcare Governance	Staff Governance
Effective		Delayed Discharges	
Efficient	<i>Hospital Length of Stay (2)</i> Hospital Readmission Rate (4)		<i>Staff Sickness Absence</i>
Equitable		<i>Early Access to Antenatal Care</i> Smoking Cessation	
Person-Centred		<i>Complaints (2)</i> Detecting Cancer Early <i>Dementia Post Diagnostic Support</i> Patient Experience	
Safe	<i>Cardiac Arrest Incidence</i> Hospital Standardised Mortality Ratio	<i>Falls with Harm</i> Healthcare Acquired Infection (2)	
Timely	<i>4 hr Unscheduled Care Wait</i> Cancer Waits (2) <i>Diagnostic Waits</i> Inpatient and Daycase Waits <i>IVF Waits</i> Outpatient Waits <i>Referral to Treatment Wait</i> Stroke Bundle Compliance <i>Surveillance Endoscopies Overdue</i>	<i>Access to General Practice (2)</i> Alcohol Brief Interventions <i>CAMHS Waits</i> Drug & Alcohol Waiting Time <i>Psychological Therapy Waits</i>	

Appendix 2 – Adopted Assurance Gradings

Definition	Most likely course of action by the Board or committee
<p>LEVEL – SIGNIFICANT</p> <p>The Board can take reasonable assurance that the system of control achieves or will achieve the purpose that it is designed to deliver. There may be an insignificant amount of residual risk or none at all.</p> <p>Examples of when significant assurance can be taken are:</p> <ul style="list-style-type: none"> • The purpose is quite narrowly defined, and it is relatively easy to be comprehensively assured. • There is little evidence of system failure and the system appears to be robust and sustainable. • The committee is provided with evidence from several different sources to support its conclusion. 	<p>If there are no issues at all, the Board or committee may not require a further report until the next scheduled periodic review of the subject, or if circumstances materially change.</p> <p>In the event of there being any residual actions to address, the Board or committee may ask for assurance that they have been completed at a later date agreed with the relevant director, or it may not require that assurance.</p>
<p>LEVEL – MODERATE</p> <p>The Board can take reasonable assurance that controls upon which the organisation relies to manage the risk(s) are in the main suitably designed and effectively applied. There remains a moderate amount of residual risk.</p> <p>Moderate assurance can be taken where:</p> <ul style="list-style-type: none"> • In most respects the “purpose” is being achieved. • There are some areas where further action is required, and the residual risk is greater than “insignificant”. • Where the report includes a proposed remedial action plan, the committee considers it to be credible and acceptable 	<p>The Board or committee will ask the director to provide assurance at an agreed later date that the remedial actions have been completed. The timescale for this assurance will depend on the level of residual risk.</p> <p>If the actions arise from a review conducted by an independent source (e.g. internal audit, or an external regulator), the committee may prefer to take assurance from that source’s follow-up process, rather than require the director to produce an additional report.</p>
<p>LEVEL – LIMITED</p> <p>The Board can take some assurance from the systems of control in place to manage the risk(s), but there remains a significant amount of residual risk which requires action to be taken.</p> <p>Examples of when limited assurance can be taken are:</p> <ul style="list-style-type: none"> • There are known material weaknesses in key areas. • It is known that there will have to be changes to the system (e.g. due to a change in the law) and the impact has not been assessed and planned for. • The report has provided incomplete information, and not covered the whole purpose of the report. • The proposed action plan to address areas of identified residual risk is not comprehensive or credible or deliverable. 	<p>The Board or committee will ask the director to provide a further paper at its next meeting, and will monitor the situation until it is satisfied that the level of assurance has been improved.</p>
<p>LEVEL – NONE</p> <p>The Board cannot take any assurance from the information that has been provided. There remains a significant amount of residual risk.</p>	<p>The Board or committee will ask the director to provide a further paper at its next meeting, and will monitor the situation until it is satisfied that the level of assurance has been improved.</p> <p>Additionally the chair of the meeting will notify the Chief Executive of the issue.</p>
<p>NOT ASSESSED YET</p> <p>This simply means that the Board or committee has not received a report on the subject as yet. In order to cover all aspects of its remit, the Board or committee should agree a forward schedule of when reports on each subject should be received (perhaps within their statement of assurance needs), recognising the relative significance and risk of each subject.</p>	

Appendix 3 - Technical Document

Measure	Target/Standard
Smoking Cessation (quits)	NHS Boards to sustain and embed successful smoking quits at 12 weeks post quit, in the 40% most deprived SIMD areas (60% in the Island Boards).
Early Access to Antenatal Care (% booked)	Percentage of maternities booked for antenatal care within 12 completed weeks - the target is for 80% of women in each SIMD quintile to be booked within 12 weeks.
CAMHs (18 Weeks)	No child or young person will wait longer than 18 weeks from referral to treatment in a specialist CAMH service from December 2014. Following work on a tolerance level for CAMH services waiting times and engagement with NHS Boards and other stakeholders, the Scottish Government has determined that the target should be delivered for at least 90% of patients.
Psychological Therapies (18 Weeks)	The Scottish Government has set a target for the NHS in Scotland to deliver a maximum wait of 18 weeks from a patient's referral to treatment for Psychological Therapies from December 2014. Following work on a tolerance level for Psychological Therapies waiting times and engagement with NHS Boards and other stakeholders, the Scottish Government has determined that the Psychological Therapies target should be delivered for at least 90% of patients.
Delayed Discharges (over 3 days)	To minimise delayed discharges over 3 days, with a current national standard of none over 14 days.
Healthcare Acquired Infection - CDI (rate per 1,000 bed days, aged 15+)	NHS Boards' rate of Clostridium difficile infections (CDI) in patients aged 15 and over is 0.32 cases or less per 1,000 total occupied bed days.
Healthcare Acquired Infection - SAB (rate per 1,000 acute bed days)	NHS Boards' rate of Staphylococcus aureus Bacteraemia (including MRSA) (SAB) cases are 0.24 or less per 1,000 acute occupied bed days.
4-hour Unscheduled Care (% seen)	95% of patients are to wait no longer than 4 hours from arrival to admission, discharge or transfer for A&E treatment. NHS Boards are to work towards 98%.
Cancer (31-day) (% treated)	31-day target from decision to treat until first treatment for all cancers, no matter how patients were referred. For breast cancer, this replaced the previous 31-day diagnosis to treatment target.
Cancer (62-day) (% treated)	62-day target from receipt of referral to treatment for all cancers. This applies to each of the following groups: any patients urgently referred with a suspicion of cancer by their primary care clinician (for example GP) or dentist; any screened-positive patients who are referred through a national cancer screening programme (breast, colorectal or cervical); any direct referral to hospital (for example self-referral to A&E).
Stroke Bundle (% receiving)	The stroke bundle (percentage of initial stroke patients receiving appropriate bundle of care - Stroke Standard is 80%) covers four targets:- 1. Admission to the stroke unit on the day of admission, or the day following presentation at hospital (Stroke Standard is 90%); 2. Screening by a standardised assessment method to identify any difficulty swallowing safely due to low conscious level and/ or the presence of signs of dysphagia within 4 hours of arrival at hospital (Stroke Standard is 100%); 3. CT/ MRI imaging within 24 hours of admission (Stroke Standard is 95%); and 4. Aspirin is given on the day of admission or the following day where haemorrhagic stroke has been excluded, or other contraindication, as specified in the national audit (Stroke Standard is 95%).
IPDC Treatment Time Guarantee (12 weeks)	From the 1 October 2012, the Patient Rights (Scotland) Act 2011 establishes a 12 week maximum waiting time for the treatment of all eligible patients due to receive planned treatment delivered on an inpatient or day case basis.
Outpatients (12 weeks)	From the 31 March 2010, no patient should wait longer than 12 weeks for a new outpatient appointment at a consultant-led clinic. This includes referrals from all sources.
Referral to Treatment (18 Weeks)	90% of planned/elective patients to commence treatment within 18 weeks of referral.
Diagnostics (6 weeks)	A six week maximum waiting time for eight key diagnostic tests (four for Endoscopy (a) & four for Radiology (b)) from 3 rd March 2009.
Surveillance Endoscopy (past due date)	No patient should wait past their planned review date for a surveillance endoscopy.
IVF (12 months)	The Scottish Government have set a target that at least 90% of eligible patients will commence IVF treatment within 12 months. This is due for delivery by 31 March 2015.
Drug & Alcohol Waiting Times (3 weeks)	The Scottish Government set a target that by June 2013, 90% of people who need help with their drug or alcohol problem will wait no longer than three weeks for treatment that supports their recovery. This was one of the national HEAT (Health Improvement, Efficiency, Access, Treatment) targets, number A11. This target was achieved in June 2013 and has now become a Local Delivery Plan (LDP) standard - that clients will wait no longer than 3 weeks from referral received to appropriate drug or alcohol treatment that supports their recovery (90%).
Detecting Cancer Early (% diagnosed)	Increase the proportion of people diagnosed and treated in the first stage of breast, colorectal and lung cancer by 25 per cent.
Staff Sickness Absence Levels (<=4%)	4% Staff Hours or Less Lost to Sickness
Cardiac Arrest	50% reduction in Cardiac Arrests from the 2009 (Jan-Dec) baseline median of 1.91 to December 2019
Falls with Harm	'Harm' is Moderate, Major Harm or Death. Incidents are reported by staff using the DATIX system which records incidents that affect patients or staff. The category and degree of harm associated with each incident are also recorded. An increase in reporting of incidents is considered to be indicative of an improving safety culture and this is monitored in all Senior and Clinical Management Teams. Incidents associated with harm should not increase and this is the trend monitored at NHS Board level. 20% reduction in all inpatient falls with harm from 2010/11 (Apr-Mar) baseline median of 0.38.
Hospital Standardised Mortality Ratios (HSMR)	HSMR is the ratio of observed deaths to expected deaths within 30 days of admission to hospital. If the HSMR for a hospital is less than 1, then fewer hospital deaths within 30 days of admission are occurring than expected. HSMRs are therefore used as system level 'warnings' for areas for further investigation. It must be emphasised that the quarter to quarter changes should be interpreted with caution. HSMRs cannot be compared between hospitals or boards; the comparison should only be against the expected number of deaths. There is some controversy about their use, but they remain widely used in this way.
48 Hour GP Access - access to healthcare profession; or GP appointment.	48 hour access or advance booking to an appropriate member of the GP team (90%) - Patients can speak with a doctor or nurse within 2 working days; or Patients are able to book an appointment 3 or more working days in advance.
Alcohol Brief Interventions (ABIs)	Sustain and embed alcohol brief interventions in 3 priority settings (primary care, A&E, antenatal) and broaden delivery in wider settings.
Hospital Scorecard - Standardised Surgical Readmission rate within 7 days	This is the emergency readmissions to a surgical speciality within 7 days of discharge as a rate per 1000 total admissions to a surgical speciality. This measure has been standardised by age, sex and deprivation (SIMD 2009).
Hospital Scorecard - Standardised Surgical Readmission rate within 28 days	As for 7 day readmissions.
Hospital Scorecard - Standardised Medical Readmission rate within 7 days	This is the emergency readmissions to a medical speciality within 7 days as a rate per 1000 total admissions to a medical speciality. This measure has been standardised by age, sex and deprivation (SIMD 2009).
Hospital Scorecard - Standardised Medical Readmission rate within 28 days	As for 7 day readmissions.
Hospital Scorecard - Average Surgical Length of Stay - Adjusted	Ratio of 'observed' length of stay over 'expected' length of stay. This indicator is case mix adjusted by HRG* and speciality. The expected length of stay is calculated by working out the average length of stay nationally (Scotland only) for each speciality and HRG combination. This is then multiplied by the total number of spells to get the expected length of stay. A hospital with a value above the national average (e.g. 1.01 will be 1% above the national average) and a hospital below the national average (e.g. 0.99 is 1% below the national average).
Hospital Scorecard - Average Medical Length of Stay - Adjusted	Ratio of observed length of stay over expected length of stay. This indicator is case mix adjusted by HRG* and speciality. The expected length of stay is calculated by working out the average length of stay nationally (Scotland only) for each speciality and HRG combination. This is then multiplied by the total number of spells to get the expected length of stay. A hospital with a value above the national average (e.g. 1.01 will be 1% above the national average) and a hospital below the national average (e.g. 0.99 is 1% below the national average).
Complaints (Stage 1 & Stage 2)	Stage 1 - Early, local resolution - 5 working days. Stage 2 - For the complex, serious investigation - 20 working days. Target %s TBD.
Dementia	1. To deliver expected rates of dementia diagnosis; 2. All people newly diagnosed with dementia will have a minimum of a year's worth of post-diagnostic support coordinated by a link worker, including the building of a person-centred support plan.

N.b. Source for Current Data - with the exception of Dementia, Drug & Alcohol Waiting Times, DCE, 48 Hours, Hospital Scorecard & HSMR data for all of the measures reported is management information

* HRG: Healthcare Resource Groups. These are standard grouping of clinically similar treatments that use common levels of healthcare resource. They are usually used to analyse and compare activity between organizations.

Director of Finance

**FINANCIAL POSITION TO OCTOBER 2017, YEAR END FORECAST AND FINANCIAL
OUTLOOK 2018/19**

1 Purpose of the Report

- 1.1 This paper provides an update to the Board on NHS Lothian's year-end forecast position and a briefing on the outlook for 2018/19.
- 1.2 Any member wishing additional information on the detail of this paper should contact the Director of Finance prior to the meeting.

2 Recommendations

- 2.1 The Board is recommended to:
 - **Accept** this report as a source of significant assurance that the F&R Committee has considered the year to date and year end forecast position of NHS Lothian and required actions to support breakeven, and have accepted the limited assurance currently provided on the achievement of breakeven by the year end.

3 Discussion of Key Issues

- 3.1 The F&R Committee received a paper on the Period 6 financial position, the year end outturn overspend projection for 2017/18, and the first draft financial outlook for 2018/19 at its meeting of the 15th November. The F&R paper highlighted an in year overspend of £5.9m and an anticipated year end overspend of £4.9m.
- 3.2 The period 7 position has since been reported and takes the year-to-date overspend to £6.2m. This outturn is a slight improvement on previous projections, albeit a projected year-end overspend remains.
- 3.3 This improvement in the forecast outturn position is largely due to further additional one-off resources being identified in this current year. Further detail on the financial position is provided in table 1 below.

Table 1 – NHS Lothian year-to-date overspend and year-end forecast

	Q1 Year- End Forecast Variance £k	Month 7 YTD Position £k	Updated Forecast Variance @ Mth 7 £k
University Hosp Support Services	(12,447)	(8,183)	(13,266)
REAS	(1,280)	(552)	(1,261)
Edinburgh Partnership	(5,310)	(3,090)	(5,028)
East Lothian Partnership	52	61	404
Midlothian Partnership	86	(316)	83
West Lothian Partnership	180	933	552
Facilities And Consort	951	(1,484)	1,089
Corporate Services	308	1,617	822
Inc + Assoc Hlthcare Purchases	374	860	374
Research & Teaching	(1,405)	(738)	(1,405)
Strategic Services	3,120	(946)	3,922
Operational Position	(15,371)	(11,838)	(13,715)
Reserves	3,834	2,237	3,834
Additional Flexibility	7,000	3,381	5,997
NHS Lothian Position	(4,537)	(6,221)	(3,884)

- 3.4 The F&R Committee considered the issues within the forecast and acknowledged the actions being progressed to achieve breakeven in 2017/18, which include:
- Accelerating property sales;
 - One-off benefits generated as a result in anticipated delays in agreed developments;
 - Non-recurrent cost reduction initiatives generated through business units.
- 3.5 The F+R committee were informed that the above measures were one off benefits and did not resolve the issue of recurrent financial sustainability in future years.
- 3.6 The Committee agreed that it had limited assurance at this point that the Board is able to achieve a breakeven outturn in 2017/18.
- 3.7 The F&R Committee also considered the initial assessment of the financial position for 2018/19. The paper highlighted a projected financial gap for 2018/19 of £42m, based on a realistic assessment of cost pressures and anticipated funding. The realistic assessment featured in a range of outlook estimates ranging from an optimistic outlook of close to breakeven, to a forecast gap in 18/19 in excess of £123m. A summary of the realistic Outlook is provided in table 2.

Table 2 – Summary of Financial Outlook

	2018/19
	£k
Baseline Carry Forward Pressures	(54,213)
Additional Expenditure, Growth, Uplifts & Commitments	(58,799)
Total Projected Costs	(113,012)
Total Additional Resources	45,986
Financial Gap before Recovery Actions	(67,026)
Financial Recovery Plans	25,000
Financial Gap after Recovery Actions	(42,026)

- 3.8 The Committee agreed to revisit the 2018/19 outlook position in January, when there should be further clarity on funding after the Scottish Government budget and more information on anticipated cost pressures.
- 3.9 The next stages of supporting the achievement of financial balance for the current year include the following steps:
- Ongoing monthly monitoring and reporting of the financial position;
 - Follow up meetings with business units as part of the mid year review to agree further actions to control and reduce spend;
 - Further review of additional opportunities for additional resources in the current year.

4 Key Risks

- 4.1 The F&R Committee also considered the risks that may impact on financial performance throughout the year. Table 3 presents the risk schedule shared with the Committee.

Table 3 – Risks to achieving year end financial balance

Key Assumptions / Risks	Risk rating	Impact
Recovery Actions	High	Delivery of planned recovery actions to the value required to cover the known pressures and developments within the individual Business Units.
Waiting Times	High	There requires to be continued management of the financial exposure on elective capacity pressures. The risk is that Current investment plans to deliver capacity will not deliver the required volume and meet the DFP Strategy.
Delayed Discharge	High	Need to manage the volume of delayed discharges and the cost of new initiatives that will be required to deliver the required reductions. At Q1 the level of delayed discharges had not reduced as anticipated.
Winter Costs	High	The risk remains whether sufficient additional resources are available to meet the pressures from anticipated winter demand, the Q1 forecast has not built in the costs of opening additional bed capacity, this will need to be managed with the delayed discharges
Integration	High	The financial plan assumed that the additional resource passed to the IJBs from the Social Care Fund would create additional capacity and reduce the total level of Delayed Discharges in the Health System, to date there is little evidence to support this assumption
Prescribing	Medium	A sustained level of ongoing growth and price increases were included in the 2017/18 financial plan, however there remains the risk that the increases are greater than projected. Short supply and increased use of new medicines are keeping the price per item higher than forecast
Pharmaceutical Price Regulation Scheme (PPRS)	High	The Pharmaceutical Price Regulation Scheme has provided a source of funding in previous year to offset the cost of approved IPTRs and New Medicines. A level of funding has been assumed for 2017/18, this funding as yet has not been received and there could be a risk that the level of funding is not at the level assumed in the plan.
Acute Prescribing	Medium	There is a risk that the level of growth exceeds the estimate contained in the Quarter 1 Forecast Financial Plan
Changes to pay T&Cs and backdated pay claims	Low	NHSL no longer has a provision for backdated pay claims, therefore any further claims will be an unplanned in year cost.
SGHD Allocations	Medium	The majority of SGHD funding for previously separately funded programmes and initiatives has now been received in year, however the level of funding has not increased since last year so expenditure will need to be managed accordingly
Capital Programme	High	NHSIL has an ambitious capital programme which requires significant resources in addition to those available to deliver. The revenue consequences of the programme are a significant ongoing pressure to the organisation.
Outcomes Framework	Medium	The Financial Plan assumed that plans were in place to reduce expenditure in line with reductions in ADP and Bundles Funding, however this is proving difficult in some areas and is creating a financial pressure.

5 Risk Register

- 5.1 The corporate risk register includes the following risk:

Risk 3600 - The scale or quality of the Board's services is reduced in the future due to failure to respond to the financial challenge. (Finance & Resources Committee)

- 5.2 The contents of this report is aligned to the above risk. At this stage there is no further requirement to add to this risk.

6 Impact on Inequality, Including Health Inequalities

- 6.1 There are no implications for health inequalities or general equality and diversity issues arising directly from the issues and recommendations in this paper.

7 Duty to Inform, Engage and Consult People who use our Services

- 7.1 The implementation of the financial plan and the delivery of a breakeven outturn may require service changes. As this particular paper does not relate to the planning and development of specific health services there was no requirement to involve the public in its preparation. Any future service changes that are made as a result of the issues raised in this paper will be required to adhere to the Board's legal duty to encourage public involvement.

8 Resource Implications

- 8.1 There are no resource implications arising specifically from this report.

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21st November 2017
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Lothian / Regional Catering Strategy Approval

1 Purpose of the Report

- 1.1 The purpose of this report is to update the NHS Lothian Board on catering strategy work undertaken both within NHS Lothian and on an NHSScotland wide basis as part of the national review of Soft Facilities Management.
- 1.2 To seek approval from the NHS Lothian Board for the Lothian Catering Strategy, Food Matters: Our Food, Our Health, Our Care (Appendix 1)
- 1.3 To confirm support for the planning and business case work associated with an east of Scotland regional Catering Central Production Unit, to be located within Lothian with the ability to supply NHS Lothian locations and that of other east regional NHS Boards.

Any member seeking additional information should contact the Executive Lead in advance of the Board meeting.

2 Recommendations

The Board is asked to:

- 2.1 Approve the Lothian Catering Strategy document: Food Matters: Our Food, Our Health, Our Care;
- 2.2 Note the Content of the NHS Scotland National Catering Production Strategy (Appendix 2)
- 2.3 Note Scottish Government funding (up to £250k) to support for the development of a "Proof of Concept" for an east of Scotland regional Cook Freeze Central Production Unit business case
- 2.4 Approve the establishment of a Catering Strategy Implementation Project Board to take forward the work associated with the business case process commencing with a Strategic Assessment and an Initial Agreement document;
- 2.5 Approve the proposal for the future development for the regional catering service CPU business case, commencing with the production of an Initial Agreement (IA) document which Scottish Government have agreed to fund

3 Discussion of Key Issues

NHS Lothian

- 3.1 The NHS Lothian Catering Strategy and Summary documents ([Appendix 1](#)) have been approved in partnership by the Lothian Catering Strategy Steering Board (CSSB) which included membership from all the key stakeholders of the service.

The key objectives for the Board were agreed as:

- To oversee the development of a comprehensive catering strategy for NHS Lothian and make recommendations on the strategic direction of catering services for endorsement by the Corporate Management Team (CMT) and;
- Make a recommendation for the future Catering Model for NHS Lothian which will deliver improved service quality, sustainability and agreed efficiency targets (circa £1m at the commencement of the work).

The draft strategy document was completed in October 2015 although not progressed at this point due to similar work being undertaken by the National Strategic Catering Review Group (part of the national review of Soft Facilities Management).

- 3.2 The national review work had representatives from a number of NHS Boards including NHS Lothian and came independently to a similar conclusion to the NHS Lothian group regarding the most appropriate way to deliver catering food production .
- 3.3 It was understood that the parallel work to deliver a Catering Strategy for NHS Scotland significantly overlapped with the Lothian work and that there were important synergies between the two projects. The decision was therefore made to align the two projects. As a consequence, Lothian has been selected as the national “Proof of Concept” within the National Catering Production Strategy.
- 3.4 The business case to realize the strategic objectives within both the national and Lothian strategies has now commenced and the CSSB can now be considered as having achieved its objective. This offers the opportunity to review the governance process for the next phase of this work and the Corporate Management Team have approved this strategy being brought to the Board for endorsement and that the Lothian Capital Investment Group take on the oversight role with regular updates to the Finance and Resources Committee as required.

NHS Scotland

- 3.5 The National Review of Soft Facilities Management commissioned a Strategic Catering Review Group (chaired by an NHS Board facilities director) to produce a National Catering Production Strategy ([Appendix 2](#)). This document was developed with input from the service and also National Partnership and Patient engagement through the Scottish Health Council.
- 3.6 The resultant National Catering Production Strategy was submitted to the NHS Scotland Chief Executives Group and received their approval in November 2016. This strategy suggested that NHS Lothian be used to develop a NHS Lothian / East regional Catering Central Production Unit with the project being considered as a “Proof of Concept” site for a regional Cook freeze central production unit (CPU).

Collaborative Working (NHS Lothian & NHS Health Facilities Management)

- 3.7 In April 2017, a group of officers representing both our catering services and the group developing the National Catering Strategy, met with a representative of the Scottish Government Health Finance and Infrastructure department. The aim of this meeting was to update Scottish Government on the National Catering Strategy, and outline the proposal for Lothian (and the south east region Boards) to act as a “Proof of Concept” and to request approval and capital funding to take the development of the business case forward.
- 3.8 Confirmation of funding for business case development (£250k) was received in July 2017. Since then key officers from NHS Health Facilities Scotland and Lothian, who will lead the work have begun the process to produce a both a Strategic Assessment and draft the Initial Agreement. Discussions are also at an early stage with other stakeholders so that appropriate options can be developed and costed

Summary of the Issues

- 3.9 The main strategic objectives for this work are:
- Provide the highest quality and most appropriate meals to a consistent standard, for all our patients to aid their recovery and ensure they receive the best possible levels of nutrition from meals. A comprehensive measurement process to evidence achievement of this will be a key component of the eventual delivery model.
 - Seek patient views on the future direction of catering services
 - Operate within a sound revenue framework ensuring that all agreed efficiency targets are achieved.
 - Be aligned with the Board’s strategic plan and all other relevant national and organisational strategies and developments where possible.
 - Enable the development of the capital investment plans required to support and sustain the provision of suitable premises and equipment to deliver the strategy.
 - In partnership establish a staff development plan which will ensure the availability of the necessary skills to deliver the agreed level of service.
 - Engage in relevant clinical research to improve the impact of nutrition and thereby achieve improved clinical outcomes.

4 Key Risks

- 4.1 The most important risks associated with this work include:
- Decisions made (including within current clinical change projects) may impede or prevent us from implementing the strategy either fully or partially, leading to reduced quality of patient services and higher levels of waste from duplication and variation of meal production processes;
 - In the short term there is insufficient capacity of cook freeze meals for us to supply the new receiving kitchens currently being planned/constructed (RHSC/DCN, REH and ELCH). To mitigate this until the availability of the preferred service delivery model, Partnership have agreed to the use of a hybrid service involving a combination of bought in meals with some traditional production;
 - Lack of available capital to provide the necessary infrastructure to deliver the strategy;

- Failure to achieve strategic alignment within the SE region leading to a non-approval of the business case.

5 Risk Register

- 5.1 A draft entry relating to non achievement of the catering strategy has been prepared for the Facilities risk register. This register is regularly reviewed by the Facilities senior management team. In addition a detailed register of project risks will be established as part of the development of the business case and incorporated into the governance processes.

6 Impact on Inequality, Including Health Inequalities

- 6.1 The aim of reducing health inequality is at the core of the Catering Strategy not only by improving access to good quality nutritional meals for patients and staff when in hospitals, but also through our aspiration to procure as many ingredients as possible freshly and from within the local or regional economy. It is anticipated that by retaining more of this expenditure within the region or within Scotland we can improve the health choices of the population.
- 6.2 An impact assessment has been carried out, led by Public Health, and the recommended changes were all incorporated into the NHS Lothian strategy document.

7 Duty to Inform, Engage and Consult People who use our Services

- 7.1 The work to develop the Lothian catering strategy to its current version has included full involvement from all stakeholder groups including Partnership and public representatives. The Scottish Health Council was consulted within both the Lothian and national processes and sustaining this engagement will be a key component of the work going forward. The business planning process will also ensure that there is an effective mechanism for ongoing communication and feedback with all stakeholders including staff and public.

8 Resource Implications

- 8.1 Scottish Government has provided initial capital funding of £250,000 to facilitate the development of the business case and a plan for the use of this will be developed and submitted for approval once the regional governance arrangements have been agreed. During discussions it was implied that given the merits of this regional proposal, that Scottish Government may look favourably upon any funding request for an NHS Lothian / east region CPU assuming suitable phasing and agreement with partners.
- 8.2 The cost of providing a regional food production unit is yet to be established and will be affected by the number of locations which commit to the process. Additionally the business case for a CPU would be strengthened by the inclusion of demand from the Royal Infirmary of Edinburgh as the proposed costs of food would be considerably lower than current charges.

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21st November 2017

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List of Appendices

Appendix 1: Draft NHS Lothian Catering Strategy: “Food Matters, Our Food Our Health Our Care” and summary document.

Appendix 2: National Catering Production Strategy.

Appendix 3: Background to the development of Lothian Catering Strategy

The work to develop a Catering Strategy for Lothian commenced in late 2013 with the establishment of the multi-stakeholder Catering Strategy Steering Board. This consists of representatives from Nursing, Public Health, Facilities, Finance, Allied Health Professionals, Partnership, Patient Representatives and Soil Association Scotland. Draft strategy and summary documents were published for public engagement between April and June 2015. Comments were received and incorporated into the narrative.

A financial options appraisal was carried out between September 2014 and February 2015. The outcome from this was that we take three options forward to Initial Agreement stage; however, the emergence of the NHS Scotland Catering Strategy approved by the Chief Executives in November 2016 offered significant opportunity to adopt a regional approach to the solution and an improved chance for success. It was therefore agreed by our Corporate Management Team in October 2016 that we should align our work with the national project.

The Scottish Health Council, Major Service Change Advisor also reviewed the documents and the proposed engagement process during the first quarter of 2015 and approved both.

The Healthcare Governance Committee considered the strategy in the third quarter of 2015 and approved it following further discussion and adjustment in November 2015.

During the past three years operational catering management have continued the work to improve quality, efficiency and manage the infrastructure risks. Revenue savings in excess of £200k have been delivered during this period.

Appendix 1:

Draft NHS Lothian Catering Strategy: “Food Matters, Our Food Our Health Our Care” and summary document.



Food Matters

Our Food, Our Health, Our Care

NHS Lothian

Catering Strategy

2014 to 2024

Unique ID: NHSLCAT

Category/Level/Type: Strategy paper

Status: Draft

Date of Authorisation:

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Executive Summary

The primary objective of the Catering Strategy is to outline how we will provide the highest quality and most nutritious meals to patients, carers, visitors and staff. It will be aligned to Our Health, Our Care, Our Future; NHS Lothian Strategic Plan 2014 – 2024 and will use the nutritional indicators specified within Food in Hospitals National Catering and Nutrition Specification for Food and Fluid in Hospitals in Scotland 2008 (under review).

Underpinning this strategy is an acknowledgement of the key role of procurement in contributing to health improvement, supporting economic growth and addressing national and local sustainability strategies. In this context “quality” is defined as meals which look great and taste delicious as well as being made from fresh, and where possible, locally sourced produce.

The elements which have been highlighted as critical to the success of the outcome and included within this strategy are:

- The critical importance of nutritional care towards good clinical outcomes for our patients.
- Our patients trust and have confidence in us to provide appetising, healthy food.
- The importance of ensuring that we value our workforce and achieve excellent staff governance.
- The importance of considering the health, social, economic and environmental benefits in our decision making.
- The anticipated future capital investment for equipment replacement and suitable catering premises.
- Alignment with current and proposed clinical strategies and Scottish Government policies relating to food Recipe for Success, 2009 and sustainable procurement Catering for Change 2011.

This strategy and future service delivery is being proposed in a tight financial climate and our strategic plan demands a “maximum value for the public purse” approach to the work. As a result, there is an emerging need to adopt and include a much wider public sector approach to the planning and delivery of such services. A multidisciplinary group has been established to develop this work and monitor its implementation, reflecting the importance, profile and the range of stakeholders with an interest in this service. Our Strategic Plan “highlights an ambitious programme of change for NHS Lothian. To support delivery of such a change programme it is important that efficiency and innovation are recognised as core building blocks for a sustainable financial future. The focus will be on reducing waste and inefficiency and driving through productivity improvements.”

This strategy will cover the period 2014 to 2024 to reflect the strategic plan, but also the level of capital investment required and to give a firm base from which to support other organisational strategies.

The key objectives of this document are therefore that the Catering Service will:

1. Provide the highest quality and most appropriate meals for our patients to aid their recovery and ensure they receive the best possible nutrition for them.
2. Operate within a sound revenue framework ensuring that all agreed efficiency targets are achieved.
3. Be aligned with the Board's strategic plan and all other relevant national and organisational strategies and developments where possible.
4. Develop the capital investment plans required to support and sustain the provision of suitable premises and equipment.
5. In partnership establish a staff development plan which will ensure the availability of the necessary skills to deliver the agreed level of service.
6. Engage in relevant clinical research to improve our understanding of nutrition and thereby improve clinical outcomes.

For a list of references and other related strategies, see appendix 3.

Our vision for catering

Food impacts on almost every aspect of our lives. The importance of the correct food to aid patients' recovery and continued well being is well documented and the provision of this is at the heart of this strategy. This document commits to the provision of the highest quality and most nutritious meals to patients, carers, staff and visitors to NHS Lothian, and procuring the freshest and most local produce available to us and within purchasing guidelines. A key driver document is Food in Hospitals National Catering and Nutrition Specification for Food and Fluid in Hospitals in Scotland 2008 (under review). It is critical to recognise the Nursing role to the success of this strategy. Nurses and Catering management will have closer links to ensure a more joined up approach between food production and its provision at ward level, and the importance to individual patient care plans will be enhanced promoting better recovery.

The strategy will cover the period 2014 to 2024. This timescale has been selected given the level of capital investment required and to align with the Strategic Plan – Our Health, Our Care, Our Future.

The key client groups will include all NHS Lothian patients, their carers, our staff and visitors. This strategy will act as a vehicle for the implementation of the Health Promoting Health Service Strategy by ensuring that Catering Services have the requirements of this initiative firmly embedded within their operational delivery plans. Units will achieve and sustain the Healthy Living Plus award for their staff and visitor services, with externally operated retail units achieving the new Healthcare Retail Strategy (HRS).

Working towards adopting a common NHS approach to the planning and delivery of catering services will also be fundamental to this strategy in order that it can maximise opportunities to achieve value for money.

The implementation of the strategy will extend to all parts of the service including retail and non patient catering.

Communication and Engagement – we are doing this together

A communication and engagement action plan has been used to ensure stakeholders are informed and have an opportunity to shape the strategy and this will be continued as we develop the preferred service delivery model. Our communication objectives are to:

- Promote understanding of why the strategy is needed
- Explain what the strategy aims to deliver by when
- Encourage involvement in the engagement process to gain the views and suggestions of service users.

Background

In creating this strategy, it is important to consider where the service has come from, where it is now and also where it might be without such a strategy.

In 2004 catering services in NHS Lothian were brought together within a single system Facilities Directorate. Capital development and investment in the period until now has been largely incremental and reactive. In operational budget terms successive programmes have improved operational efficiency year on year. Over the past five years the Catering Service in NHS Lothian has improved its financial efficiency by some £900k (equivalent to a circa 12% revenue reduction). In addition we have reduced the variation in quality and cost across our units by introducing a common patient menu supported by standard recipes. This work continues to improve our quality and compliance around regulations relating to allergens.

We have been able to improve our patient food costs which at the time of writing are within the target costs for NHS Scotland. However, important as this work has been, it has made no provision for sustaining these services, taking advantage of new technology or improving the quality of catering in the longer term. A strategy for the delivery of catering in NHS Lothian is required if we are to remain in a position to support good standards of patient nutrition, prevent a gradual reduction in quality, and do so within an assured financial framework.

Operational developments/changes are regularly requested to meet clinical strategy needs, for example, the requirement for increased ward capacity to meet seasonal demands. It is apparent that incremental clinical service development has the potential to drive similarly incremental development of catering services. This is considered to be an inefficient and ineffective way of service planning and reinforces the need for a strategy which ensures the planning and delivery of catering in a manner which guarantees the required level of quality, safety and is financially sustainable.

On some of our sites, including the Royal Infirmary of Edinburgh, catering is provided by contractors and we need to make sure that this catering strategy applies fully to these sites, and consider whether the catering being provided by contractors is the appropriate model for the long term.

The importance of quality

A number of propositions contained within the Strategic Plan such as the re-provision of the Royal Hospital for Sick Children and the Royal Edinburgh Hospital, are scheduled within the term of this strategy. Therefore if the incremental development of catering services is to be avoided, a catering strategy under the umbrella of the Strategic Plan is required.

The implementation of the NHS Lothian patient menu and standard recipes has shown that comprehensive and consistent quality improvement is best achieved through standardisation, the removal of variation in the product, service or method. But we want to ensure that where possible we will focus on using ingredients that are local and in season. This also supports the overarching intention contained within the Strategic Plan that we reduce waste, remove duplication and use lean processes.

A survey of patient satisfaction showed that 90% were satisfied overall with their meal. 92% were satisfied with the appearance, taste, portion size, and religious / cultural options. This reduced to 75% satisfaction for choice and 89% for satisfaction with temperature of their meal. There is further variation within these results between the services provided from the individual kitchens. This demands a radical approach to re-design the service with the aim of “improving both our performance in quality terms and the value added by investment in facilities and services, identifying those which do not contribute to the health of the population, in order to generate the funds and capacity to deliver a higher quality, more modern, sustainable health and care service in line with this plan.” This direct quotation from the Strategic Plan can be considered as steering us to a complete re-organisation of the catering service from its current dispersed model where resources are duplicated and therefore wasted, to a comprehensively planned one where they are allocated to maximum effect.

Good food helps people get better

It is well documented that many patients who are ill in hospitals and have poor appetites or an impaired ability to eat are at risk of developing under-nutrition. 40% of patients admitted to a large Scottish teaching hospital were under-nourished on admission and of these 75% lost more weight during their stay. (McWhirter and Pennington 1994)

The largest prospective national survey² of the prevalence of malnutrition on admission to hospital and care in the UK was carried out in Scotland finding showed the risk of malnutrition was slightly below the national average. However, one in four adults (23%) admitted to general acute hospitals were at risk of malnutrition.

Evidence shows older people are more likely to be undernourished when admitted to hospital and remain undernourished during their stay. They also have longer periods of hospital stay. The majority of patients depend on ordinary hospital food to improve or maintain their nutritional state in order to optimise their recovery from illness.

It is generally understood that offering appropriate food and fluid to patients is a key component of work towards improving recovery, cutting length of hospital stay and the associated cost from in-patient admissions. The key recommendations from the British Dietetic Association, Mind the Hunger Gap policy supports this, appendix 1.

Our local nutritional care groups, on each site, focus on strengthening awareness and knowledge of the provision of food and nutrition in relation to patient care.

Food safety is a top priority, relating to a number of areas, such as food borne infection, food allergy and texture modification treating dysphagia. Systems are in place to minimise risks.

The Malnutrition Task Force³, indicates that are five key aspects to providing good nutrition and hydration care:

1. Raise awareness of malnutrition
2. Work together
3. Identify older people who are malnourished or at risk
4. Provide support, care and treatment and monitor progress;
5. Monitor and evaluate your activities

These principles are fundamental within our Strategy.

Within the Lothians, we are part of a growing and ageing population where poor diet is one of the main causes of ill health. 64% of adults in Scotland are overweight or obese. 5% of Lothian's population have diabetes and this continues to increase. People now, are keen to know the calorie content of their meals to help manage their weight and those with diabetes may wish to know the carbohydrate content of the foods they eat to help manage their diabetes.

⁽²⁾ British Association of Parenteral and Enteral Nutrition (BAPEN) in conjunction with the Royal College of Nurses (RCN) and the British Dietetic Association (BDA)

³ <http://www.malnutritiontaskforce.org.uk/>

What does this mean for our patients?

Hospital catering and the food and nutrition it provides, although viewed as a non-clinical service within the NHS, is now widely accepted to be a core part of the treatment and recovery process of hospital patients. Understanding of the importance of food and nutrition in the well being of patients has increased and multi-disciplinary working, education and training towards improving this will be adopted within our workforce plan. Patients recognise the importance of nourishing food in building up their strength and getting back to health.

Four names are already being used to represent four groups of patients. These groups have been identified because their current use of health services suggests that those services could be provided in a better and more person centred way. The four groups are represented by Callum, Hannah, Scott and Sophie who encompass the main patient groups who use our services.

Hannah, who may have diabetes and requires regular meals, healthier options, calorie and carbohydrate content of the menu will be available to support self management of her diabetes whilst in hospital.

Scott, who may have difficulty swallowing (dysphagia) and be “nutritionally vulnerable” requiring soft or texture modified meals. He may wish finger foods and high calorie snacks that are easy to eat. His meals may need to be fortified with higher calories foods. The “Protected Mealtime” will be useful to give older people time to eat their meal without disturbance.

Callum, who may be described as the “nutritionally well” patient, who requires healthy eating choices and requests larger portions as he is hungry. His religious needs for halal meals will have been identified on admission.

Sophie, who may need to be encouraged to eat familiar foods from a children’s menu which includes dishes popular with younger children. She may need to alter portion sizes and have meals/snacks at a time that suits her. She may require a menu that is suitable for people with food allergy/intolerances.

There will be a dish directory, listing ingredients, available so patients and staff can identify the content of food items on the menu eg if suitable for gluten free and advising on the presence of any of the 14 main allergens.

In order to achieve a person centred approach, catering within hospitals and long-term care facilities needs to provide for different patient profiles with differing dietary needs and intolerances. Food service provision must therefore reflect the needs of the patient. We will design our catering service to be flexible enough to meet these varying needs, with standard recipes analysed to evidence nutritional value.

Fundamental considerations that hospitals need to address in order to provide a service which is optimised to meet the dietary and nutritional needs of its patients are the ability to:

- maximise opportunities for patients to eat and drink through the provision of high quality meals, substantial snacks, out-of-hours service provision, on-ward provisions
- maximise the available choice of suitable foods and fluids
- serve food that looks appetising and is at the correct temperature
- ensure adequate quantity and quality of food and fluid is available in an environment conducive to eating
- and there is appropriate support for those struggling, e.g. staff / volunteer assistance, modified eating aids for people who can potentially chew and swallow but are unable to feed themselves.

The period from 2014 to 2020 is likely to see a population increase in Lothian of some 9% to 10% with the largest proportion being in the over 75 age group. This particular change will place additional pressure on in-patient beds.

Looking further forward to 2030 it is predicted that the 0 to 15 age group will also increase by some 14%.

Future demographic changes including an aging population, will lead to changes in dietary needs, this will increase the need for improved / adapted nutritional intake for the most vulnerable groups. We must build upon our understanding of the nutritional needs for the main cultural groups. Our menu cycle currently includes provision of meals that are suitable for the main ethnic groups. Improving our understanding and knowledge will be critical to ensuring that catering is used to positively contribute to improving nutrition for the total population, reducing lengths of stay and readmission levels.

Engagement in research relating to nutrition must be a strategic objective for us if we are to improve clinical outcomes and sustain the health and well-being of the population beyond the end of the strategy period. Given the shift in the balance of care, it may be acknowledged that those people who are admitted to hospital are likely to be more unwell and vulnerable. Catering must respond to this by producing meals to meet such varied needs, available when needed and made in a way which is easy to eat.

The Scottish Government's document, *Becoming a Good Food Nation 2014*, shows commitment to improving the diet of the Scottish people; part of this commitment relates to an increased availability of healthier food and encouraging individuals to make healthier choices.

The environment and the economy

Our Strategic Plan includes within its outcomes to be achieved, the requirement to "increase our investment in new innovations which improve the quality of care, reduce costs and simultaneously provide growth in the Scottish economy." The national food and drink policy for Scotland makes clear the objective, for the public sector and food producers to work together to achieve the health, economic and environmental benefits associated with food. The policy sees the adoption of sustainable food procurement arrangements as a corporate objective for all public sector organizations. It is through the most effective use of limited public resources that we will be able to sustain high quality services during this period.

Understanding modern living and changing family dynamics is important when planning for recruitment. If the current approach to delivery of catering services is maintained it is likely that there will be a shortfall in available skills in the labour market. We must therefore take a shared approach to recruitment, training and service delivery if we are to avoid unnecessary risks. It is well understood that we will better support and enable economic aspirations at individual/family level if we can provide employment opportunities which are more flexible, offering an enhanced work life balance.

Health Promotion

The Royal Society For Public Health states in Promoting Health and Wellbeing: Reducing Inequalities that, “Health promotion is about giving people information and tools to improve their own health. Health promotion is about improving the environments in which people live that often determine their choices.” The link between good health and an individual’s personal circumstances is thereby established.

It is expected that this strategy will have a positive impact on the local environment and economy by way of enhanced local procurement where possible, sustainable employment, educational benefits as well as nutritional benefits, it is therefore anticipated that this will enhance living standards, improve choices in relation to food and therefore health. It is expected that coronary heart disease, stroke and diabetes will continue to be prevalent and consequently, the impact that the catering strategy can have within a wider public health agenda must not be underestimated.

Together with the Healthy Working Lives programme, which provides an evidence based framework for developing a staff well-being programme, the continued implementation of the Healthy Living Award Programme and the Healthcare Retail Strategy, this strategy will support our work as a Health Promoting Health Service.

The challenge is to provide what people wish to eat, whilst, balancing their current nutritional requirements to aid their recovery, and also to influence their future dietary choices.

Risks (Reasons for Change)

There are 5 main in house food production units currently operating within NHS Lothian. A table detailing a snapshot of the current operational activity within these can be seen in appendix 2.

The critical issues associated with continued delivery of the catering service from the in house units are undernoted. Failure to address these will lead to an erosion of our capability to sustain the necessary level of quality:

- Poor quality environment needing constant maintenance;
- Poor and out of date equipment leading to regular breakdowns and risks to service provision, menu changes etc;
- Poor workflow arising out of inappropriately designed spaces leading to us managing food safety risks that a suitably designed unit would avoid;
- Inconsistent quality of output arising out of the above;
- A lack of strategic direction leading to incremental service and staff development with resources not deployed appropriately in the most effective manner;

- A need for a more robust agreed financial framework and a retail strategy which addresses the financial cross subsidy between patients and non patients;
- Raised levels of food waste arising out of a production and service style which is out-dated and in some areas unsuitable to the environment;
- Units working at or near capacity exposing the organisation to seasonal demand challenges.

Thus far the approach to sustaining catering facilities has been one of essential repair. If this situation remains unresolved it will quickly become difficult to comply with food hygiene legislation. Additionally, no planning has been undertaken to review future capacity needs.

Similarly our process for the replacement of essential equipment has been based on a reliance on slippage from other capital projects rather than having a planned replacement programme in its own right. This has caused operational difficulties and has had an impact on staff morale.

Our work benchmarking catering services in a national context has identified that significant inefficiencies exist in relation to food waste. The opportunity to exercise effective control will remain unavailable to us while we continue to operate our current service styles and while we lack the most appropriate equipment. The knock on effect is that without a strategic approach resources will continue to be used inefficiently. In addition to this, changes in legislation regarding the disposal of food waste came into effect in January 2016. This has brought an additional cost pressure and is a further reason for us to re-design the service to mitigate this.

The main operational risks outlined at the beginning of this section, can be managed out of the service with an effective strategy leading to an options appraisal process and the development of the necessary business plans for capital investment. This approach will put catering on a sound financial, operational and food safe basis.

Finance and Resource Implications

The configuration of services within the main hospital sites in NHS Lothian is currently within a period of change. Buildings condition and infrastructure is being reviewed and as it develops, this work will support consideration of options for future development or re-provision of services. The re-provision projects and master-plans can be considered as an opportunity within which individual strategic projects such as this one can be established and developed. It is critical for the success both of these and this strategy that all of these work-streams are undertaken in a collaborative manner, under the auspices of the NHS Lothian Strategic Plan.

Arising out of the population growth mentioned earlier, we must ensure the future capability of our services to operate within available funding, which in real terms means we need to plan for financial efficiencies over the next 10

years that as a minimum cover the likely increase in the costs of providing the service.

Operationally it will be important that we develop and utilise “lean” processes throughout the re-designed service and scrutinise our activities to remove duplication, reduce waste and thereby improve efficiency and effectiveness. Our strategic plan challenges us to move from a “low tech” service delivery to one where technology enables choice and control. It also gives us the opportunity to adopt “a radical shift away from a traditional, incremental approach to development based on services and specialties to a patient-centred, whole-system, pathways approach.”

Capital availability to fund maintenance and development of services generally is currently very restricted and subject to multiple competing priorities. It is understood that significant capital expenditure is required to support and enable improved capacity and workflow within the current premises, to facilitate planned site moves and to replace ageing equipment that is no longer fit for purpose.

The revenue position is similarly challenging although the catering service has been able to drive efficiency over the past number of years. However, this incremental efficiency is not sustainable within the current arrangement of services and this supports the rationale for radical change previously stated. It is therefore important that a robust and up to date financial framework is developed and agreed to support this strategy.

The development of the business case for the preferred catering service delivery model will include a financial framework designed to implement this strategy and sustain the services into the future.

Purpose designed facilities equipped with modern food production equipment would allow catering service managers to establish more effective and efficient systems of production service and overall control. Currently resources are being directed disproportionately towards managing consistency and reducing variation in quality which almost entirely make up the recurring themes in complaints. The design of the environment and the equipment employed in catering service delivery directly influences the quality and cost of the output.

This strategy focuses on achieving the highest standards of quality. The food produced will be of a consistently high nutritional and quality standard enabling us to assist patient recovery and reduce average lengths of stay. We have already appointed a dedicated dietician for the catering service recognizing that nutrition is at the heart of our planning and operations and to promote closer working with clinical colleagues, such as nursing, medical and other allied health professionals.

A review of our non patient retail catering service has commenced which will consider the views of staff and visitors as well as the need to establish this

aspect on a commercial footing and avoid any financial cross subsidy from the patient service.

As stated earlier, the resource requirements for this will be established through the development of the business case for the infrastructure and service model. The financial efficiency target associated with this strategy is that it will deliver £1M of cost reductions compared to the existing service, over the first five years of its implementation.

It is also considered critical that we include any current service delivery within a Private Finance Initiative (PFI) environment and consider recommending contractual change where it is felt that this would positively contribute to the development and delivery of best value services and the achievement of our strategic aims in relation to catering. We are moving towards closer integration of services across the public sector, and it is appropriate to develop discussions relating to support services under this banner.

Strategic Objectives

The key objectives of this document are therefore that the Catering Service will:

1. Provide the highest quality and most nutritious meals for our patients, carers, staff and visitors within a cycle of continuous improvement.
2. Operate within a sound revenue framework ensuring that all agreed efficiency targets are achieved.
3. Be aligned with all other national and local strategies including health and sustainable food procurement where possible.
4. Develop capital investment plans required to support and sustain the provision of suitable premises and equipment.
5. Recognise the critical importance of a skilled and committed workforce to the success of this strategy and therefore establish a comprehensive staff development plan incorporating family friendly terms and conditions which will ensure the availability of the necessary skills to deliver the agreed level of service.
6. Engage and keep abreast of further clinical research around the links between food and health.

The establishment of a programme to achieve the above is already underway with the full engagement of all the key internal and external stakeholders of the service. This will ensure that a whole system approach is achieved.

Appendices:

1. The key recommendations from the British Dietetic Association, Mind the Hunger Gap policy:

- Everyone should have access to a nutritious, high quality diet.
- Providing the right food at the right time should always be the first line of support. Anyone unable to meet their needs through food should have access to nutrition team services and oral nutritional supplements (ONS) as a matter of urgency.
- Commissioned services that allow all people that need nutrition support to be offered treatment that aims to provide them with complete nutritional requirements. Commissioners and regulators should recognise the value and potential cost savings of preventing malnutrition through high quality social care, clinical services and catering services.
- Systems should be in place in the community, care settings and hospitals to identify and support individuals/communities at risk of a poor diet and hydration.
- All public sector catering specifications, including NHS, should have a requirement to meet nutritional standards suitable for the setting, supported by appropriate expertise from caterers, procurement professionals and dietitians.
- Dietitians should lead the coordinated and integrated approach to addressing the nutritional care of vulnerable populations in the hospital and community as part of the nutrition team.

2. Benchmarking data 2013



3. Other relevant strategies

The key national and organisational strategies with which this document must find fit include:

- Our Health, Our Care Our Future, NHS Lothian Strategic Plan, 2014 – 2024
- The Food, Fluid and Nutritional Care Standards 2015
- Food in Hospitals National Catering and Nutrition Specification for Food and Fluid in Hospitals in Scotland 2008; (under review - consultation May 2015)
- The NHS Lothian Nutritional Care Framework;
- The Health Promoting Health Service: Action In Hospitals Setting CEL 01 (2012)
- Mind The Hunger Gap, British Dietetic Association (BDA) 2012

- Catering for Change: Buying Food Sustainable In The Public Sector. 2011
- Recipe For Success: Scotland's National Food And Drink Policy 2009
- The Healthcare Quality Strategy For NHS Scotland 2010
- A Sustainable Development Strategy for NHS Scotland 2012
- Becoming a Good Food Nation 2014

4. Catering Activity March 2014.



5. National Report on Compliance with Nutritional Standards March 2014.

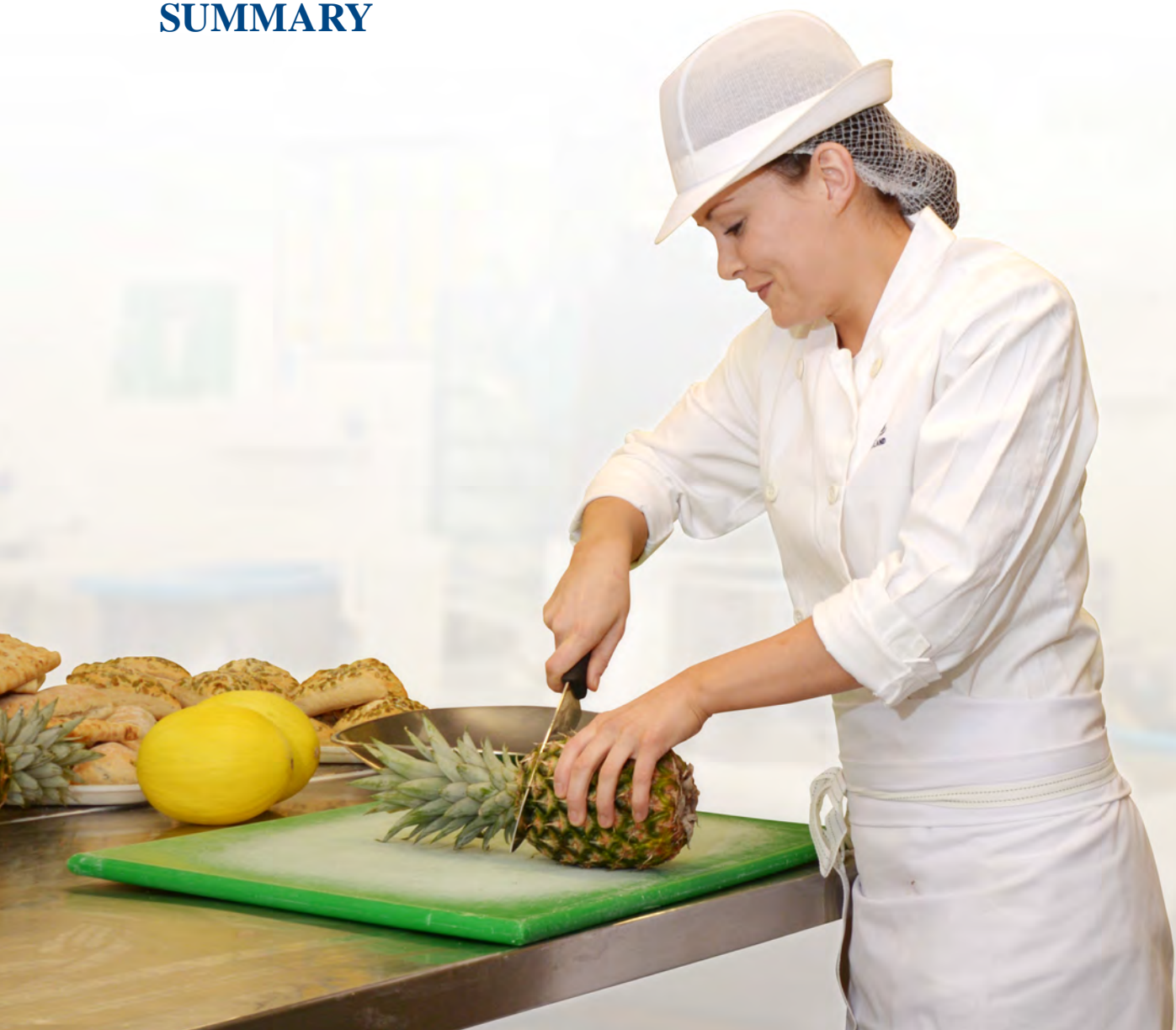


FOOD MATTERS

OUR FOOD, OUR HEALTH, OUR CARE

NHS Lothian Catering Strategy 2014 – 2024

SUMMARY



“Good food is at the heart of good care.”

OUR VISION FOR CATERING

Food matters because good food helps people in hospital get better, more quickly. A good diet keeps you healthier and buying food locally supports local farmers and businesses and as a result helps sustain better standards of living.

The Strategic Plan for NHS Lothian – Our Health, Our Care, Our Future, sets out the way forward for us. It challenges us to improve choice and look after each person’s needs - be more person-centred and at the same time help reduce waste. Along with this, Scottish Government wants to become a Good Food Nation and has said that Public Sector Caterers are really important in making this happen.

Providing tasty and nutritious meals for our patients, carers, staff and visitors and supporting local food suppliers is the best way to take this forward.

Over the past few years we have worked hard to improve the quality of our catering across NHS Lothian. We currently produce food from six kitchens but we are reaching the limits within these. We need to plan for fewer but more modern kitchens.

On some of our sites, including the Royal Infirmary of Edinburgh, catering is provided by contractors and we need to make sure that this catering strategy is delivered on these sites, and consider whether the catering being provided by contractors is the appropriate model for the long term.

ESSENTIAL FOR SUCCESS

- Nutritious and tasty meals that people enjoy
- Well trained, committed and motivated staff
- An efficient and effective service
- Suitable kitchens and dining spaces
- Future investment for equipment replacement
- A joined up approach to delivering
- Our Health, Our Care, Our Future and link with other strategies that involve food
- Championing fresh, local and sustainable food.

“Eat well to get well and stay well.”

GOOD FOOD HELPS PEOPLE GET BETTER

A meal can have all the right nutrients in it, but if it is left uneaten the nutritional content doesn't mean a thing.

This means getting the basics right every time and for catering this means understanding the importance of food in getting better and staying healthy. This applies to the whole population whether they are our patients, carers, staff, or anyone living in the region.

It's as simple as making sure we offer the right food choices at the right time and assist patients to eat.

Food needs to be served in lots of different places.

Meals or snacks will be more freely available to suit when people are hungry, rather than just at meal times.

“We aim to help prevent illness by strengthening healthy lifestyles initiatives”

**NHS Lothian
Strategic Plan**

THE IMPORTANCE OF QUALITY

The main reason for having a Catering Strategy is to ensure everyone is working towards the same aim - the provision of the highest quality, most nutritious meals and improving patient choice and experience.

Quality means different things to different people and our aim is for this plan to meet the needs of the whole population we care for.

Over the past few years we have improved the quality of our meals by creating recipes that use local, fresh ingredients. We want to build on this.

The feedback we have received from patients tells us that meals are a really important part of the day and that delicious meals that look appetising can make all the difference.



“The right food at the right time.”

“We recognise and value the importance of our staff.”

OUR STAFF

This strategy will only work if we have a skilled and committed group of staff. This is not limited to catering staff but also involves dietitians, porters, nurses and domestic staff.

We will work with other public sector organisations to recruit and train local people who can carry out the range of jobs that will make up the service and who want to be part of this exciting change.

We will replace staff who are promoted, move on or retire on an ongoing basis with others who also have the values that we look for in our staff and who show they want to make a difference to patients' lives.

In return for this level of staff commitment we will offer a range of long term fulfilling careers which will include opportunities for promotion and development.

We are a family-friendly employer and have good relationships with staff side organisations; we will continue to build on this strength and are committed to working hand in hand to turn this plan into reality.



WHAT DOES THIS MEAN FOR OUR PATIENTS?

Our Health, Our Care, Our Future uses four characters, representing different groups of people who use our services and have different needs. We are using these characters to understand what our catering strategy must deliver to patients in these groups.

Hannah

*Adult patient aged
16 and 74*

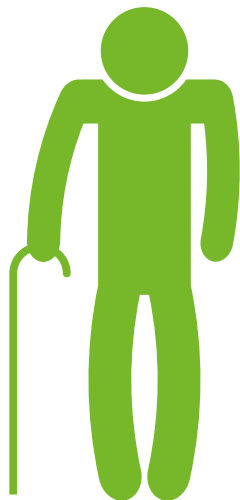


Hannah has many long term conditions and represents **56%** of A&E admissions

We would encourage Hannah to choose healthier options, more fresh fruit and fewer biscuits.

Scott

*Patient aged
over 74*

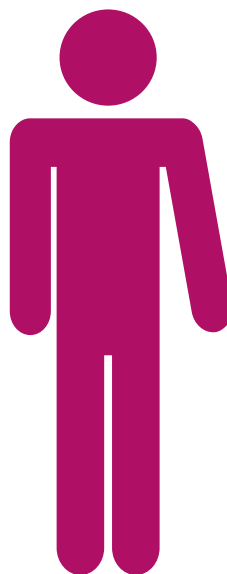


Scott is frail and has long term conditions. He represents **33%** of A&E admissions

We will provide Scott with a range of high energy, high calorie options.

Callum

*Adult patient
aged between
16 to 55*



Callum may have mental health problems. He represents **11%** of A&E admissions

We will make sure Callum has a regular, balanced diet, with choices he prefers.

Sophie

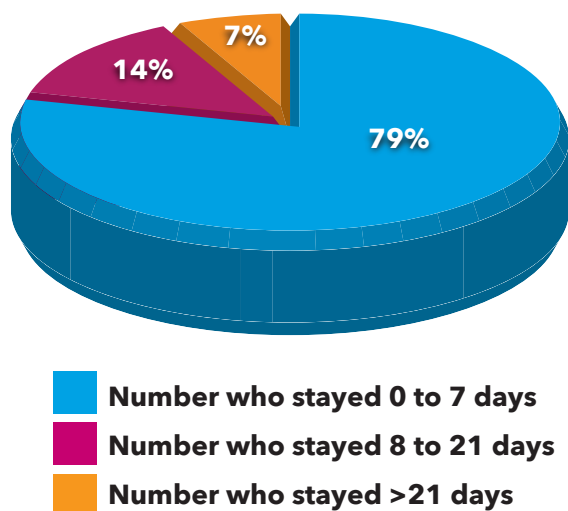
*Child patient
aged under 16*



Sophie represents **11%** of under 16 A&E admissions

We will include dishes popular with younger people, with the right portion size and allow Sophie to eat at a time that suits her.

“Every bite counts.”



We will encourage people to choose food that is healthy for them. Some patients have very specific and complex nutritional needs and our dietitians help us look after their needs. We design our menus carefully to make sure there are choices available to meet the needs of each individual whilst taking account of the needs of our patients. Our menus rotate on a three week cycle, giving our patients a variety of meals to choose from.

DIET AND HEALTH

Within the Lothians, we are part of a growing and ageing population and we are caring for people with more complex needs.

Poor diet is one of the main causes of ill health in Lothian. In general we eat too much and our diet has too much sugar, salt and fat. We all need to work together to address this.

We are a Health Promoting Health Service and our restaurants, shops and coffee shops already provide a wide choice of healthy options and we want to help patients, carers, staff and visitors eat well by providing a better and healthier range within our dining rooms and coffee shops.

This can always be improved and we want to expand and develop the availability of fresh, healthy products in our hospitals.

64% of adults in Scotland are overweight or obese.

Scotland is fifth in the world obesity league table.

The amount of fruit and vegetables eaten by the poorest people in Scotland has fallen by 20% since the recession.

The cost of dealing with obesity in Scotland in 2008 was £457 million and will rise to £3 billion in 2030 if nothing is done.

“Working in partnership to support local businesses, reduce waste and our carbon footprint.”

THE ENVIRONMENT AND THE ECONOMY

Our catering strategy has a wider impact than just what happens in our hospitals

Latest figures show over a year 48% of food used in the Scottish public sector was from Scotland.

We currently serve around 9,000 meals for inpatients every day. In addition we provide day patients and staff meals, taking the total to over 10,000 meals a day. By using local suppliers we will be supporting local jobs and local farmers.

We want to make sure that we make the most of this opportunity; in this way we will reduce the food miles to the lowest possible level. To achieve this we have joined forces with our partners in local councils and the Soil Association Scotland (www.soilassociation.org).

The food and drink industry uses lots of energy and water, making it one of the biggest carbon producers in Scotland. We believe that designing and equipping new kitchens will help reduce how much gas and electricity we use, having a positive impact on the environment.

OUR MONEY

We currently spend around £8M a year on our catering service. Our 10 year plan can give us improved quality and save up to £1m. To make sure we can afford this, savings will be made by cutting down on the waste that comes from having lots of kitchens and duplicated effort. We will look for other opportunities to influence the provision of good food with other public sector organisations. The money saved will go towards funding other health service improvements.

It is our intention to get the best value for our money by making sure that everyone involved has the same aim, if possible, keeping this wealth either in the Lothians or within Scotland.

Results on how to buy food for schools has been shown to provide a wider value in terms of health, social benefit and environmental outcomes

*Becoming a Good Food Nation
June 2014*

“Provide best value for money.”

This strategy will precede an action plan which will develop the preferred model. This could take the form of a hub or hubs, which would be our main kitchens, where food and special diets would be created, prepared, cooked and packaged for delivery to the ‘satellites’, our sites where meals would be plated and served. Cold items such as sandwiches, salads, service would be freshly and locally prepared.

- We work to help people live longer, healthier lives no matter who they are or where in the region they live.
- Care must be of the highest quality and patients have to be involved in the decisions that affect them.
- We must be more efficient.

Our Health, Our Care, Our Future

WE’VE ALREADY DONE QUITE A BIT... WHAT’S NEXT

April to June 2015

Continue to meet with staff, patient groups, public, partner organisations to discuss options, cost options, prepare a business case.

June to July 2015

Feedback from engagement and incorporate into plan.

October 2015

Lothian NHS Board to approve final catering strategic plan.

YOUR VIEWS

This summary offers you the opportunity to comment on our catering strategy.

It has to be right for you and for the people you care for.

Please tell us if:

- you agree with our vision
- if the strategy addresses the most important issues
- we have missed anything? If so what?
- you have any other comments.

Further information

You will find fuller details on our proposals including our reasons for improvement in the main Catering Strategy document at:
www.nhslothian.scot.nhs.uk

Email us at:

cateringstrategy@nhslothian.scot.nhs.uk

Or write to:

**Catering Strategy
NHS Lothian, Waverley Gate
2-4 Waterloo Place, Edinburgh, EH1 3EG**

Engagement period runs until 19 June 2015

National Catering Production Strategy

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EXECUTIVE SUMMARY

NHSScotland spent in the region of £86m delivering food services in Scotland in 2013/14 (figures specifically commissioned for this programme of work). We delivered 48,000 meals per day, employing the equivalent of around 2,181 full time staff from 99 locations (Ref 1).

National Catering Production Strategy for NHSScotland has been developed around the key points highlighted below.

1. National Catering Production Strategy sets out a framework for the development of catering production services across Scotland for the next decade. It is designed to give an evidence-based, perspective of why change is needed and what direction that change should take.
2. The NHS in Scotland has successfully made progress against many of the challenges to our nation's health and healthcare. National Catering Production Strategy aims to support these key improvements in Healthcare provision in Scotland.
3. *"The health of the population of Scotland is poorer than in many other European countries, but will continue to improve with national initiatives to support healthier lifestyle choices".* Better nutritional standards within the NHS should contribute to this improvement.
4. Despite the success of the National Health Service in Scotland, there are challenges that need to be addressed if we are to meet our aim of providing a first-class health service for the future.
5. We know that we, on average, tend to live longer will result in an increasing number of older people. While many older people will enjoy better health and nutrition than their predecessors did at an equivalent age, they will still have significant health needs.
5. We also know that the NHS in Scotland is at present challenged by a number of factors. We know that many of the current experienced catering staff in the service may retire in the next 10 years and that the skill set required to deliver the proposed service will alter.
6. As a result of the financial challenges being faced around the world, there will be constraints on what can be achieved with anticipated future resources. National Catering Production Strategy proposes that a continuous drive to deliver catering services of the highest quality and value is a more important and appropriate way of managing resources than an isolated focus on finance.
7. National Catering Production Strategy describes the rationale for a concentration of resources in centralised production facilities which will release resources to be utilised in front line patient care delivering a more person centered care.
8. The proposed service model aims to deliver safe, consistent, high quality food from (four) central production unit locations (CPUs) across Scotland operated by NHS Staff. The service model would be based around frozen meal to hospital locations

for onsite finishing by NHS staff. This service will provide a range of meal options to meet the needs of all patients and staff across Scotland.

9. National Catering Production Strategy has shown from initial high level analysis, that over a 10 year period, cumulative operational running costs are estimated to reduce from £847.4m to £786m, an estimated cost reduction of £61.4m. This requires an estimated capital expenditure investment of £34m and could potentially release resources over a 10 year period of £27.4m to be reinvested in patient care.
10. National Catering Production Strategy suggests a phased approach to change. The initial phase involves the introduction of a number of regionally based catering production units which can deliver safe, nutritious food to wider geographical areas and potentially other public service user groups. The Strategy proposes a “proof of concept” based on NHS Lothian **Our Food, Our Health, Our Care NHS Lothian Catering Strategy 2014 – 2024** which has identified an immediate need for change to its current catering production facilities. This “proof of concept” will provide an exemplar model for further regional production centers.
11. It is recognised that in some sections of the media and caterers, it is perceived that food produced with a cook serve model is a better product than either cook freeze or cook chill. Our research evidenced that (following a Literature Review and Blind Tasting) there is no one catering production system that is either better or safer than any other.
12. It is essential to take forward planning and delivery locally, regionally and nationally. Whilst recognising the benefits of a “Once for Scotland” approach. Planning and delivery within geographical and/ or other boundaries may no longer deliver what is needed; planning and delivering services for and across populations, regardless of locality, is key. We must increase the collaborative working that is the hallmark of the NHS in Scotland. The potential future service configurations as a consequence of the integration of health and social care will be a part of this.
13. National Catering Production Strategy describes the advances that can be made by harnessing technology – both in catering production and resource control, to support standardisation of processes where they should be standardised, and to enhance food safety.

NHSScotland will increasingly become an organisation that is driven by enhanced interpretation of data, and better use should be made of this data to support service improvement and performance management. The original Initial Assessment (IA) was based on the assumption that a National Catering Information System and Bedside Electronic Patient Meal Ordering System (NCIS/BEPMO) would be implemented in all A1 and A2 hospital locations. This development still requires to be progressed to achieve maximum service efficiency. In addition, menu harmonisation would be an essential element of catering services across Scotland. As we become more able to draw conclusions from “big data”, we should be able to enhance the production of food which is nutritionally compliant and consistent across NHSScotland.

14. Acknowledging that the quality of services is related to the quality of our workforce, National Catering Production Strategy describes the development of skilled staff, working effectively in multidisciplinary and multi-organisational settings to deliver catering excellence.

15. In summary, National Catering Production Strategy sets out the case for:

- delivering a safe, nutritious, compliant, high quality and consistent catering product across the whole of NHSScotland
- delivering national menu harmonisation structure across NHSScotland
- developing cook freeze, regionally based catering production units, operated by NHS staff
- enhancing and promoting the image of patient catering services both within the NHS and to the wider population in Scotland
- caterers having greater responsibility for catering services, moving the service closer to the patient
- providing high quality, proportionate, effective and affordable catering services
- transformational change supported by investment in catering facilities and IT systems.

WHY DO WE NEED A NATIONAL CATERING PRODUCTION STRATEGY?

Compelling Case for Change

The case for change is based on the need to develop sustainable services that align to the NHSScotland quality ambitions of a person-centered, safe, and effective service.

Catering services in NHSScotland aspire to achieve high standards in catering. They are provided within an industry leading policy and guidance framework, meeting many of the challenges placed upon them in the past. However, there are a significant number of challenges and drivers which future healthcare catering services will need to address to maintain and enhance the reputation of the service.

The NHS in Scotland has successfully made progress against many of the challenges to our nation's health and healthcare. National Catering Production Strategy aims to support these key improvements in Healthcare provision in Scotland.

"The health of the population of Scotland is poorer than in many other European countries, but will continue to improve with national initiatives to support healthier lifestyle choices". Better nutritional standards within the NHS should contribute to this improvement. (REF1)

The compelling Case for Change for NHSScotland catering production service improvements is based upon the points below relating to the current service:

- Multiple (five) Catering Service Models i.e. conventional cook freeze, cook chill, hybrid and delivered meals.
- 99 food production locations across NHSScotland.
- Inconsistent and variable levels of service including no national menu harmonisation delivery.
- Variable actual costs per patient day (from £8.39 to £20.12 with the average £10.95).
- Deteriorating state of catering estate facilities and equipment across NHSScotland.
- Consistency of compliance with market leading, catering and nutrition specification/ standards (Food and Hospitals 2016, Food, Fluid and Nutritional Care Standards 2014).
- Challenging fiscal pressures.
- Need for a National Catering Production Strategy.
- Increasing pressures in recruiting skilled production staff.
- New food legislation requirements.
- Increasing media and public attention in hospital food.
- Increasing desire to localise Scottish food procurement.
- The need to provide appropriate financial information on the catering service to allow informed, up to date and accurate decision making.

The context of healthcare catering is illustrated in Fig 1.

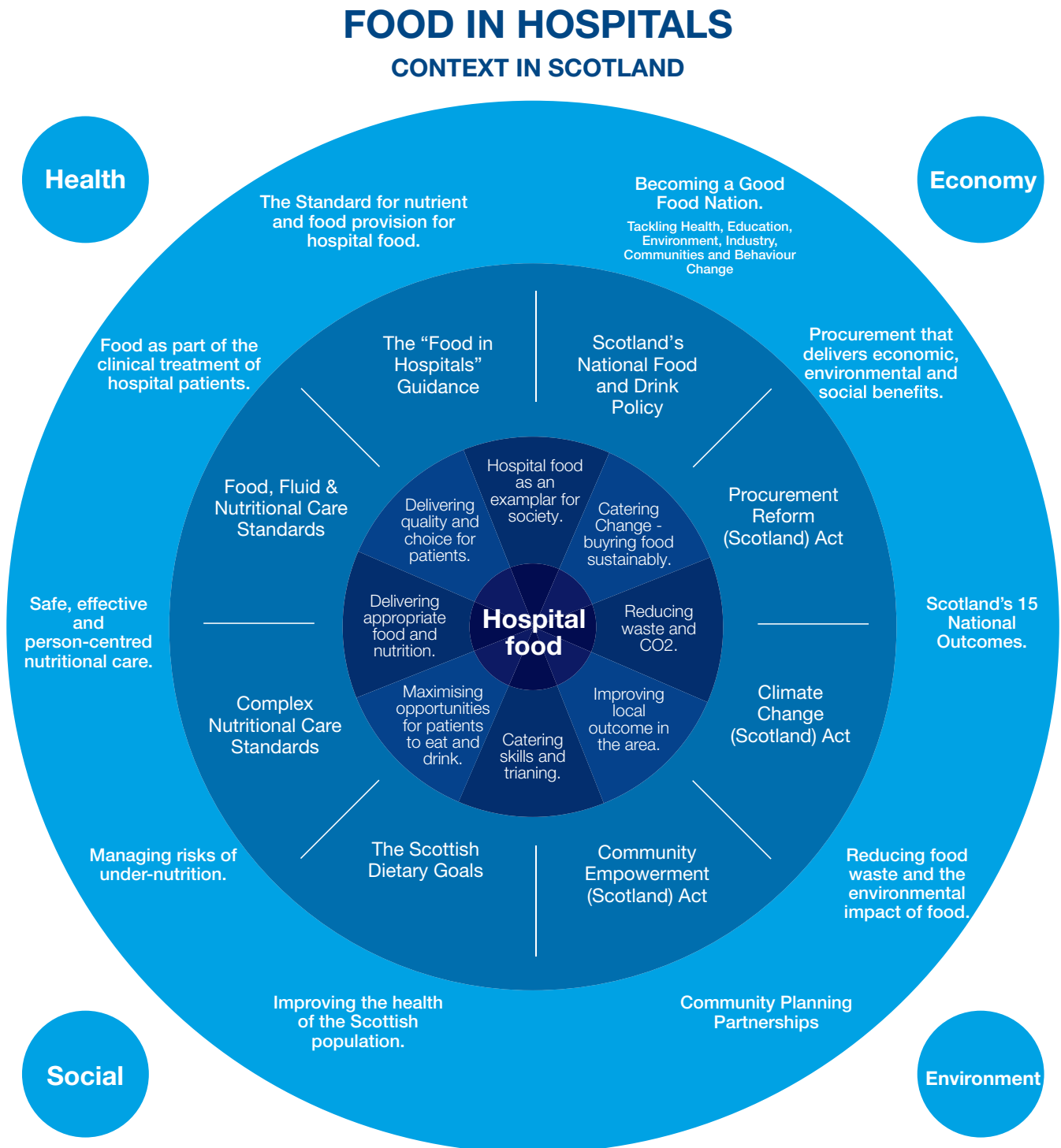


Fig 1 Hospital Food in Context

National drivers

There are a number of national drivers in terms of policies, strategies, reports and national context which the proposed plan supports. These in summary include:

- **NHSScotland Shared Services:** will be managed Once for Scotland and delivered in a consistent way where it is appropriate to do so.
- **2020 Vision “Achieving Sustainable Quality in Scotland’s Healthcare”:** focus on achieving the highest standards of quality and safety, with the person at the centre of all decisions (Ref 2).
- **The Healthcare Quality Strategy for NHSScotland:** alignment with the three quality ambitions (person centered, safe, and effective) (Ref 3).
- **NHSScotland Efficiency Framework for SR10:** improving quality and efficiency through a developed workforce, adopting good practice, and reducing variation, waste, and harm (Ref 4).
- **The Christie Commission On The Future Delivery Of Public Services Report:** “we must prioritise expenditure on public services which prevent negative outcomes from arising” (Ref 5).
- **Integration of Health and Social Care The Public Bodies (Joint Working) (Scotland) Act 2014** (Ref 6).
- **CEL 46 (2008) Outsourcing of Soft Facilities Management in NHSScotland:** NHSScotland are responsible for direct delivery of clinically related soft facilities management services, with any new arrangements exempt from contracting or outsourcing (Ref 7).
- **NHSScotland National Catering and Nutritional Specification for Food and Fluid Provisions “Food in Hospitals”:** National Catering and Nutrition Specification revised Mar 2016 (Ref 8).
- **Healthcare Improvement Scotland, Standards for Food, Fluid and Nutritional Care 2014:** “these standards can be used to reinforce national consistency and food, fluid and nutritional care across Scotland” (Ref 9).
- **The Food Safety Act 1990:** “provides a framework for all food legislation in Britain” (Ref 10).
- **Compliance with Regulation (EU) 1169/2011:**, identifying food labelling/allergens (Ref 11).
- **Scotland’s National Food and Drink Policy 2009:** “by 2025 people from every walk of life, will take pride and pleasure in the food served day by day in Scotland” (Ref 12).

Local drivers

There are a number of local drivers specific to the catering production services in terms of policies, strategies, reports and local requirements which these proposals support.

These include:

- **Strategic Review of Soft Facilities Management:** acting on recommendations to produce a business case for the re-provision of Catering Production facilities across NHSScotland that moves to best practice and standardisation and makes best use of assets.
- **Service model and site variations:** minimising variances where appropriate in the move towards a national catering production Strategy.
- **Varying levels of cost and service configuration efficiency:** improving productivity and achieving efficiency savings by moving to an optimal model of service delivery.
- **Varying condition of the catering production facilities:** the catering production facilities are ageing and are in need of upgrade or replacement.
- Based on NHS Lothian's Strategic Review **"Our Food, Our Health, Our Care NHS Lothian Catering Strategy 2014 – 2024"** (Ref 13) which has identified a need to change its current catering production facilities and recommending a cook freeze model. It is suggested that a "proof of concept" be undertaken to provide an exemplar model for further regional production centers.

Case for change

Moving to delivery through an optimal model of service ensures an appropriate catering service is in place that contributes to the overall sustainability of wider NHSScotland services. The key service needs are outlined below:

- Best practice and standardisation which minimises variances where appropriate and aligns with the strategic direction of travel to ensure equity of service across NHSScotland.
- Delivering a consistently safe and nutritious choice for patients and non-patient catering across Scotland.
- Delivering services in modern fit for purpose facilities within capital allocation, addresses backlog maintenance issues, supports new ways of working, and improves health and safety of the workforce.
- Improving productivity and realising efficiencies that reduces the overall cost per unit generates costs savings that contribute to the sustainability of the service and wider NHSScotland.
- Developing and retaining a skilled and motivated workforce has positive impact on staff and ensures the productivity and sustainability of the service.
- Providing capacity with sufficient contingency arrangements to flexibly respond to frontline service demand ensures the service is effective and aligned with the delivery of person-centered care.

Proposed service model

The proposed service model aims to deliver safe, consistent, high quality food from (four) central production unit locations (CPUs) across Scotland operated by NHS Staff. The service model would be based around frozen meal to hospital locations for onsite finishing by NHS staff. This service will provide a range of meal options to meet the needs of all patients and staff across Scotland.

WHAT IS GOING TO CHANGE?

NHSScotland need to change the way catering production works

National Catering Production Strategy identifies an ambitious and radical change over a period of 10 years to catering production services across NHSScotland. The key outcomes from adopting this Strategy will be:

- Standardisation of food quality and an improved more consistent service to patients, staff and visitors.
- The elimination of an ageing catering estate in a number of NHS Boards.
- A reduction in the wide variations in service modelling, quality and choice.
- The reduction in highly variable costs per patient (food and labour).
- The reduction in high volumes of food wastage in some NHS Boards.
- Compliance with increasingly onerous food safety and standards legislation e.g. Hazard Analysis Critical Control Point System (HACCP) and food labelling/allergen regulations.

- Managing potential future skill shortage resulting from changing demographics of catering production staff and recruitment pressures.
- Releasing resources for frontline patient care.
- Eliminating catering subsidies for non-patient catering.

It is recognised that parts of the media and a number of caterers wish to retain a production model based on a traditional cook serve methodology and this vocal lobby finds resonance with certain groups within Scotland, that food produced by a cook serve process is a better than that by either cook freeze or cook chill. The reality is that (following a Literature Review and Blind Tasting) there is no one catering production system that is either better or safer than any other. In fact many of the cook serve operations utilise significant volumes of frozen products within their normal “conventional” food production.

It is proposed that the optimum way forward is to develop a “proof of concept” for the production of cook freeze facilities. NHS Lothian, which has an immediate need to upgrade its predominantly conventional catering facilities, has already conducted a review and produced a local NHS Lothian Catering Strategy (Ref 13). This Strategy, based on a move to cook freeze production, has already undergone public consultation. As this is in line with the NHSScotland Catering Strategy, early discussions have strongly indicated a desire to work in partnership to use NHS Lothian as this “proof of concept”.

National Catering Production Strategy for NHSScotland strongly recommends the need for the regional catering production units to service an area wider than those of any current individual NHS Boards. It is essential, for the Strategy to derive maximum benefits, that it has the capacity to meet current and potential future demands.

The proposals of National Catering Production Strategy apply essentially to those NHS Boards planning new builds, or requiring to redevelop their catering estate or equipment. Those Boards that already have existing catering production arrangements that are fully compliant with all guidelines and legislation, and/or where there are

substantive reasons for maintaining their existing arrangement, would not be expected to change their service model in the short to medium term. This may for example apply to the Island NHS Boards.

National Catering Production Strategy describes the rationale for a concentration of resources in centralised production facilities which will release resources to be utilised in frontline patient care delivering a more person centered care.

We also know that the NHS in Scotland is at present challenged by a number of factors. We know that many of the current experienced catering staff in the service may retire in the next 10 years and that the skill set required to deliver the proposed service will alter.

We're going to ensure a Once for Scotland approach

National Catering Production Strategy recognises that Shared Services will be managed Once for Scotland and delivered in a consistent way where it is appropriate to do so. It is based on these aims.

NHSScotland Shared Services will:

- Transform the way support services are delivered by integrating services and working across boundaries.
- Support Scotland's health with a sustainable, consistent and effective service which meets service user's requirements.
- Be fully accountable to their service user's for the quality and effectiveness of their services.
- Exploit economies of scale to increase efficiency, reduce costs and maximise returns from continuous improvement.
- Embed governance to set strategic direction, prioritise service improvements and resolve day to day issue.

National Catering Production Strategy will:

- Improve quality of food and patient experience by providing a service closer to the patient, with food that is produced from nutritionally analyzed recipes. Moving the service as close to the patient as possible to enhance their requirements in terms of choice, timings and suitability.
- Introduce new opportunities for the Scottish supply chain to achieve enhanced social, economic and environmental outcomes through food. There is a desire for as much of the food utilised in any future NHS catering production system to be sourced as close to the method of production as possible. It is essential that any food producers (wherever based) need to be able to meet the current and future NHS procurement specifications.
- Assist in maintaining jobs security. There will need to be a re-training programme for production staff who will need to develop new skills. Any productivity gains will be from natural wastage, not compulsory redundancy. Any displaced staff at the individual hospitals/sites could be reallocated to ward based patient facing roles. NHS Boards would be required to review existing workforce plans to reflect these changes.
- Acknowledging that the quality of services is related to the quality of our workforce, National Catering Production Strategy describes the development of skilled staff, working effectively in multidisciplinary and multi-organisational settings to deliver catering excellence.
- Release resources to move the catering service closer to the patient and most importantly ensure the delivery of safe food on a consistent basis to all patients across Scotland.

Key Operating Principles of the National Catering Production Strategy

Listed below in table 1 are the key operating principles that will be applied to National Catering Production Strategy.

Operating Principle	Assumption
NHS Only	The Strategy initially only addresses the needs of the NHS client base, whilst recognising that the integration of health and social care along with the shared services agenda's should be understood in terms of future proofing.
Menu Harmonisation	Standard practice will be that all patients are offered a consistent menu choice across NHSScotland from an approved suite of menus.
Safe Food (allergens)	Information technology is an important tool in protecting both the patient and the caterers in terms of having nutritionally analysed standard recipes for all products detailing the 14 Allergens identified in current legislation.
Cook Freeze	Food will be cooked by conventional means and rapidly frozen. Food produced will be held at -18C or lower so that it has an enhanced shelf life.
Phased Approach	There will not be a definitive date by when all production in NHSScotland will come from a defined source of production. It will be a phased approach, following proof of concept in NHS Lothian.
Staff and visitor dining	Hospitals will provide a "reworked" model of retail and visitor catering services that are commercially viable.
Staff and Employee considerations	The proposed changes will comply with all NHSScotland guidance and policies including CEL 46 (2008), (Outsourcing of soft facilities management services in NHSScotland).
"Manage the catering service closer to the patient"	NHS Board Catering Leads and staff will have a greater role in the entire catering journey.
Food Procurement	Endeavour where possible to engage and utilise Scottish Small/Medium Enterprises (SME's) food producers in NHSScotland catering food procurement.

We're going to change the way the NHS Scotland catering production works through introducing more new technology

The original IA was predicated on the implementation of proven IT systems which were to be implemented to reduce food wastage and enhance the patient meal experience. The implementation of NCIS/BEPMO still requires to be progressed to fully achieve these aims.

WHAT IS REQUIRED TO REALISE THE STRATEGY?

The development of the IA involved a series of Workshops and consultation which identified that to deliver National Catering Production Strategy the following will be required. These are outlined below:

Availability of investment capital and revenue streams - to maximise the potential benefits from the proposed food production system for NHSScotland it will be dependent upon suitable and adequate capital investment and future reasonable revenue stream funding.

Adoption of IT systems - improves quality of data and reduces the risk of over production and waste. All identified IT requirements within the Strategy assume that there is a consistency and capacity to adopt across NHSScotland. This will link in with any future eHealth Facilities Strategy.

Reliance of supply chain - to maximise the quality and benefits imbedded in the future food production model it will be essential to ensure that all supply chain partners (both local and national) are fully engaged in the process.

Multidisciplinary approach with other NHSScotland staff involved in patient catering services - the success of National Catering Production Strategy will only be realised if the whole NHS “team” involved in feeding the patients are engaged and supportive of the whole process, caterers alone cannot deliver the Strategy.

Effective communication Strategy - at present there are some deeply held views by both NHS staff and the general public about hospital food. National Catering Production Strategy identifies that it is essential to have the public and NHSScotland staff perceive a valued, quality food service across NHSScotland. An effective, consistent and strong communication Strategy requires to be developed across Scotland.

Effective project planning and implementation - it is likely that some of the proposed changes to food production across Scotland will involve major build or refurbishment project and it's essential that these schemes are effectively managed in a timely and competent manner.

Shared NHS Boards' vision - it is essential that all NHSScotland NHS Boards sign up to and agree with the whole Strategy and do not “cherry pick” parts of it that suit themselves and their local agendas.

Effective Staff side engagement - it is likely that there will be significant changes in the future delivery of food production for catering services across Scotland and it is imperative that all staff are engaged in these changes as it could provide some real opportunities for re-training, re-skilling and re-educating essential frontline catering staff. It is hoped that the improved working environments will be seen as a significant benefit to certain staff.

Management of risk - it is essential that the “risk” factors associated with any future food production across NHSScotland will be identified, recorded and managed at an early stage in any changes.

National reporting and monitoring - any future Strategy for food production across NHSScotland must be dependent on a rigorous, fair and robust monitoring and auditing system that measures the consistency of all catering services against the agreed National standards.

Improved Logistics and Sustainability

Requirements - it is essential that any proposals around the future configuration of food production across Scotland takes full account of the transportation issues involving logistics, costs and sustainability responsibilities and targets.

Ability to provide conformity on a consistent manner to Food, Fluid and Nutritional Care (FFNC) Standards 2014 - any future food production model must be able to fully support the current requirements of the FFNC Standards including, special, cultural and therapeutic diets.

Business Continuity - it is essential that any future National Catering Production Strategy is able to provide robust business continuity arrangements to ensure a continuous supply of food to NHS patients and staff.

Finances - this all requires to be delivered within the context of the toughest public expenditure conditions faced in a generation. The Scottish Government’s discretionary budget will be around 12% lower in real terms in 2019-20 than it was in 2010-11. Despite this pressure, health spending continues to be protected, with health resource spending in Scotland set to rise to a record level of £12.4 billion in 2016-17.

National Catering Production Strategy is primarily about improving the value delivered by catering production services. Improving value by providing reliable services that are proportionate to need, safe, effective, person centered and sustainable will increase value for patients, and is likely to stabilise costs.

National Catering Production Strategy has shown from initial high level analysis, that over a 10 year period, cumulative operational running costs are estimated to reduce from £847.4m to £786m, an estimated cost reduction of £61.4m. This requires an estimated capital expenditure investment of £34m and could potentially release resources over a 10 year period of £27.4m to be reinvested in patient care.

Implementation

It is clear that the proposed strategic direction cannot be implemented across the whole of Scotland on the same date. Therefore a phased implementation would be the optimal approach.

A “proof of concept” approach would be used in NHS Boards with immediate requirements to invest in their catering infrastructure e.g. NHS Lothian.

Evidence of the adoption of this technology is seen already by for example NHS Greater Glasgow and Clyde which is already committed to the proposed cook freeze service model.

CONCLUSION

National Catering Production Strategy sets out the need for significant change in order to adapt to changing circumstances.

These Initiatives are complex, and reflect changes to legislation, policy and guidance related to food production, patient and staff catering; workforce skills and resources; potential outcomes and finance. It will require careful, yet thorough conversations within NHSScotland, the public and their representatives. However, failure to transform NHSScotland will limit the potential to build on the industry leading standards of patient catering services in Scotland and the reduction of wastage costs.

The aim of National Catering Production Strategy is to provide patients, visitors and staff with quality meals and reduce current variances across NHS Scotland. The Strategy is intended to improve upon current standards and in some cases offer a wider choice than currently available. Our aim is to improve the catering services that are proportionate to need, safe, effective, person centered and sustainable production models which is designed to enhance services for patients, with the potential to achieve value for money across NHS Scotland providing the “Once for Scotland” approach.

REFERENCES

- 1: NHSS National Clinical Strategy for Scotland
- 2: Achieving Sustainable Quality in Scotland’s Healthcare August 2012
- 3: The Healthcare Quality Strategy for NHSScotland – May 2010
- 4: NHSScotland Efficiency Framework for SR10
- 5: The Christie Commission On The Future Delivery Of Public Services Report
- 6: Integration of Health and Social Care The Public Bodies (Joint Working) (Scotland) Act 2014
- 7: CEL 46 (2008) Outsourcing of Soft Facilities Management in NHSScotland
- 8: NHSScotland National Catering and Nutritional Specification for Food and Fluid Provisions “Food in Hospitals”
- 9: Healthcare Improvement Scotland, Standards for Food, Fluid and Nutritional Care 2014
- 10: The Food Safety Act 1990
- 11: Compliance with Regulation (EU) 1169/2011
- 12: Scotland’s National Food and Drink Policy 2009
- 13: Our Food, Our Health, Our Care NHS Lothian Catering Strategy 2014 - 2024

APPENDICES

10.1 NHSScotland Catering Shared Services Catering Production Initial Agreement and Appendices

November 2016

6th December 2017

Executive Director of Nursing, Midwifery, and AHPs

FRAGILE SERVICES - THE Lothian Box

1 Purpose of the Report

- 1.1 The purpose of this report is to propose how NHS Lothian should approach corporate portfolio analysis, building on discussions around “fragile services”.
- 1.2 This approach was discussed at both the August and October meetings of the Strategic Planning Committee and the September Board Development session. In these discussions it was proposed and agreed that while the initial application of such an approach was for “fragile services” the logic applied to all services.

2 Recommendations

The Board is recommended to;

- 2.1 Note the background (paragraphs 3.1-3.2);
- 2.2 Note the routes by which services are commissioned (paragraphs 3.3-3.5);
- 2.3 Note examples of fragile services (paragraphs 3.6-3.11);
- 2.4 Approve the definition of fragile services (paragraphs 3.12-3.15);
- 2.5 Approve the methodology outlined described as “The Lothian Box” (paragraphs 3.16-3.25).

3 Discussion of Key Issues

Background

- 3.1 Board members are very aware of the pressures upon all services provided by NHS Lothian and the Health and Social Care sector generally. These pressures include, but are not limited to;
 - Demographic change leading to rises in demand, particularly for services associated with aging;
 - Technological change leading to either a broadening of the service offering, or increased direct costs associated with innovations;
 - Financial pressures associated with rising demands;
 - Demographic pressures in the workforce, as it mirrors the general public;
 - Workforce supply challenges, with medical and nursing supply becoming constrained at the undergraduate level and these constraints beginning to travel upstream.
- 3.2 The combination of these factors alongside the drive to improve quality and access affects all services provided by the NHS and hence by NHS Lothian. NHS Lothian has a range of advantages in recruiting and developing staff, including the attraction of living and working in and around Edinburgh, a relatively strong economic and cultural position, a large tertiary education sector, research and development sectors, and a positive reputation as an employer. These do not mitigate the challenges outlined in 3.1, but they do give NHS Lothian a competitive advantage in maintaining the bulk of its services.

Commissioning of services

- 3.3 NHS Lothian's statutory functions include a mix of planning and commissioning of services, and service delivery. These are different functions which have intertwined over time, and so it may not be completely clear to all how the planning and commissioning is undertaken. Table 1, below, is intended to clarify this;

Table 1 – showing commissioning routes for a range of example health services

Type of service (examples)	Who commissions?	What is the mechanism for commissioning?	Who delivers?
General Medical (GP) services	Integration Joint Boards	IJB Strategic Plans	Health and Social Care Partnerships supported by Primary Care Contracting Organisation
Community services (district nursing, hospital-based complex care, etc)	IJBs	IJB Strategic Plans	HSCPs
Royal Edinburgh Hospital and associated services	IJBs	IJB Strategic Plans supported by Lothian Hospitals Plan	NHSL through Royal Edinburgh Management Team
Hosted services (Chalmers Sexual Health, Astley Ainslie, Community Dentistry)	IJBs	IJB Strategic Plans	Each service is hosted by a particular HSCP
Acute set-aside	IJBs	IJB Strategic Plans supported by Lothian Hospitals Plan	NHSL University Hospitals
Acute services (orthopaedics, general surgery)	NHS Boards	Lothian Hospitals Plan	NHSL University Hospitals
Regional services (oncology, cardiology, neurosurgery, forensic mental health services)	NHS Boards	For Lothian, Lothian Hospitals Plan, for partner Boards, through Regional Planning Group mechanism and financial service level agreements	NHSL
National specialist services which support a population of 5 million – liver transplant, spinal deformity, paediatric intensive care	NHS Boards	National Specialist Services Committee (NSSC) supported by National Services Division	The vast majority of services are delivered by NHS Lothian and NHS Greater Glasgow and Clyde
National specialist services which support a population of greater than 5 million (photon beam therapy, gender reassignment)	NHS Boards	NSSC and NSD	Usually English NHS Trusts, but sometimes international

- 3.4 In addition, some services are directly commissioned by the Scottish Government and provided by NHS Boards. An example would be the Transaortic Valve Implementation (TAVI) service, or the emerging Scottish Trauma Network. NHS Boards have limited control over these.
- 3.5 Table 1 hopefully gives a flavour of the mechanisms and the range of commissioning approaches, and gives a sense to Board of the levers it may have to control service development and commissioning.

Examples of “fragile services”

- 3.6 SPC has received a number of reports and engaged in a number of discussions over the last two years which have focussed in on a range of services which, in retrospect, fit a description of “fragile”.
- 3.7 While NHSL has the advantages laid out in para 3.2, it does have a number of services and areas, where the relatively small, distributed, population of Scotland presents a challenge where conditions are relatively rare (or are becoming rarer). This means that few patients present with certain conditions and where there is therefore less to attract staff members. Specialised staff will wish to see as many of their specialist interest as possible, but there is “only so much to go round” in a small country like Scotland.
- 3.8 There are a range of services that NHS Lothian currently provides which fall into a category which could be defined as “fragile”. These are services where they may be;
- A relatively small number of patients supported and treated. It may be that this number is reducing due to other interventions;
 - Difficulties in recruiting appropriately-trained and skilled staff. This may be due to a lack of staff available, or it could be that other factors, such as being single-handed or working in a very small service, make the opportunities less attractive;
 - A question as to whether these services are essential to the overall clinical model of the service, due to interdependency between services (several of which could meet a description of “fragile”);
 - A change in technology, technique, or standard of care, which cannot be kept pace with;
 - Significant financial issues which make sustainability a significant challenge
- 3.9 At its session of August 2017, SPC received a presentation (appended to this paper) which outlined a range of services where different approaches have been taken to manage the challenges laid down in various services. These include;
- Paediatric Cleft Lip and Palate Surgery;
 - Paediatric Epilepsy Surgery;
 - Burns surgery;
 - Extracorporeal membrane oxygenation (ECMO)
- 3.10 The range of responses has differed in terms of what NHS Lothian has chosen to commission going forward;
- For Paediatric Cleft Lip and Palate Surgery, agreeing to support provision from a single site;
 - For Paediatric Epilepsy Surgery, to argue forcefully for maintenance of the current service and additional investment;
 - For Burns, to agree to commission highly specialist work from elsewhere and not bid to be the national centre;
 - For ECMO, to push NSD to improve performance from English centres
- 3.11 For all of these, however the key considerations have been the *sustainability* of the service, and the level to which these services have been *essential to the clinical model*.

Definition of “fragile services”

- 3.12 At SPC in August and at the Board Development Day, the presentation included the following definition of “fragile services”;
- Services provided to a small number of patients per annum
 - Recruitment of key staff (usually consultant) is difficult/unsuccessful
 - Patients not receiving services to the expected standard (in particular, access)
 - Solutions currently provided locally but alternatives at regional, national, or UK-wide level
 - “Patient-facing” service
- 3.13 To this original list, further discussions have included;
- Services to which some consideration of financial viability needs to be brought;
 - Services which are being considered for establishment which would immediately meet more than two of the other criteria in this list.
- 3.14 The following caveats would need to be applied;
- Definition should usually, but not always, apply to services we already provide;
 - Definition should apply to services we could reasonably expect to provide within Lothian;
 - Number (of patients or interventions) is not defined;
 - May lead to further investment as opposed to commissioning from elsewhere
- 3.15 With this addition, it is recommended that the Board approve this definition for general use across NHS Lothian, and that a “fragile services” register be established, initially around acute services. The Strategic Planning Directorate would work with site teams to develop this register, developing appropriate action plans for review by Strategic Planning Committee for each. These action plans could include;
- Cessation of service;
 - Commissioning of service from elsewhere;
 - Further investment in staff, equipment, or other elements;
 - Or others

Corporate Portfolio Analysis – towards the Lothian Box

- 3.16 The discussion at SPC in August suggested that the approach described could be applied to other services, and indeed all services commissioned by NHS Lothian. If an objective, evidence-based approach could be effectively applied, NHS Lothian would be able to adopt a coherent, repeatable approach to the development of its services and ensure that it “picked winners”.
- 3.17 This approach would find an analogue in comparably-sized private sector businesses as corporate portfolio analysis, with the best-known approach to this being the “Boston Box”. Put simply, the Boston Box would see a business assess its products or businesses by mapping profitability against market share growth.
- 3.18 The conventions associated with the Boston Box would, crudely, call for a business line assessed as low profitability and low market share growth to be ceased, while a high profitability and high market share growth business line would be supported in the most appropriate way – with resource, with marketing, or other.
- 3.19 The use of “private sector” terminology masks the potential usefulness for NHS Lothian (and the Health and Social Care sector generally) of such a structured approach.

- 3.20 The mapping criteria that would be used by NHS Lothian instead of profitability and market share growth would, based on the discussions around fragile services, be *sustainability* and *essential to the clinical model*. In discussions and development of the Lothian Box with clinical, managerial, and financial teams, further consideration has been given to how *sustainability* and *essential to the clinical model* can be defined,
- 3.21 In this conceptualisation, *sustainability* would incorporate the likely availability of staff, the likely justification for service development based on population and disease incidence, the financial cost, and the opportunity cost of investments in these services. In the discussions described at 3.20 this has been clarified to include;
- Vacancy rates within medical staffing;
 - Vacancy rates within nurse and other staffing;
 - Access performance;
 - Financial viability
- 3.22 *Essential to clinical model* would reflect how important any service is to others in the ecosystem within NHS Lothian (and beyond). So, questions to ask would include;
- Do other services require it locally to ensure their own sustainability?
 - Would develop of such a service strengthen other services to be of higher quality, more affordable, or improve access?
 - Is there a strong clinical evidence base for the treatments this service provides?
 - Does local provision have a clear and evidential benefit to patients and families – for example, would travel out of the area have a clear detrimental impact on family life?
- 3.23 The Lothian Box is graphically represented in the appendix, and was suggested to the Board Development Day in September 2017.
- 3.24 Using such an approach would lead to four categories for services;
- **High sustainable, low essential** – where NHSL may choose to decommission or commission from other providers;
 - **High sustainable, high essential** – where NHSL would continue to commission and provide locally;
 - **Low sustainable, high essential** – where NHSL would choose to deploy all possible resources to improve sustainability;
 - **Low sustainable, low essential** – where NHSL would decommission
- 3.25 The applications of the Lothian Box would not be limited to revenue and workforce responses, but also to guide prioritisation of capital, and hence the Lothian Box will play a role in the finalisation of the capital plan.

4 Key Risks

- 4.1 Inherently, this definition of “fragile services” is intended to support the management of risk, whether this is workforce, performance, clinical, or financial.
- 4.2 A broader application through the Lothian Box concept would manage similar risks on a much broader scale. In discussion at the Board Development Day it was noted that this objectivity did not necessarily reflect the subjectivity of the “real-life” environment, but the Board is still charged with making decisions on the basis of best evidence available to manage risk, and this approach would support this.

5 Risk Register

- 5.1 At this point there are no implications for the risk register, but the Lothian Box and the codification of objective evidence and prioritisation against this may help provide further evidence bases for the risk register.

6 Impact on Inequality, Including Health Inequalities

- 6.1 None at this stage. It is envisaged that “essential to clinical model” would have to incorporate the impact on inequalities.

7 Duty to Inform, Engage and Consult People who use our Services

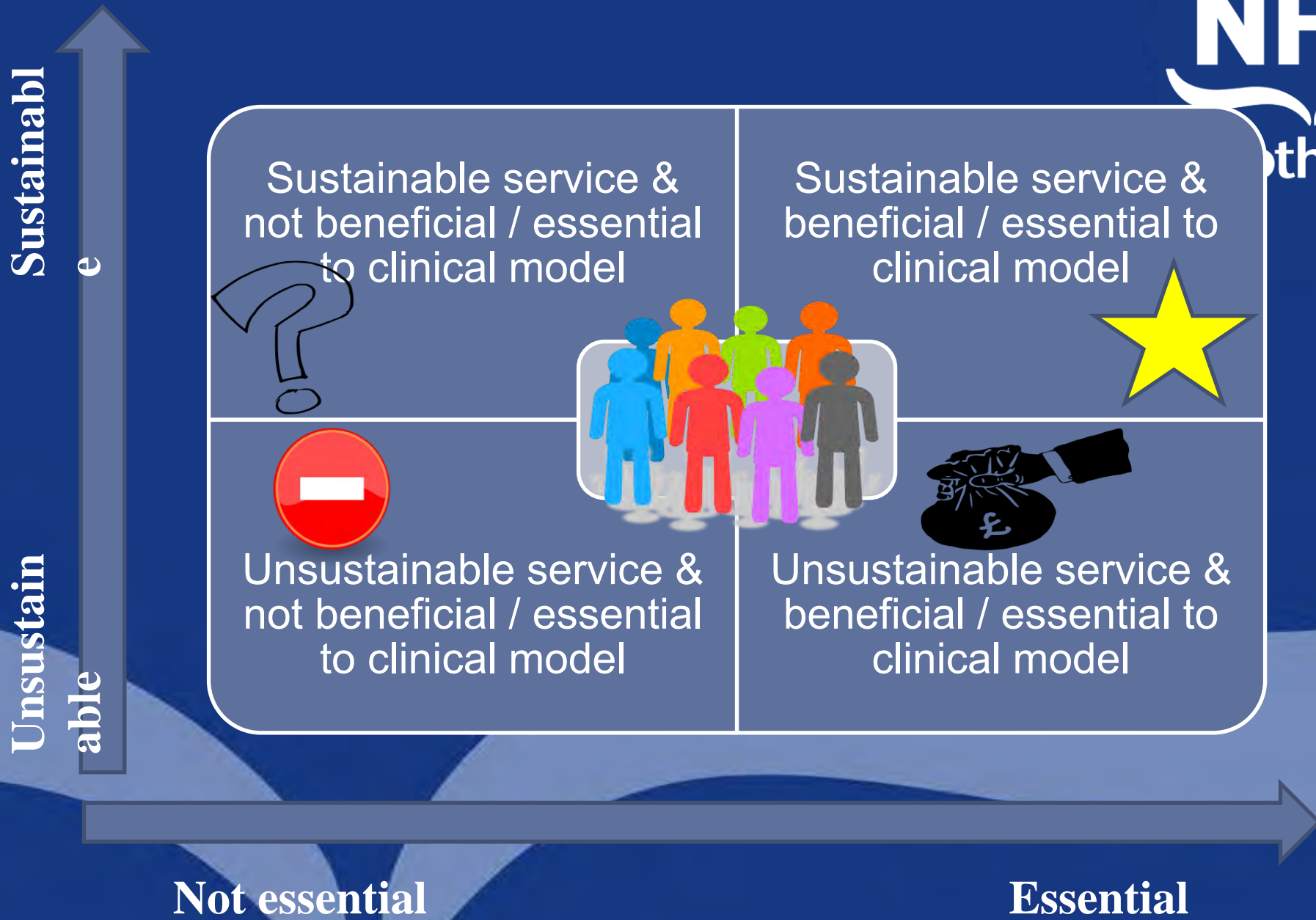
- 7.1 The work behind this paper has been discussed with both SPC and the Board, as well as with clinical and managerial teams and work continues to refine and codify the Lothian Box and what it tells us about our services.
- 7.2 Interest in the Lothian Box has been expressed by neighbouring and national Boards, and by IJB partners.

8. Resource implications

- 8.1 At this stage there are no direct resource implications, as this work is within the auspices of the Strategic Planning and Finance Directorates.

Colin Briggs
Director of Strategic Planning
27th November 2017

Appendix – Lothian Box



PAEDIATRIC PROGRAMME BOARD UPDATE

1 Purpose of the Report

- 1.1 The purpose of this report is to update the Board on the further review by the Royal College of Paediatrics and Child Health (RCPCH) and the Paediatric Programme Board's (PPB) initial response to this report.

Any member wishing additional information should contact the Executive Lead in advance of the meeting.

2 Recommendations

The Board are recommended to;

- 2.1 **Note** the recommendations made by the RCPCH arising from the visit in September 2017 to St John's Hospital (SJH) and the PPB's initial responses
- 2.2 **Endorse** the actions agreed at the PPB on 23 October 2017 following review of the output from the RCPCH visit to SJH in September 2017

3 Discussion of Key Issues

- 3.1 A report by the Royal College of Paediatrics and Child Health (RCPCH) considering acute and general paediatrics in Lothian was received in [June 2016](#). The main issues which led to the review being commissioned were staffing at consultant level in the Acute Receiving Unit at Royal Hospital for Sick Children and staffing of the 'middle grade' out of hours rota at SJH. Both issues presented patient safety and quality of care concerns. The report made 31 recommendations including a number on staffing of the Acute Receiving Unit at Royal Hospital for Sick Children and the paediatric and neonatal units at SJH.
- 3.2 In line with the RCPCH recommendations, a Paediatric Programme Board was established and has vigorously striven to implement the recommendations set out in the original report. Specifically it has focused on implementing "Option 1" as recommended by the RCPCH and supported by NHS Lothian's Board, which is to establish a resident consultant model of service that all consultants at SJH (current and future appointments) should support in principle and in practice. This model retains the 24/7 inpatient service at the children's ward at SJH.
- 3.3 To provide an independent review on progress against the original report the Paediatric Programme Board invited the RCPCH back in summer 2017.

- 3.4 The RCPCH were asked to;
- To review the assumptions and pre requisites that they set out when recommending Option 1
 - To review all the actions taken to deliver Option 1
 - To assess the impact of these actions
 - To detail any changes in circumstances throughout this process
 - To identify any additional actions that could have been taken to implement Option 1
- 3.5 Activity data along with minutes of meetings, correspondence, job plans, risk assessments, and contributions from local political representatives was provided to the RCPCH in advance of their visit. The RCPCH visited SJH on 11 September 2017 and spoke to a wide range of clinical staff, members of the Clinical Management Team for Children's Services and local elected members. Their report is now available and attached as appendix 1.
- 3.6 The most recent RCPCH report reaffirms their view that the continued provision of inpatient paediatrics is the right model for the population of West Lothian, if it can be achieved with sustainable staffing.
- 3.7 However, the RCPCH consider that it is currently neither safe nor sustainable to reopen the paediatric inpatient unit at SJH and they validate NHS Lothian's decision in July 2017 to suspend the out of hour's provision of paediatric inpatient services at SJH.
- 3.8 They note that there is not a "quick fix" to this; rather a three year strategy will need to be developed which includes a minimum staffing threshold at which this can be safely achieved and a realistic timescale. The RCPCH themselves caveat this recommendation with the comment that "if indeed this is possible given the national picture" referring to the challenges faced nationally due to an overall shortage of paediatricians within the United Kingdom. They also warn that "There is a risk that moving back to the 24/7 model too early will put too much pressure on staff, further damaging morale and risking regular closures which is unsettling for the population and for staff."
- 3.9 The RCPCH recommend whilst the development of the workforce takes place to support a 24/7 service, enhancement of the current Short Stay Paediatric Assessment Unit should be prioritised to maximise the numbers of children that can be seen and discharged locally
- 3.10 A workshop was arranged for 09 October 2017 for the PPB and other senior members of the clinical and leadership teams to review the RCPCH report, however the final RCPCH report was not ready in time for this event, therefore the workshop was cancelled.
- 3.11 Subsequently, the observations and recommendations made by the RCPCH were subject to detailed review by the PPB on 23 October 2017. It was agreed that wider engagement events would be required before recommendations on proposed clinical models could be made to the Acute Hospitals Committee and NHS Board.

3.12 The PPB's responses to each RCPCH recommendation are below;

a) The Paediatric Programme Board should prioritise development of a 3-year strategy and action plan towards completion of the recommendations from the 2016 review including those below. Since 24/7 opening of SJH for paediatrics is dependent upon increased numbers of staff, the strategy should set out the minimum staffing threshold at which this can be safely achieved and a realistic timescale

Paediatric Programme Board Response:

The PPB committed to formulating a strategic plan and vision for the paediatric service at SJH. This would include components that will be delivered over 1-3 years, 3-5 years and 5-10 years and each of these components will be risk assessed.

Options for the vision of the service and clinical model will be formulated through the PPB and wider involvement with other key stakeholders at workshops in December 2017 and January 2018. These options will be risk assessed and presented to the Health Board in April 2018.

b) Continue to implement the Advanced Nursing Strategy to include rolling recruitment of trainee and/or qualified APNPs to work across both RHSC and SJH. Support Tier 2 by continuing to strengthen the ANNP cohort.

Paediatric Programme Board Response:

There is an existing commitment to strengthen the Advanced Nursing Workforce as evidenced by recent recruitment efforts.

The PPB agreed that whatever option is pursued, Advanced Paediatric Nurse Practitioners (APNPs) and Advanced Neonatal Nurse Practitioners (ANNPs) will play a pivotal role in the service. However, due to the lack of trained APNPs nationally, there is a need to increase the number of trainee APNPs. Therefore this component of the strategy will take time to implement as each trainee APNPs will require around 4 years of training before being able to work independently. The number of APNPs able to be trained simultaneously is also limited by the number of available consultants to deliver the hands on training. There is a similar issue with ANNPs.

c) Once the strategic plan is developed, strengthen support for the clinical leadership at SJH so all consultants are involved in the decision making and service planning.

Paediatric Programme Board Response:

The Senior Charge Nurse (SCN) of the Children's Ward and three consultants who work at SJH are currently members of the Programme Board. The PPB agreed to extend an invitation to all other consultants who wish to participate on the programme board.

The PPB agreed to review and strengthen lines of communication from the programme board to staff. Staff from all areas will be invited to contribute to the visioning events in December 2017 and January 2018.

d) Monitor closely the statistics and patient 'flows' resulting from the temporary closure, including the items listed in paragraph 4.5.4 and continue to listen to the experiences of families whose children have been transferred. In particular ensure that delays in transfer are not putting patients at risk.

Paediatric Programme Board Response:

The PPB agreed to review what data is available at the weekly huddle when reviewing patient flows and will work with the analytical team where gaps are identified.

A meeting with the SAS occurred early in November 2017 to explore reasons for transfer delays and options to improve these; including reviewing categorisation of ambulance requests and to optimise use of flow centre transport. There is ongoing dialogue with the SAS to monitor impact of these changes and to explore further improvements.

Provision of additional analytical and project management support to aid with this (and the overall programme) will be considered.

e) Maintain and strengthen the current Short-Stay Paediatric Assessment Units (SSPAU) towards full compliance with the RCPCH's guidance, including: A clear agreed SOP for the operation of the unit.

- Agreed pathways for access, referral, admission and discharge.*
- Pathways for shared care with speciality teams.*
- Review availability of support services – pharmacy, radiology and USS.*
- Establish a plan for access to the child's electronic GP record.*
- Review written safety netting information to reflect current status.*
- Review availability of play specialists.*

Paediatric Programme Board Response:

The SCN, APNPs and two consultants from SJH have recently attended a conference on setting up and benchmarking a paediatric assessment unit. A review of different models in place across Scotland, UK and wider will be reviewed and evaluated to support the development of the SSPAU

The Senior Charge Nurse of the Children's Ward in SJH is leading a programme of work aiming to repatriate work from RHSC to ensure where appropriate West Lothian children can be treated at SJH, i.e. Rheumatology infusions.

The development of this component of the service will form part of the vision and strategy set out in recommendation (a).

f) Consider extending the opening hours of the SSPAU to better match attendances i.e. 10am to 10pm or 14 hours to 10pm

Paediatric Programme Board Response:

Again, the development of this component of the service will form part of the vision and strategy set out in recommendation (a), and will be aligned to workforce availability.

g) Explore the expansion of the children's community nursing team towards 24/7 availability to prevent admission/support discharge

Paediatric Programme Board Response:

The PPB agreed that this was integral to developing a high performing SSPAU. Key stakeholders from this staff group will be invited to the visioning workshops in December 2017 and January 2017.

h) Consider, with the Emergency Department team and the Scottish Ambulance Service, whether bypass of SJH by 'blue light' ambulances is appropriate when the SSPAU is not open.

Paediatric Programme Board Response:

A mechanism for this is already in place in the series of patient flow charts covering paediatric referrals to SJH.

i) Review the provision of day surgery at both sites and consider extending provision at SJH to relieve pressure at RHSC.

Paediatric Programme Board Response:

The PPB agreed that this would need reviewed as part of developing the wider vision and strategy for the service. Work is currently ongoing at specialty level exploring how to maximise paediatric day surgery throughput at SJH.

- 3.13 The first workshop will be held on 18 December 2017 and a further workshop in January 2018. The options for the future clinical model will be developed then risk assessed along with realistic timelines detailed, and will form the basis of a report that will be submitted to the NHS Board in April 2018.

4 Key Risks

- 4.1 Based on the original RCPCH review in 2016, NHS Lothian Board committed to recruiting 8 additional consultants to bolster the resident on call rota and to maintain a 24 hour paediatric inpatient service at SJH. Recruiting the full quota of consultants required to ensure a safe and sustainable service has been challenging as there is recognised shortage of paediatricians across the UK, along with the working pattern in the jobs we need to advertise (which includes resident out of hours shifts at middle grade level) is relatively unattractive and there is currently uncertainty about the long term model of service at SJH. N.B. There were no applicants for the 5th round of consultant recruitment, no applicants for the locum post and one of new consultants goes on maternity leave in December. The 6th new consultant (of the 8 posts) takes up post in January 2018.
- 4.2 Of note the success in the first round of recruitment in September 2016 where five consultants were recruited included the recruitment of two locums and a specialty doctor who were already working in NHS Lothian. The net gain to our system on that occasion was therefore two consultants
- 4.3 In contrast, we have a good track record in recruiting and training to advanced practice level both trainee nurse practitioner and trainee advanced neonatal nurse practitioners. The issue with these staff groups is that, unlike career grade doctors, there is a period of several years before they are able to practice independently. However, further recruitment in these staff groups would be reinforcing success.
- 4.4 For all staff who contribute to the paediatric and neonatal service at SJH chronic uncertainty about the future service and staffing model is extremely unsatisfactory and loss of staff to other units is now a risk. Unless this uncertainty can be resolved quickly, loss of nursing and medical staff to other units in South East Scotland is a significant risk.

5 Risk Register

- 5.1 There are no new risks for NHS Lothian Risk Register.

6 Impact on Inequality, Including Health Inequalities

- 6.1 An Integrated Impact Assessment will be required if a resident out of hours model cannot be sustained and a new model of service results in changes to pathways of care for children.

7 Duty to Inform, Engage and Consult People who use our Services

- 7.1 The RCPCH committed from the start to involving and engaging with patients, families, staff, the public, voluntary sector and political stakeholders and the detail of this is set out in their Report.
- 7.2 NHS Lothian organised 7 public engagement events aimed at engaging with local families with children. Three parents attended along with some Local Councillors and a GP. Feedback from these events was that the inpatient service was very much valued, concern for parents having to travel into Edinburgh, distance, cost, and a view that West Lothian people thought this was a deliberate cost cutting exercise. All attendees fed back that they found the events informative and helpful.

8 Resource Implications

- 8.1 The new posts agreed as a result of the 2016 RCPCH review – trainee nurse practitioners and consultants – are unfunded.
- 8.2 Once trained the nurse practitioners will become Band 8A rather than Band 7 and attract unsocial hours payments which will increase the financial gap for Children's Services.

Dr Edward Doyle

Associate Medical Director, Women's & Children's Services

28/11/2017

List of Appendices

Appendix 1: RCPCH Lothian Follow up report Sept 2017

RCPCH Invited Reviews Programme

St John's Hospital Paediatric service, NHS Lothian

September 2017



RCPCH Invited Reviews Programme
September 2017

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Executive Summary

Since 2008 there have been concerns about the levels of medical staffing at St John's hospital in Lothian. Located just 17 miles from the Edinburgh's Royal Hospital for Sick Children St John's provides general hospital, maternity and neonatal care for the population of West Lothian.

In July 2017 the paediatric ward closed overnight for the third time in five years due to problems maintaining safe paediatric medical cover. The neonatal unit remained open with modified staff rotas maintaining round the clock care. Eighteen months on from the RCPCH's review of paediatric services across NHS Lothian, a small team of three was invited back to comment on progress made with implementing 'Option 1' – a sustainable approach to delivering 24/7 paediatric care at St John's Hospital.

The team reviewed data and documents and visited St John's in September 2017. They reviewed the assumptions made previously, considered national policy and projections for the future paediatric medical and nursing workforce, and spoke to staff working in and with the paediatric team about their ambition and expectation for the future. Local political representatives provided helpful contributions and local context.

The report reaffirms that for the population of West Lothian the continued provision of inpatient paediatrics is the right model if it can be achieved with sustainable medical staffing. This is not a 'quick fix' as demonstrated by attempts to recruit paediatricians and advanced children's nurses. Until sufficient trained medical and nursing staff are available to provide sustainable overnight care, the current daytime only paediatric assessment and decision making service should be maintained and strengthened. Its opening times should be mapped more closely to activity and it should be supported with strengthened community and transport services.

Compliance with national service standards for urgent care and short stay paediatric assessment units requires stronger community and specialist nursing arrangements to improve the management of children with long term and chronic conditions. Support and 'upskilling' of the Emergency Department team to manage the small number of overnight paediatric emergency attendances, detailed analysis of 'patient flows' during this temporary period of inpatient closure, and a focus on supporting families whose children need to be

transferred will mean in the short term children receive safe care and robust systems are in place to support the inpatient unit when it reopens.

All those the review team spoke to want to make service the best they can for the people of West Lothian. Many were, however, exhausted from the continued pressure to maintain the inpatient ward with too few staff. This pause enables the skilled and caring managers and clinicians across the Health Board to agree together how the future service will work, based on national examples but tailored to the Lothian population and staffing models.

1 Introduction

- 1.1 In spring 2016 the RCPCH was invited to conduct a review of the paediatric services provided by NHS Lothian across the Royal Hospital for Sick Children (RHSC, St John's and the Simpson Maternity unit at the Royal Infirmary of Edinburgh (RIE)). One aim of the review was to propose a sustainable solution to the provision of services at St John's Hospital, Livingston following longstanding medical staffing problems. The resulting report provided a range of recommendations for services across the three sites including three staffing models for St John's. The Health Board chose to pursue Option 1, strengthening paediatric medical and nursing provision across RHSC and St John's to safely provide a 24/7 inpatient unit on both sites,
- 1.2 One year on there continue to be problems filling the medical rotas at St John's and the Health Board's Acute Services Committee decided in June 2017 to temporarily close the unit to overnight stays from 7th July. This was the third period of summer closure in 5 years. In the face of considerable public scrutiny as to why it had not been possible to sustainably deliver 'Option 1', the Acute Hospital Committee asked the RCPCH to conduct a swift and focussed review of the progress and potential in pursuing this model. This report sets out the findings of that review.

2 Terms of reference and conduct of the review

- 2.1 The terms of reference for the review were
 - To review the assumptions and prerequisites that the RCPCH set out when recommending Option 1
 - To review all the actions taken to deliver Option 1
 - To assess the impact of these actions
 - To detail any changes in circumstances throughout this process

- To identify any additional actions that could have been taken to implement Option 1

2.2 The RCPCH convened a small review team including the lead reviewer from the previous visit plus an experienced DGH paediatric consultant familiar with the issues facing smaller units in Scotland, and administrative support from the RCPCH. The team reviewed various documents and undertook a one-day visit to St John's on Monday 11th September, talking with managers and clinicians from nursing and medical specialities as well as local political leaders who expressed their concerns about the service changes. Further information was sought and received including input from the neonatologists based at the RIE maternity unit.

2.3 The review team would like to pass on their thanks to all participants for their hospitality and engagement with the process, their openness, and their time.

3 Background and context

3.1 St John's Hospital in Livingston opened in 1989, around 17 miles from the RHSC and provides a full range of acute 'DGH' paediatric services including an emergency department/receiving unit, a 14-bed paediatric inpatient ward seeing around 3,000 children a year, a GP assessment bay, paediatric day surgery, outpatient services and a recently refurbished Level 1 special care neonatal unit for infants from 32 weeks supporting a consultant led obstetric service with approximately 2,600 births annually.

3.2 St John's has struggled since 2008 to attract skilled paediatric medical and nursing staff to cover the medical rota despite national and international recruitment drives. An RCPCH review for the South East Deanery considered the four units in the region in terms of training experience and sustainability. As a result of the report's conclusions in June 2012 the Deanery in conjunction with representatives from the four services concluded that Tier 2 trainees should not work overnight at St John's, and gaps in the overall Tier 2 training programme meant that daytime posts could not be filled. The report proposed a daytime short stay paediatric assessment unit (SSPAU) model or investing in more consultants, staff grade doctors or advanced nurse practitioners to provide 24/7 care.

3.3 A period of closure of the inpatient ward occurred in summer 2012, as overnight medical cover could not be secured. In June 2013 an expert panel commissioned by the Scottish Government Health Department (the Tailored Workforce Support Team) reviewed the St John's situation along with the paediatric staffing position at RHSC and RIE. Their report, NHS Lothian; Sustainability of paediatric services at St Johns Hospital was informed by a South East and Tayside (SEAT) report from December 2012. While outlining potential service and workforce options for St John's, the panel did not recommend a preferred option. The service continued attempts to recruit consultants and Tier 2 doctors but in 2015 a second summer closure on safety grounds due to rota gaps provoked a request to the RCPCH for a major review of paediatric services across the Health Board during spring 2016.

3.4 As a part of the 2016 review, section 6.5 proposed three options for the future of St Johns, namely:

- Option 1 - 24 hour resident on call consultant and Tier 2 rota, 12 hour Tier 1 rota – this was the preferred model, which is working in several other DGHs

of a similar size. It would be manageable with the current cohort of 8-9 consultants working in a different way to the current arrangements, plus development of Advanced Children's Nurse Practitioners (ACNP) to supplement the Tier 2 rota. This was anticipated to take around 2 years to implement if the health board, consultants and partners were fully committed.

- Option 2 - either as an interim or if Option 1 fails - 14.5 hours consultant cover, with
24/7 Tier 2 cover for 'low acuity' overnight patients
- Option 3 - no overnight paediatric care and a 14 hour (8am-10pm) Short Stay Paediatric Assessment Unit (SSPAU)

3.5 These options were presented to the public Board meeting in July 2016 with 31 recommendations that included sustainable staffing for the RHSC acute receiving unit. Option 1 was selected and ratified as the preferred way forward for SJH.

3.6 The Health Board has tried diligently to deliver the recommendations made in the RCPCH report. These included recruitment of sufficient additional medical and nursing staff to sustain the Acute Receiving Unit at the RHSC and a 24/7 'middle grade' rota at St John's staffed by Tier 2 doctors and nurses supported by resident consultant paediatricians. Since June 2016 the Health Board has achieved:

- Establishment of a Paediatric Programme Board (PPB) under the chairmanship of an experienced non-executive director of the Health Board, with membership including clinical and managerial representatives.
- Recruitment of two trainee Advanced Children's Nurse Practitioners (ACNPs) who are expected to be sufficiently skilled to contribute to the Tier 2 rota at both sites from early 2019. The vacancy for a second qualified ACNP remains unfilled.
- Recruitment to eight new consultant posts in September 2016 resulted in seven offers with five now in post across both sites each providing 24 out of hours (OOH) shifts a year at SJH. However, of the five in post three had been covering similar temporary roles so only two are new to the service.
- Recruitment in March 2017 resulted in two offers; one accepted from January 2018
- Further recruitment rounds took place in August and September 2017 without success.
- Annual attempts to recruit two international medical fellowship trainees each year to support the SJH Tier 2 rota have also not been successful.

3.7 During the spring of 2017 the availability of paediatricians at St John's deteriorated again. Three of the permanent medical staff were on long term sickness absence, a specialty doctor in a fixed term post left in June 2017, recruitment to a locum specialty doctor post was unsuccessful and an agency locum engaged for the summer left. In August 2016 the Health Board had rationalised pay and working hours for 'internal locums' to comply with the European Working Time Directive which resulted in fewer local paediatricians being willing/able to provide short notice locum cover at St John's.

3.8 Full implementation of Option 1 would require all SJH consultants to commit to working resident on call. This arrangement was initiated in August 2016 and whilst the consultants have been very helpful in providing cover in the short term, the additional pressure of covering for absent colleagues has made the service very fragile, with no long term commitment to this working pattern.

3.9 On 23 June the Chief Officer for Acute Services, with the support of the Health Board decided on safety grounds to reduce the paediatric provision to an 8am-8pm seven day service from 7th July, although night-time on-call from home is required. Arrangements were put in place to transfer children needing overnight care to the RHSC and the situation was subject to weekly monitoring and reporting. The PPB was reconstituted with a remit to consider progress against the RCPCH report's recommendations and support delivery of any outstanding actions.

3.10 Whilst supported by the Health Board this decision has provoked considerable concern amongst local stakeholders, particularly regarding the uncertain duration of the service reduction given the increased activity expected during the winter months. The RCPCH was approached to review the situation under the terms of reference above.

3.11 The neonatal unit supports a full obstetric service with senior paediatric cover required at all times. Daytime medical cover is provided by the consultant paediatrician of the week, three of whom have neonatal special interest supported by sessions from four neonatologists based at the Royal Infirmary Edinburgh. There was reported to 'always be a senior doctor around during the day for neonates'. Since 7th July paediatric gaps in the overnight rota have been supported by clinical fellows, ANPs and the consultant neonatologists who have sessions for this in their job plans. The special care unit and maternity service is therefore, relatively unaffected by the changes although routinely using

consultant neonatologists for occasional shifts and to support 24/7 cover is perhaps an inefficient use of expertise. The RIE neonatal staff are unable to cover paediatric attendances.

4 Findings

4.1 The assumptions and prerequisites that the RCPCH set out when recommending Option 1

4.1.1 Option 1 is the Health Board's preferred option and local circumstances have not changed. Obstetric care remains secure on this site with the 24/7 level one Special Care Unit¹ linked closely with the RIE and there is no indication of any desire or need to adapt this arrangement. The General Register's Office for Scotland (GRO)² predict a 1.6% growth in the under-16 population of West Lothian over the next ten years (whilst the over-75 population is set to rise significantly) so planning has been conducted by the Health Board on that basis.

4.1.2 Option 1 remains the RCPCH preferred model for the long term as stated in the 2016 report. However the prerequisite for achieving it was

- commitment by the Health Board to a long term strategy for the service
- full engagement of the doctors to work in new and different ways
- strong clinical leadership and management support to address the reasons for recruitment and retention problems
- a programme for development of Advanced Children's Nurse Practitioners (ACNP) and Tier 2 doctors.

4.2 Review of actions taken to deliver Option 1 (see section 3.5-11)

Medical staffing at St Johns

4.2.1 The paediatric inpatient service at SJH has three out of hours medical rotas that need to be covered.

1. Non-resident consultant
2. Resident middle grade which can be covered by consultants, specialty doctors, advanced children's' nurse practitioners and clinical fellows

1

¹ as defined by BAPM guidance 2010

2

² See <https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-projections>

3. The junior FY/GPST rota.

The non-resident consultant rota nominally has seven people contributing to it but two of these doctors are unable to contribute due to health reasons and another does not make a full contribution because of family reasons. There is therefore a considerable need for the remaining doctors in this group to cover gaps on a locum basis before they can consider making any contribution to the middle grade resident rota.

4.2.2 With regard to the resident middle grade rota, Option 1 presumed 8 WTE consultants available at St John's to provide occasional resident support to a 24/7 Tier 2 rota comprising between five and seven SAS doctors and ACNPs, plus up to eight ANNPs to cover the neonatal unit. In January 2016 there were eight consultants and two SAS doctors, with one ACNP who works closely with an ANNP to provide Tier 2 cover.

4.2.3 In September 2017 there are seven consultants and two SAS doctors based primarily at SJH but five of these doctors are unable to contribute to the resident middle grade out of hours rota leaving four consultants able to contribute to the middle grade resident rota. Of these most spend 2 PA's per week contributing to specialist services at RHSC, leaving approximately 4.0 WTE devoted to SJH.

4.2.4 Five paediatricians (out of eight required) have been appointed to dual-site posts providing between them 10 nights a month resident consultant cover and 10 weeks a year of hot week cover, equivalent to around 1 WTE in total at SJH.

4.2.5 The Tier 2 rota requires between 5 and 7 staff, but the current arrangement comprises 1 ACNP, 1 specialist doctor who is only working day shifts, 1 overseas clinical fellow and a specialty trainee contributing to the out of hours rota for 6 months. Posts have been advertised locally for paediatricians and ACNPs but with little response.

4.2.6 At Tier 1 level there are six regular doctors on the programme - 1 x FY1, 3 x FY2, 2 x GPST. Between them, their rota covers all days and nights except 6 weekend day shifts per month which are covered by FY2s based in general practice (of which 1 post is currently unfilled). There can sometimes be problems with sickness absence at weekends which puts extra strain on the service, but otherwise the rota is compliant with the Working Time regulations.

4.2.7 Due to ongoing sickness absence and continuing difficulties in recruitment, the service at SJH was not compliant with Facing the Future and other standards and the RCPCH supports the decision to reduce the service to daytime only SSPAU until more permanent medical staff can be appointed.

4.3 Details of any changes in circumstances throughout this process – a review of the national workforce picture

Configuration of inpatient units

4.3.1 In 2001 there were 238 paediatric medical inpatient units in the UK. Ten years later the Facing the Future³ acute standards defined the staffing levels of safe and equitable inpatient paediatric services. Alongside the standards was a strategic recommendation for a five-year reduction of inpatient sites from 218 (in 2009) to approximately 170, with 32 new SSPAUs (up from 161). By 2015⁴ however, there were still 189 inpatient units but the number of SSPAUs had risen to 178 units of which 16 are 'stand alone' without a paediatric inpatient service⁵.

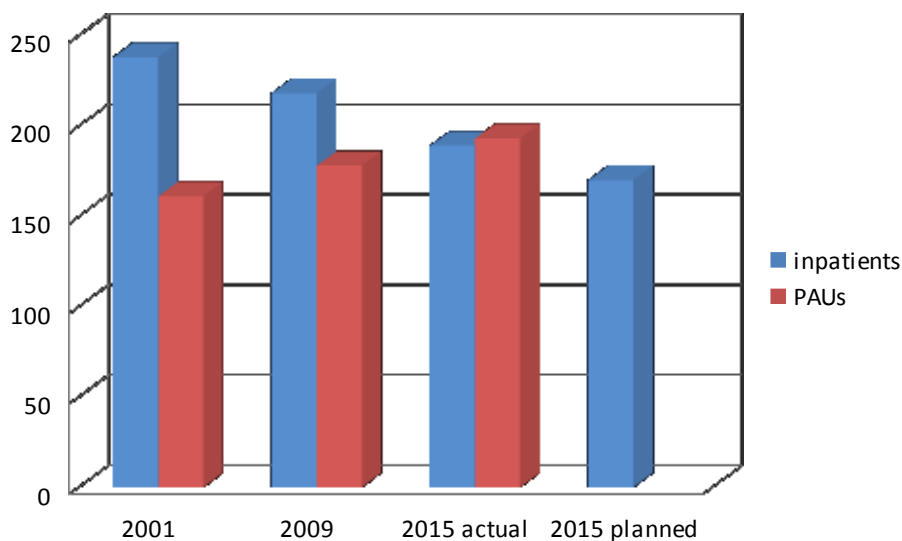


Fig 1 - paediatric units in the UK

4.3.2 Consultant numbers were recommended to increase in the UK to 4,625 WTE, alongside more GP trainees and specialist nurses supporting the Tier 1

3

¹ [Facing the Future RCPCH 2015](#)

4

¹ [RCPCH Workforce Census 2015, published March 2017](#)

5

¹ SSPAU survey based on 2015 census

and Tier 2 rotas. Five years on, by 2015, there were just 3,996 WTE consultants plus significant junior rota gaps. This is a long term combination of too few consultants being trained and too few posts available for them to fill.

4.3.3 Across the UK many units continue to struggle to meet the standards and the implication is that there are still too many units for the available workforce and either consolidation or significant expansion of medical staffing is required.

Workforce projection

4.3.4 The RCPCH's biennial census⁶ and annual rota gaps and vacancies survey in early 2017 found:

- The UK rota vacancy rate is 14.6% on Tier 1 rotas and 23.4% on Tier 2 rotas. Averaged across both tiers, there has been an increase in the vacancy rate from 14.9% in January 2016 to 18.6% in January 2017.
- Across both rota tiers, 41.2% of vacant posts are filled by locums (46.5% in January 2016).
- 70.9% of rota gaps are due to failure to recruit; with a significant proportion of trainees being out of programme (maternity, clinical fellowships, part time working). The South East Scotland Deanery currently has 36% of trainees on maternity leave.
- 54 (45.4%) of the responding units reported that they have consultants who permanently work resident shifts, an increase since 2015-16 where 23 (31.9%) of units reported this. Six of these units (54.5%, 46 doctors) were in Scotland
- RCPCH calculated that consultants working resident shifts spent an average 2.38 PAs on resident duties.
- 87.4% of respondents were very or moderately concerned about how the service will cope in the next 6 months. All responding units in Northern Ireland and Scotland were either very or moderately concerned.

4.3.5 In future, the number of general paediatric CCT award holders (newly qualified consultants) emerging each year is not predicted to increase significantly

4.3.6 In 2015 (latest UK census data available) the proportion of CCT and CESR holders working less than full time was 23% (33% of women, 9% of men) with this predicted to increase as more qualified female doctors choose part time working or career breaks. Currently women represent 52% of the overall and

74% of the trainee paediatric workforce. This is corroborated by ISD workforce data for June 2017*

4.3.7 An average of around 8% of newly qualified consultants are working overseas and the numbers entering, then prematurely leaving or postponing training, enable a prediction of little change or a net reduction in available personnel in future. According to current trends, to maintain availability of sufficient paediatricians to cover UK rotas in future, each ST1 year requires at least 465 new trainees; in 2016 this was 404. More details about workforce projections can be found in the RCPCH's policy briefing.⁷

	Female	Male	Unknown	Total
Other*	63	52	5	120
ST1	334	92	20	446
ST2	368	94	7	469
ST3	394	101	0	495
ST4	387	117	0	504
ST5	356	114	0	470
ST6	316	124	1	441

Year	Number
2011	247
2012	285
2013	295
2014	332
2015	324
2016	299

Table 2 CCT and CESR awards

Trainees

4.3.8 The absence of trainees at St John's is an agreed point in discussion with the four health boards. Whilst there is no support for trainees to sustain training posts overnight, the daytime experience may be suitable, including within an SSPAU arrangement. The consultants are keen to support trainees, although there have been delays in submitting the curriculum matrix to the Deanery, indicating how trainees would be supported to develop specific competencies at the site.

4.3.9 Several interviewees mentioned that there appeared at times to be a 'surplus' of Tier 2 trainees at RHSC and that some of those might be keen to work shifts at St John's to gain DGH experience and perhaps more 'hands on' work than is possible at RHSC. This was a recommendation of the last review

and may be considered favourably if there were documented training opportunities following submission of the curriculum matrix. Although there may only be one or two positions this would provide some support for the daytime rota, enable the trainees to get to know the team and site, and could lead to their choosing a consultant post at St John's once qualified.

Advanced Nurse Practitioners

4.3.10 The development of the ANP role – either as children's nurse practitioners or neonatal nurse practitioners – has been proposed across the UK as a solution to support the declining numbers of trainees on Tier 2 rotas. Access to training courses, however, remains difficult, due to limited courses, no national curriculum and a shortage of 'backfill' senior nurses to cover for those being trained. Health boards and trusts sponsoring trainees must commit to at least 2-3 years investment and consolidation of training, before the ANP can contribute at Tier 2 level, often with no guarantee of retention at the end of the course.

4.3.11 The RIE neonatal team recognised the potential for development of Advanced Neonatal Nurse practitioners in 2004 and looked at nurse-led SCU models in Ashington and Wansbeck. There have been ANNPs on the neonatal rotas since 2005, and currently there are 9 out of a planned 14 in post with 4 working on the middle grade and three rotating out to St John's for a month at a time.

4.3.12 Building a team of Advanced Children's Nurse Practitioners to cover paediatrics was recommended in the 2016 review. The Chief Nurse for Scotland is championing work around Transforming Nursing Roles and each board has assessed acuity and submitted a Service Needs Analysis. A central group is scoping Advanced Practice Nursing needs across the health boards towards an Advancing Roles academy. NHS Lothian is developing a nursing strategy which will include ANP roles and link to this pan-Scotland programme, but the documents seen have not started to consider the implications of the RCN's Credentialing scheme (April 2017) which is likely to affect Advanced Nursing - across the UK.

Community children's nurses

4.3.13 Clinical nurse specialists and community children's nurses can contribute significantly to the improved management of children who have chronic complex conditions, reducing urgent presentations and preventing readmission and improving outcomes for children and their families. The RCPCH 'Facing the Future Together for Child Health' standards and the SSPAU standards both

include recommendations for round-the-clock availability of advice from community children's nurses.

4.4 To identify any additional actions that could have been taken to implement Option 1

4.4.1 St John's has been running on fragile staffing rotas since at least 2008. It has a longstanding reputation as a unit that is under threat of closure and the large number of reviews and assessments that have been conducted have all concluded similarly with little tangible change to the situation. This is a significant blight on recruitment.

4.4.2 In 2012 the RCPCH training review predicted that the longer term future of St John's paediatric service was likely to be a 14-16 hour SSPAU. Four years later the RCPCH conclusion was that whilst the service remained unsustainable in its current form and whilst a safe SSPAU service was feasible, the unit was far from the smallest inpatient service in the UK and there were many examples of similar settings with sustainable staffing. The consultants and local population were also at the time highly resistant to the loss of inpatients. The RCPCH provided examples of working UK models that maintained an acute inpatient service, sometimes through complete redesign of consultant rotas and a concerted drive from clinicians and management to make the new arrangement work. We suggested this should be a three year strategy to ensure corporate, public and staff buy in and training of relevant staff.

4.4.3 The Health Board has tried extremely hard to make this arrangement succeed with four rounds of active consultant recruitment through traditional means for the new posts, and the paediatric team at St John's has worked hard to cover vacancies and rota gaps themselves in the interim. The review team detected some longstanding scepticism amongst the St John's team about process and underestimation of the busyness of the unit and acuity of the children requiring transfer. Some feel that the Health Board is not really committed to supporting the unit - all of which need to be addressed to attract applicants and instil confidence in the future.

4.4.4 In turn the management of the acute hospital service faced sustained pressure and scrutiny, from political and internal stakeholders, to maintain and report frequently on a service that is constantly 'close to the edge' on safety grounds, which is exhausting, inefficient use of their expertise and unhelpfully stressful for all involved. There was strong support for a clear strategy and then 'just getting on with it'.

4.4.5 There may still be scope to advertise in more creative ways for what would potentially be a new opportunity to work differently; two SJH consultants are members of the Paediatric Programme Board so there are mechanisms in place to review, through liaison with similar units in the UK the factors which would attract colleagues to the jobs. Models in place elsewhere include longer opening paediatric assessment units as an alternative to inpatients and some offer shift patterns that may suit a different work-life balance. An international recruitment campaign through an external agency in 2013 was unsuccessful, but this might be worth reconsidering alongside discussions with other Health Boards and recruitment agencies about what innovative ideas may make jobs more attractive.

4.4.6 The financial commitment of the Health Board to keeping services open has been significant; particularly considering NHS Lothian's difficult financial position and the heavy use of locum staff. At no time did the review team hear that cost cutting was a driver for the closure of inpatient beds. Indeed, the need to maintain 24/7 senior cover for the neonatal unit has meant that the changes do not significantly affect the financial position, apart from the reduction in locum staff payments.

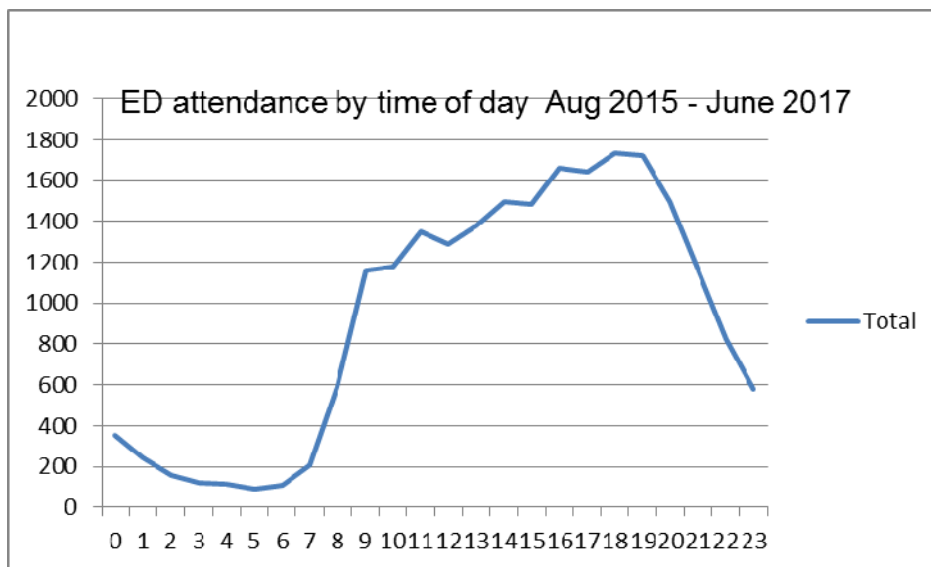
4.4.7 In terms of nursing strategy, an NHS Lothian Advanced Nursing Practice group has been developed and a project manager appointed to take forward the resultant strategy as recommended by the RCPCH in 2016 (see 5.3.10-11). Two ACNP trainees have been recruited, but a rolling programme of recruitment and training of ACNPs is required irrespective of the future of the inpatient service; this investment would improve services in the emergency department at both SJH and RHSC, with greater scope for rotational posts to support surrounding DGH hospitals in SEAT. There was enthusiasm expressed amongst staff about this potential development and anticipation that more would be invited to start the training course if this does not diminish the cohort of skilled senior nurses.

4.5 What is the impact of the actions to date?

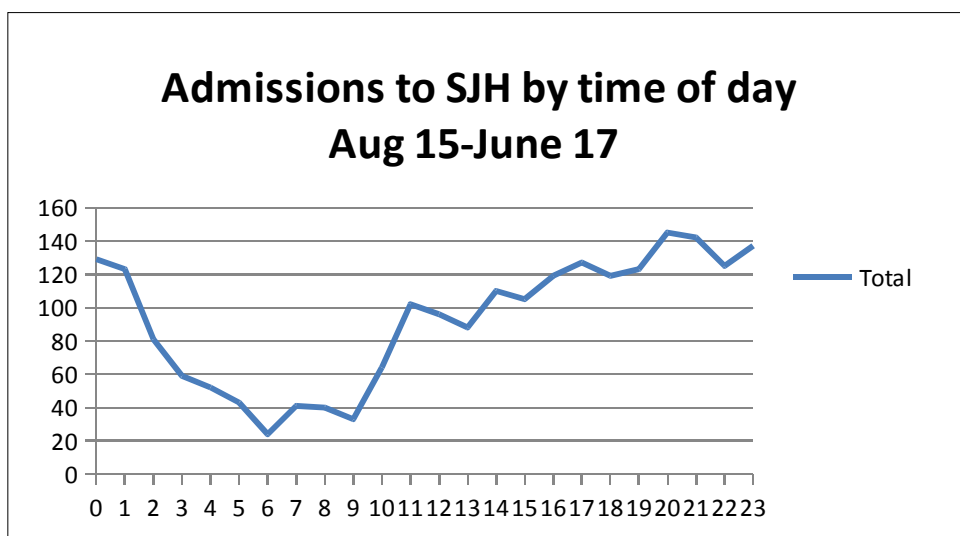
4.5.1 The impact of recruitment efforts and strategy to achieve Option 1 in 2-3 years is covered elsewhere, so in this section we consider the impact of the temporary service change to a daytime only SSPAU. Given that there is no end date for this temporary closure, it is appropriate to comment on the safety and effectiveness of this arrangement for children and young people, as development of a short stay facility was a recommendation of the 2016 review.

Activity

4.5.2 St John's serves a relatively young, relatively deprived population, but has skilled experienced consultants who tend to see and discharge children swiftly, sometimes suggesting follow up attendance the next day. There is good liaison with the emergency department team, who readily engage the paediatricians and this effective management of ambulant children meant that the inpatient ward was relatively quiet. Of around 366 admissions per month only an average of 87 patients had required a stay of over 24 hours and the median length of stay of all attendances was 5.25 hours.



4.5.3 There are around 11,000 paediatric attendances to ED per year, peaking at around 6pm which correlates closely with elsewhere in the UK. Most of these attendances would be dealt with by the ED staff, but a proportion will require paediatric advice or review.



4.5.4 Since the change in July the regular situation reports show an average of 1.5 children per day being transferred to RHSC, although some families might take children direct to RHSC. All emergency ambulances will take patients to the nearest hospital and no divers are in place. Apart from situation reports, the review team did not see an analysis of the impact of moving to a 7 day 12 hour service, although this was reported to be in place including robust weekly or monthly statistics of current attendances. This should include.

- Emergency/unscheduled referrals to SSPAU
- Transfers to RHSC including data on ambulance delays
- Impact of the change on activity at other local sites (RHSC and Wishaw)
- Planned investigations
- Planned day case procedures
- Planned review of patients discharged from SSPAU
- 999 ED episodes
- ED self referrals

Timings and transfers

4.5.5 The review team was told that the service at St John's was popular with local GPs who often seek advice or second opinion given the service is local for families. There is some frustration amongst the medical staff that the SSPAU ceases to accept GP referrals from around 4pm to ensure they are discharged or transferred by 8pm, although ED patients will be seen up to 6pm. This means that the peak of attendances to ED (around 6pm) and paediatrics (about 8pm) are not covered by the SSPAU and patients will need to attend the ED or transfer directly to RHSC.

4.5.6 The swift implementation of the overnight closure was not anticipated by the emergency and transport services and the evening transfers in particular have faced some delays due to unavailability of ambulances which is a wider problem across the region, although the '999' service is unaffected. - It is important to ensure clear pathways of care for parents and staff and SoPs for

use of Out of Hours services, NHS24 and the transfer of children from the SSPAU during the period of closure of the inpatient unit.

4.5.7 Data about transfers to RHSC for the first six weeks of the SSPAU indicated about half of the transfers (27/51) were directly from the ED, four from the GP out of hours service and 20 from general paediatrics. The numbers of transfers had risen during August but informal anecdotes from the Scottish Ambulance Service indicated some variation in acuity threshold for transfer. There were however concerns about long delays for patients awaiting transfer; although the statistics indicated that for 19 of the 22 assigned as emergencies, the ambulance arrived within the target 19 minutes, and a further 8 'very urgent' patients were collected within the hour this was during the relatively quiet summer period and even then four 'less urgent' cases had to wait over four hours, with one waiting over 7 hours for transfer. This is an area that must be urgently addressed by the Health Board particularly with the winter pressures likely to exacerbate the problem. .

4.5.8 Despite the characteristic reductions in attendance expected during the summer, the number of transfers (1.5 per day) since closure of the inpatient ward is significantly lower than the previous figures about over 24 hours admissions. This may relate to thresholds for referral to paediatrics from GP/OOH/ED, but the review team was told that around 70% of referrals were now discharged from the SSPAU which mirrors other similar units. A similar experience occurred elsewhere in a unit with 1100 admissions a year when the service went from inpatient wards to SSPAU, but on closure only 500 – 600 extra patients went to the neighbouring larger inpatient unit. Efforts to find the 'lost patients' included assessing impact on neighbouring EDs, but the service concluded that primary care was managing these children. There was no evidence of poorer outcome in terms of increased admissions to paediatric intensive care by post code or from reviewing child deaths.

Impact on experience

4.5.9 For most children attending St John's there is little demonstrable change to the service. Follow up / review attendances, day case and most urgent and emergency assessments, including 'blue light' ambulance calls take place as previously and children are discharged.

4.5.10 For families whose child requires inpatient care at RHSC there was understandable disappointment that care was not available locally; but there was an expectation that the best care was provided at RHSC and they were prepared

to travel for that. However, being discharged out of hours a long way from home is inappropriate, so funding needs to be available to cover repatriation by taxi or support with fares.

4.5.11 The Health Board has sought feedback from those families who have been transferred to RHSC from SJH since July 2017. Overall, they were very happy with the clinical care and also the explanations of why transfer was required. A small number felt the quality of service was undermined by delays in the transport service and once at RHSC the cost and difficulty of arranging transport back home.

4.5.12 The review team was told of concerns raised by constituents with local politicians about care for children with chronic conditions who were 'regular attenders' at St John's. It is important for these families that they are reassured about arrangements to help them to manage their child's condition at home wherever possible, and that safe arrangements are in place to manage emergency situations where an inpatient stay is necessary.

SSPAU Compliance with standards

4.5.13 Development of a PAU alongside the inpatient service was a recommendation of the 2016 report. A gap analysis by the paediatric clinical leads of compliance with the 32 RCPCH standards⁸ showed 20 were met and there was partial/near compliance with a further six (see Appendix and recommendations). More work is needed however, on the development of standard operating procedures, pathways for access, referral and admission, and for shared care arrangements. A triaging system is being piloted and a national PEWS chart being rolled out in Scotland from September 2017 includes pain scoring which will enable compliance with that standard. There is no shared record system with GPs and community children's nurses are not available for 24 hours a day.

When the SSPAU is closed

4.5.14 If an SSPAU runs alongside an ED without senior paediatric support on site the ED team need enhanced skills to recognise and manage emergency presentations (as set out in the 'Tanner'⁹ report). Whilst there is a children's nurse at all times in ED and a good relationship with the paediatricians, it is

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¹ Standards for Short Stay Paediatric Assessment Units, RCPCH March 2017

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¹ The acutely sick or injured child in a district general hospital – a team response, DH England 2006

important to ensure the Emergency Care physicians and anaesthetists are involved in designing the pathways for paediatric care to minimise the need to transfer. Without onsite paediatric support, appropriate refresher training, with support from RHSC PICU / Anaesthetics / Paed ED, should be programmed although the ED consultants do rotate through the RHSC. There is a resident paediatrician/-neonatologist/ANNP covering the SCU, but the individual may not have recent paediatric expertise, so a clear pathway must be put in place involving the non-resident on call consultant.

4.5.15 The good relationship with local GPs is beneficial and there should be encouragement to develop their skills in paediatric care and decision making as set out in Facing the Future Together for Child Health and the SSPAU standards (see appendix 4) to reduce unnecessary attendance for chronic conditions and promote swifter discharge. This applies also to the GP Out Of Hours' service.

4.5.16 The neonatal unit (see 3.12) retains 24/7 senior onsite cover, provided by the paediatricians, where available, or a combination of Tier 2 and consultant neonatologists or ANNPs overnight. Without 24/7 senior paediatric cover on site, a consultant is required to rotate from the RIE, which is an expensive option for an SCU; Table 1 below indicates that there remain some gaps in cover which require Tier 2 support even with this arrangement and the experienced Advanced Neonatal Nurse Practitioners contribute to the rota. The Scotstar neonatal and paediatric retrieval team was reported to offer an excellent service for backup support.

Table 1 shows the out of hours commitment from each consultant group

	Number of consultants contributing	Nights/ consultant/yr	Weekend days/ consultant/yr	Total nights	Total w/e days
SJH	2	40	11	80	22
Neonatal RIE and SJH	4	28	7	112	28
SJH and RHSC	5	17	7	85	35
Grand Total				277	85
"Gaps"				88	19

Other services and implications

4.5.17 Since the loss of inpatient beds there has been a reduction in planned surgery at St John's, including maxillo facial and general surgery which has affected throughput, although the main drivers for these changes are not related to the temporary closure of the inpatient paediatric unit. There are ongoing implications for anaesthetic expertise across the site if surgery is reduced. All

specialist elective work at SJH including ENT, orthopaedics, ophthalmology, surgery, should be reviewed to ensure that it is appropriate to conduct in the absence of overnight beds / onsite expertise. There is an opportunity to maintain activity through reassignment to SJH of more straightforward cases from RHSC for patients living in West Edinburgh.

4.5.18 Children attending due to child protection concerns, either physical or suspected sexual abuse may require a range of investigations and some hospitals admit them as a 'place of safety' whilst these tests are carried out. If SJH is closed overnight this is not possible but increasingly best practice is for the social work team to find a residential 'place of safety' overnight such as a relative or friend so the child has as little disruption to their daily routine as possible.

Nursing staff

4.5.19 St John's has a cohort of trained and experienced nursing staff who clearly value the support currently provided by chief nurse and senior managers. They have coped impressively with the sudden changes to the service but ongoing support and opportunities for professional development are important in maintaining morale and retaining this valued workforce. The previous review team discussed the development of a consultant nurse role to support and manage the development of the ANP programme and that is still under consideration by the Health Board to ensure there is sufficient activity to justify the role.

4.5.20 The integration of children's community, specialist and ward nurses who see themselves as part of the same team, looking after the same patients, would ensure that families receive consistent information and follow efficient pathways of care.

CCNs can also expedite discharge from SSPAU/ paediatric inpatient units and decrease the medical reviews. Data from Paisley indicates that even CCN telephone follow up of children presenting with bronchial problems reduced re-attendance. The development of the nursing strategy provides an opportunity to rethink how the roles combine and handover, and the importance of developing the specialist and community roles.

5 Summary and Recommendations

5.1 The size of the service justifies the decision for Option 1. Although the Health Board has made steady, albeit difficult progress with consultant

recruitment overall, the senior rotas are proving extremely difficult to fill and with just six active consultants and a depleted Tier 2, 24/7 working is currently neither safe nor sustainable.

5.2 The development of this model is a long term solution depending upon successful recruitment of consultants, ANPs and SAS doctors willing to work on a resident basis. Other successful models of resident on-call working (including a full resident on-call model with 14 consultants and no Tier 2) would need at least 4 resident consultant shifts per week, but there is insufficient willingness amongst the staff to commit to this. Whilst immense effort and progress has been made to underpin development of Option 1, there is further to go. A clear 3-5 year vision and strategy is required, which has buy-in from senior management and good understanding and support from consultants, other clinical staff and the Deanery. There is a risk that moving back to the 24/7 model too early will put too much pressure on staff, further damaging morale and risking regular closures which is unsettling for the population and for staff.

5.3 Whilst the development of the workforce takes place to support a 24/7 service, (if indeed this is possible given the national picture), enhancement of the current SSPAU arrangement should be prioritised to maximise the numbers of children that can be seen and discharged locally. Clear pathways of care and a positive communications campaign with parents and GPs, should take place together with review of the opening hours to extend to perhaps 10pm. A plan to achieve compliance against the RCPCH standards should be prioritised, as this will still be beneficial when a 24/7 service resumes.

5.4 There must continue to be a consultant on call at night to support the tier two doctor in the neonatal unit. Currently, that consultant can provide non resident support to ED. Over time, the skills of the on-site staff may be enhanced, so this provision could be reduced and improved communications with RHSC such as video conferencing for advice may serve to reduce the numbers of transfers required.

5.5 Staffing levels for a PAU-only service can be found in the original 'Facing the Future'¹⁰ and suggest an '8 till late' unit requires 4.4 consultants supporting the main workforce of Tier 1 and 2 staff. This suggests that there are currently sufficient staff to safely manage the current unit and indeed extend to 10pm working

5.6 In Scotland there are no examples of a SSPAU 10-20 miles from a large unit that work well. For those that stay open until 10pm, calls and patients would usually be diverted from around 1800 so some peak time is missed

5.7 The RCPCH workforce census identified 16 stand alone SSPAUs with no overnight beds and is exploring their current position. The team at SJH could perhaps link with one and develop in parallel sharing ideas and learning.

Recommendations

a) The Paediatric Programme Board should prioritise development of a 3-year strategy and action plan towards completion of the recommendations from the 2016 review including those below. Since 24/7 opening of SJH for paediatrics is dependent upon increased numbers of staff, the strategy should set out the minimum staffing threshold at which this can be safely achieved and a realistic timescale

b) Continue to implement the Advanced Nursing Strategy to include rolling recruitment of trainee and/or qualified ACNPs to work across both RHSC and SJH. Support Tier 2 by continuing to strengthen the ANNP cohort.

c) Once the strategic plan is developed, strengthen support for the clinical leadership at SJH so all consultants are involved in the decision making and service planning.

d) Monitor closely the statistics and patient 'flows' resulting from the temporary closure, including the items listed in paragraph 4.5.4 and continue to listen to the experiences of families whose children have been transferred. In particular ensure that delays in transfer are not putting patients at risk.

e) Maintain and strengthen the current SSPAU towards full compliance with the RCPCH's guidance, including:

A clear agreed SOP for the operation of the unit.

Agreed pathways for access, referral, admission and discharge.

Pathways for shared care with speciality teams.

Review availability of support services – pharmacy, radiology and USS.

Establish a plan for access to the child's electronic GP record.

Review written safety netting information to reflect current status.

Review availability of play specialists.

f) Consider extending the opening hours of the SSPAU to better match attendances i.e. 10am to 10pm or 14 hours to 10pm

g) Explore the expansion of the children's community nursing team towards 24/7 availability to prevent admission/support discharge

h) Consider, with the ED team and the Scottish Ambulance Service, whether bypass of SJH by 'blue light' ambulances is appropriate when the SSPAU is not open.

i) Review the provision of day surgery at both sites and consider extending provision at SJH to relieve pressure at RHSC.

Appendix 1 The review team

Dr David Shortland MD FRCP FRCPCH DCH has been a consultant paediatrician for 26 years in Poole, with ten years as neonatal lead and twelve as clinical director. .

Following five years as member, then Chair, of the Clinical Directors' Special Interest Group, in 2006 David was elected as the National Workforce Officer for the RCPCH leading the 2007 national workforce census and designing a cohort study of trainees to provide a clearer understanding of the current and future workforce, helping to define how the role of paediatricians can evolve to provide consultant delivered care and hence safe and sustainable services.

David was elected Vice President (Health Services) in 2009 and played a central role in developing strategy for UK Child Health Services supporting paediatricians through the challenges of radical reform to the health service, working time legislation and service re-design. He developed a national template for the resident paediatrician and was lead author for "Facing the Future" which defined 10 quality standards for acute paediatrics and is widely quoted as a template for good practice. David led a national audit of these standards in 2013 and currently chairs a steering group extending the approach to care outside hospitals. Since 2014 David has been clinical adviser to the RCPCH Invited Reviews programme and has led a number of high profile reconfiguration, individual and service reviews.

Dr Graham Stewart BSc, MBChB, FRCPCH, FRCP(Glasgow) has been a consultant paediatrician in the West of Scotland since 1994 with fifteen years' experience in clinical leadership and management posts. Graham has wide experience in strategy and redesign having been a member of the NHS Greater Glasgow Child Health Strategy Group for seven years and a member of the Scottish Expert group on Acute Maternity services. Graham is Honorary Senior Lecturer in Developmental Medicine at Glasgow University and a Senior Examiner at the RCPCH.

As clinical director in RHSC Yorkhill, Graham supported services in change, using organisational development to help teams move forward in several service redesign and reconfiguration projects. In 2011 Graham led his Board's review of the children's services of Western Isles Health Board; the consequent report was well received ,and he has participated in and led several RCPCH Invited Reviews. In 2014 Graham became medical advisor to the New Children's Hospital project board contributing to the successful opening of the Royal Hospital for Children in Glasgow in June 2015.

Sue Eardley joined the RCPCH in January 2011 and since 2012 has led the Invited Reviews programme. Originally an engineer in the oil and gas industry Sue spent 13 years as a non-executive and then Chair of an acute hospital trust

in south London, alongside various voluntary activities including national and local involvement in user representation and as a Council member of the NHS Confederation. For six years Sue headed the Children and maternity strategy team at the Healthcare Commission and then CQC, overseeing strategy, design and delivery of all inspections and reviews in England of maternity, child health and safeguarding.

Carol Williams, RCN Nursing Consultant and **Professor Steve Turner**, RCPCH Officer for Scotland provided advice and quality assurance of this report.

Appendix 2 Contributors to the review / the review team

The following staff were interviewed during the review on 11th September 2017 or by telephone

Non Executive Director and Chair of paediatric Programme Board
Clinical leads from St John's ED and Anaesthetics
Ward charge nurse and Deputy Charge Nurse
Advanced Paediatric Nurse Practitioner and Advanced neonatal Nurse Practitioner
Newly Appointed Paediatric Consultants
Clinics Director, paediatrics, Associate Nurse Director CYP, Director, Women's and children's services
St Johns based paediatricians
Neonatologists based at RIE

Appendix 3 Standards and reference documents

A1.1 The following standards are referenced in the review

[Facing the Future](#) – a review of Paediatric services (RCPCH 2015) updates the original 2011 guidance and details ten service standards relating to clinical cover, expertise and child protection, and [Facing the Future – Together for Child Health](#) (RCPCH/RCN/RCGP 2015) sets out 11 standards which aim to reduce attendance at hospital and provide improved care closer to home for children with urgent healthcare needs.

[Standards for Short Stay Paediatric Assessment Units](#) (SSPAU) (RCPCH March 2017) defines the various models of provision and provides 31 standards for the safe and effective management of these units, including integration with other services and arrangements for information sharing and involvement of patients and families.

[Intercollegiate Standards for care of CYP in emergency care settings](#) (RCPCH 2012) covers staffing, training, facilities, communications and interfaces set out in

a clear style and agreed by all professional colleges involved with urgent and emergency care.

[The acutely or critically sick or injured child in the district general hospital](#) – a team response (DH and intercollegiate 2006 – “Tanner report”) details issues around anaesthesia and other services available. It has 42 clear service and competence recommendations and provides a clear checklist when reviewing urgent care services.

[The Future for community children’s nursing](#) – challenges and opportunities (RCN 2014) sets out the current policy direction in the UK and internationally and the requirements for appropriate services to deliver improved outcomes closer to home

[Specialist and Advanced children and young people’s nursing practice in contemporary health care](#) - guidance for nurses and commissioners. (RCN 2014) sets out case studies values and principles to support the development of these roles and nurse consultants.

[Advanced Nurse Practitioners](#) - An RCN guide to advanced nursing practice, advanced nurse practitioners and programme accreditation (RCN 2012) sets out the benefits and competencies required for nurses to achieve this status.

[Transforming Nursing Roles - Developing Advanced Roles in NHS Scotland](#) (NHS Scotland June 2016) sets out a vision for development of nursing within Scotland

[Workforce Census 2015](#) (RCPCH May 2017) provides a biennial snapshot of the paediatric workforce and configuration of paediatric units in 2015

Appendix 4 Information provided to the review team

The following documents were provided by the Health Board or others relating to the following areas:

- Papers from the paediatric programme board an acute hospital committee
- Various correspondence with local representatives
- Consultant job plans and job descriptions of new posts
- Activity data from St John’s and ED at the RHSC
- Nursing strategy update
- Situation reports and risk assessment
- All papers previously available to the 2016 review
- Contributions from local political representatives providing local context

Appendix 5 – List of Abbreviations

A(C)NP	Advanced (children's) nurse practitioner
CCN	Community children's nursing
CCT	Certificate of completion of (specialist) training
CDC	Child development centre
CEC	Children's emergency centre
CESR	Certificate of Eligibility for Specialist Registration
CYP	Children and young people
DGH	District General Hospital
ED	Emergency department
ENT	Ear, nose and throat
FY	Foundation year
GP	General practitioner
GP OOH	General practitioner out-of-hours service
PA	Programmed Activities
RCPCH	Royal College of Paediatrics and Child Health
RHSC	Royal Hospital for Sick Children
RIE	Royal Infirmary of Edinburgh
SAS	Specialty and associate specialist
SEAT.	South East and Tayside Deanery (now South East Scotland)
SJH	St John's Hospital
SOP	Standards Operating procedure
SSPAU	Short Stay Paediatric assessment unit
ST1	Specialist trainee, first year
WTE	Whole time equivalent

Appendix 6 – Gap analysis of 'Together for Child Health'

Facing the Future 'Together for child health' provides eleven standards to improve the provision offered by primary care and acute teams for urgent care to reduce the need for hospital attendance or admission. Compliance across the UK is currently being audited by the RCPCH. St John's is making progress against the standards but still is non compliant on some.

Compliance with Facing the Future – Together for child health	
Progress against standard	Comply?
Standard 1 – GPs have access to immediate telephone advice from a consultant paediatrician.	Yes
Standard 2 – consultant – led rapid access service – although there is an urgent outpatient service or referral to the assessment unit	partly
Standard 3 – no link consultant paediatrician to support GP practices, although there is a GP interface group. .	No
Standard 4 – twice-yearly information and knowledge exchanges with GPs are not provided	No
Standard 5 – The community children's nursing service operates 9-5 six days a week, not 24/7	Partly
Standard 6- There is a link community children's nurse for each group of GP practices.	Yes
Standard 8 – Discharge summaries are sent to GPs electronically within 24 hours, but this has not been recently audited.	Yes
Standard 9 - Access to the child's health record is available to all in the hospital setting but not GPs or GP out of hours	Partly
Standard 10 – Whilst there are jointly developed referral guidelines for some conditions care pathways have not yet been developed jointly with GPs.	No
Standard 11 – There are no regular meetings with health professionals across hospital community and primary care with CYP representation to monitor review and improve local unscheduled care services.	No

Appendix 7 - Gap analysis against SSPAU guidance

Standards for Short-Stay Paediatric Assessment Units (SSPAU) were launched in March 2017 and provide 31 evidence or consensus based guidance for ensuring equitable care for children and young people attending these facilities.

Standard	Compliance or gap
Governance	

	Standard	Compliance or gap
1.	The SSPAU operates as part of a regional paediatric network of local and specialised children's services.	<i>Compliant- not a network but under joint management with RHSC</i>
2.	A Standard Operating Policy (SOP) must be in place with a named senior paediatrician and named senior children's nurse responsible for the management and coordination of the service.	<i>Gap – SOP not drawn up. Senior Paediatricians have taken responsibility for service but not officially named and not officially recognised in Job Plan</i>
3.	Clear pathways for access, referral and admission to the SSPAU and for escalation of care and discharge must be in place and audited against.	<i>Gap – not yet developed</i>
4.	Trust/Health Board safeguarding policies and processes are in place and followed.	<i>Compliant</i>
5.	Evidence-based guidelines are used for the management of conditions with which infants, children and young people may be admitted to the SSPAU.	<i>Compliant – RHSC guidelines used although not always easily accessible Still potential for development</i>
6.	Agreed pathways for shared care with speciality teams such as CAMHS, general paediatric surgery, orthopaedic surgery, ENT, plastic surgery, ophthalmology, oral surgery and dentistry, maxillofacial, gynaecology, neurosurgery in place.	<i>Gap – for development</i>
7.	Each SSPAU audits their performance against locally agreed care quality indicators.	<i>Compliant – audited against Scottish Patient Safety Paediatric Programme (SPSPP) but not specific to SSPAU</i>
8.	Processes must be in place for implementing learning from complaints, compliments, transfers and adverse events.	<i>Compliant</i>
	Environment and hours of operation	
9.	The unit must have its own dedicated footprint with secure, restricted access to ensure the safety and security of infants, children and young people.	<i>Compliant</i>

	Standard	Compliance or gap
10.	A CYP friendly and developmentally appropriate play area must be available for all infants, children and young people.	<i>Compliant</i>
11.	Hours of operation should match times of population demand of the SSPAU.	<i>Gap</i>
12.	Equipment must be available to support the day-to-day activity on the unit as well as resuscitation, stabilisation and transfer of infants, children and young people who become critically unwell.	<i>Compliant</i>
13.	SSPAUs which provide care for infants, children and young people beyond four hours must include provision for meals, bathroom and parent facilities.	<i>Compliant</i>
	Recognition and management of the deteriorating child	
14.	All infants, children and young people accessing the SSPAU must have a standardised initial assessment including pain score within 15 minutes of arrival, if this has not taken place in the emergency department. Regular paediatric early warning score assessments should subsequently be undertaken with appropriate escalation of care.	<i>Partially compliant- triage system currently being trialled although pain score not included. A national PEWS is being rolled out across Scotland in September which will result in compliance.</i>
15.	There is urgent access to a paediatric resuscitation team including personnel with advanced airway, intubation and ventilation skills during all hours of operation.	<i>Compliant</i>
16.	Guidelines for the stabilisation and transfer of infants, children and young people must be in place for all of the following situations: - Accessing advice from and transfer to the PICU - Inter-hospital transfer - Transfer within the hospital	<i>Compliant</i>
	Promotion of ambulatory and community based care	
17.	The SSPAU can access support from community children's nursing teams 24 hours a day, seven days a week, with visits as required depending on the needs of the children using the service.	<i>Not compliant</i>

	Standard	Compliance or gap
18.	A written discharge summary is sent electronically to the infant, children or young person's GP and other relevant healthcare professionals (including health visitors and school nurses as appropriate) within 24 hours of discharge. A copy of the information is given to the child or young person and their parents and carers.	<i>Partially compliant. Discharge letters sent to GP- not routinely copied to parents</i>
	Supporting services	
19.	The SSPAU has timely access to pathology, radiology and pharmacy services with paediatric-appropriate advice from these services during all hours of operation of the SSPAU.	<i>Partially compliant- Pharmacy and radiology services available on- call after 5pm . No access to paediatric USS after 5pm – requires transfer to RHSC</i>
20.	Healthcare professionals assessing or treating infants, children and young people in the SSPAU have access to the child's shared electronic healthcare record.	<i>Partially compliant – but no access to GP records</i>
	Communication with children young people and families	
21.	Children and young people and their parents and carers receive regular updates on their condition and management plan, and are fully involved in the decision making process.	<i>Compliant</i>
22.	Children and young people and their parents and carers are provided, at the time of their discharge, with both verbal and written discharge and safety netting information, in a form that is accessible and that they understand.	<i>Partially compliant- written safety netting information needs developing since change in service.</i>
23.	The SSPAU actively engages with children, young people and parents and carers and uses their feedback to inform service delivery and development.	<i>Compliant</i>
	Staffing	
24.	Every infant, child or young person on the SSPAU with an acute medical problem is seen by a healthcare professional with the appropriate competencies to work on the tier-two) paediatric rota within four hours of admission to the unit.	<i>Compliant</i>

	Standard	Compliance or gap
25.	Every infant, CYP on the SSPAU with an acute medical problem is seen by a consultant paediatrician* within 14 hours of admission to the unit, with more immediate review as required according to illness severity or if a member of staff is concerned.	<i>Compliant Mon-Fri but not always at weekend</i>
26.	A consultant paediatrician* is readily available on the hospital site at times of peak activity of the SSPAU and is able to attend the SSPAU at all times within 30 minutes. Throughout all the hours they are open, SSPAUs have access to the opinion of a consultant paediatrician* via telephone.	<i>Compliant</i>
27.	The SSPAU has access to a paediatrician with child protection experience and skills (of at least level three safeguarding competencies) who is available to provide immediate advice and subsequent assessment, if necessary, for all infants, children and young people where there are safeguarding concerns.	<i>Compliant</i>
28.	SSPAU children's nurse staffing comply with RCN guidelines (Min 2 children's nurses for every 6-8 beds) with regular audit of patient acuity using appropriate tools to ensure that levels are appropriate for the number, dependency and case mix of infants, children and young people normally cared for by the service.	<i>Compliant</i>
29.	Every ICYP on the SSPAU with an acute medical problem is seen by, or has their case discussed with, a clinician with the necessary skills and competencies before they are discharged. Nurse-led discharge, when appropriate should be supported by policy, education & training.	<i>Compliant</i>
30.	The SSPAU has access to appropriately qualified play specialists and allied health professionals.	<i>No current play specialist- support worker with training in play</i>
	Training and CPD	

	Standard	Compliance or gap
31.	Nursing staff should possess competencies in triage (where patients have direct access to SSPAU), recognition and management of the deteriorating child, including resuscitation and pain management.	<i>Compliant</i>
32.	All clinical staff have appropriate, up-to-date paediatric resuscitation training. At least one member of staff with advanced paediatric resuscitation provider certification must be available at all times.	<i>Compliant</i>