

NHS Lothian Internal Audit Report 2021/22 Water Safety in New Build Sites

Assurance Rating: **Moderate Assurance**

Date: September 2021

Final Report

Contents

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1 Executive Summary

2 Management Action Plan

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Timetable

- Date closing meeting held: Client responded directly to draft report
- Date draft report issued: September 2021
- Date management comments received: 25 May 2022
- Date Final report issued: 01 June 20212
- Date presented to Audit and Risk Committee: 20 June 2022

This report has been prepared solely for internal use as part of NHS Lothian's internal audit service. No part of this report should be made available, quoted or copied to any external party without Internal Audit's prior consent.

1. Executive Summary

Introduction

The development, construction, installation and maintenance of hot and cold-water supply systems are vital for public health. Healthcare premises are dependent upon water to maintain hygiene and a comfortable environment for patients and staff, as well as for clinical and surgical care. The basic steps to achieve effective water quality management include testing, filtration, temperature control and flow.

Management has the overall responsibility for implementing procedures to ensure that safe, reliable hot and cold-water supply, storage and distribution systems operate within the organisation. There are a number of regulations that specifically relate to water supplies, for example the Scottish Health Technical Memorandum 04-01 (SHTM 04-01), which sets minimum standards in areas such as testing and maintenance. In addition, there are statutory requirements relating to the control of Legionella. All premises are required to have a Legionella risk assessment and a written scheme for controlling any identified risks in accordance with the Health and Safety Commission's Approved Code of Practice L8.

The importance of water safety has recently been brought to the forefront from issues identified at the Queen Elizabeth University Hospital in Glasgow, with an independent review examining water contamination commissioned. This is of particular importance for new build sites, where there is a handover in the roles and responsibilities of water safety management and the controls in place prior to handover, between the contractor and NHS Lothian. Therefore, NHS Lothian require a clear control environment to provide assurance internally that the control environment is designed and operating effectively.

Scope

This audit considered the design and operation of controls in place for NHS Lothian's water quality management relating to new build site and the handover of these sites. This considered the RHCYP & DCN site and the East Lothian Community Hospital. We assessed testing processes in order to provide assurance that the controls in place are reasonable and that the risks in this area are managed effectively.

This included considering how roles and responsibilities of both NHS Lothian and contractors are established from the outset, and how these are handed over appropriately at completion of the build. We also considered how NHS Lothian are assured of the processes undertaken by the contractor to support the decision to commence operations once the site is functional.

It should be noted that this review was limited to the controls in place relating to new build sites, however, future reviews are planned to consider water maintenance and safety of existing buildings, including those maintained by a provider and those maintained by NHS Lothian.

Specific areas of risk identified where assurance was sought that suitable processes and controls are in place, to mitigate the risks, are set out below:

Risks:

- The contract with the builders does not set out responsibilities in relation to water management during the build or during handover.
- The handover date of these roles and responsibilities are not agreed in advance and a sufficient handover is not performed.
- Testing of water safety is not picked up as part of NHS Lothian's responsibilities under their water management processes following handover of site.
- Identification and assessment of water quality risks is not undertaken by the contractors or reviewed by NHS Lothian.
- The testing process used by contractors is not reviewed and agreed by NHS Lothian, to ensure it aligns to national and local standards.
- Contractors do not undertake sufficient testing over water safety, including considering all locations concerned and this is not reviewed by NHS Lothian.
- Any issues identified relating to water safety are not escalated to NHS Lothian Water Safety Group in a timely manner.
- Where testing returns areas of concern or where issues have been identified actions are not put in place to rectify this, with sufficient oversight from NHS Lothian.
- NHS do not perform testing or are not assured of water safety prior to commencing operations at the site.

Approach

We met with relevant staff, reviewed documentation, and undertook sample testing to assess if the controls in place around the management of water safety during a site build are designed and operating effectively. We considered how roles and responsibilities are defined in advance of a build, and how these are handed over at completion. Additionally, we considered how NHS Lothian decide to commence operations based on the water safety information available to them.

A complete list of staff involved in the audit and documents reviewed can be seen at Appendix 1.

Acknowledgments

We would like to thank all staff consulted during this review for their assistance and cooperation

Limitations in Scope

Please note that our conclusion is limited by scope. It is limited to the risks outlined above. Other risks that exist in this process are out with the scope of this review and therefore our conclusion has not considered these risks. Where sample testing has been undertaken, our findings and conclusions are limited to the items selected for testing.

It should be noted that internal audit are not technical experts and, therefore, the review focused on testing compliance with the controls established by NHS Lothian to provide assurances internally. There may be other controls which NHS Lothian should have which could only be identified by a specialist or technical expert.

This report does not constitute an assurance engagement as set out under ISAE 3000.

Summary of Findings

We have concluded that the controls in place in respect of the processes in relation to Water Safety in New Build Sites provides a **MODERATE** level of assurance. The table below provides a summary of the findings. The ratings assigned are based on the agreed internal audit rating scale (**Appendix 2**).

Detailed findings, recommendations and agreed management actions are found in Section 2 of this report.

MODERATE assurance			
HIGH	MEDIUM	LOW	ADVISORY
-	3	-	-

Ref	Issue	H	M	L	A
2.1	An assurance pathway should be put in place which outlines key approvals and governance to provide assurance over actions undertaken	-	1	-	-
2.2	The Board Water Safety Group needs to formally ratify supporting water safety group's terms of reference	-	1	-	-
2.3	There is a lack of clarity over decision making and advisory roles	-	1	-	-
TOTAL		-	3	-	-

Conclusion

Through discussions held and evidence obtained, internal audit could confirm that certain procedures had been undertaken to enable NHS Lothian to comply with the technical requirements for water safety in new build sites. However, without there being a clear assurance pathway for water safety in new build sites and without internal audit holding the relevant technical expertise, it was difficult to establish whether all relevant requirements had been met or if best practice had been followed.

As a result, we have highlighted 3 main findings within our report.

1. NHS Lothian does not currently have an assurance pathway for the management of water safety during the design, installation and operation of healthcare premises. This should be put in place in order to clearly document how the Board complies with requirements from the SHTM 04-01 and other relevant guidance and should set out key approvals required at each stage. It should also incorporate any additional procedures NHS Lothian would wish to undertake to provide added assurance.
2. The Board Water Safety Group, which is responsible for the ongoing management of water safety within NHS Lothian has not ratified the terms of reference (including remit, membership and quorate status) of Commissioning Phase Water Safety Groups, which are set up when new build sites are being developed. Nor does the Board Water Safety Group formally delegate powers to the commissioning phase group. In practice, acceptance of handover is normally done by the construction phase groups. Without formal delegation and ratification of the remit of the construction phase groups, there is a lack of clarity over each groups responsibilities, with a risk that some decisions taken at the wrong level.
3. There is a lack of clarity over the responsibilities in relation to decision making and advisory roles, with little direction given to these roles in relation to new build sites. There is a risk that without defining the expectations of roles within the process for water safety in new build sites, that the right input is not obtained at the right stages.

These findings are discussed in full within our Management Action Plan below.

Follow Up

The follow-up process is aligned with the meetings of the Board's Audit & Risk Committee. Audit Sponsors will be contacted on a quarterly basis with a request to provide the necessary evidence for those management actions that are likely to fall due before the next meeting of the Audit and Risk Committee.

2. Management Action Plan

Finding 2.1 – An assurance pathway should be put in place which outlines key approvals and governance to provide assurance over actions undertaken

Medium

Management has the overall responsibility for implementing procedures to ensure that safe, reliable hot and cold-water supply, storage and distribution systems operate within the organisation.

The SHTM 04-01 Part A sets out advice and guidance on the design, installation and operation of specialised building and engineering technology used in the delivery of healthcare and focuses on standards, guidance and up to date best practice. It remains the responsibility of healthcare providers that appropriate governance arrangements are in place and are managed effectively. The guidance sets out expectations in relation to various activities required during the construction of a healthcare building including:

- The Water Safety Group being consulted as early as possible when planned premises were being discussed;
- A water risk assessment being completed for all projects and updated throughout;
- The Water Safety Group being consulted with at all stages of the design, installation and commissioning of the new water systems;
- Continuous monitoring being performed throughout the installation; and
- Appropriate documentation being provided on completion.

NHS Lothian have a Water Safety Management Policy with the purpose of outlining the means by which NHS Lothian will meet its obligations in respect of water. This policy sets out the roles and responsibilities of individuals in relation to water management as well as notes the governance structure, including the establishment of a Water Safety Group. This policy has an annual review date from issue, however, the policy was last reviewed in December 2019, and is therefore currently out of date.

Whilst the policy provides an overview of the governance structures and roles and responsibilities within NHS Lothian, there is no reference to or associated procedure relating to the construction phase of healthcare premises and the obligations of NHS Lothian in relation to these.

It was noted during the review that there is good knowledge and experience of water safety issues within the project teams, as well as areas of good practice undertaken. This included the commissioning of independent audit reports considering water nearer to completion of builds to ensure requirements had been met. These independent audits did identify areas for improvement, including things like replacing certain taps which were identified as containing bacteria or performing a backwash on water filtration units, with actions subsequently put in place to address these. Additionally, prior to handover, independent assessments were undertaken by the Authorising Engineer which recommended acceptance of handover via a pre-handover report.

However, there is currently no assurance pathway or process in place for reviewing, monitoring and accepting completion of buildings (in relation to water safety). Without this, it was difficult for internal audit to establish whether all relevant requirements had been met or if what was done by project teams reflected best practice. The independent audit reports mentioned above also acknowledged that there was limited assurance to secure governance, risk management and internal control within some of the areas under review.

There remains a risk that the knowledge and good practice with the projects team may be lost with should any employees leave NHS Lothian. For the NHS Lothian Board to have sufficient assurance over the processes undertaken, we would expect a clear assurance pathway to be in place and followed. For example, without there being a requirement to, via an assurance pathway, independent audits may not have taken place and therefore issues identified from these may not have been addressed.

It should be noted that actions are already being undertaken within NHS Lothian to address the issues highlighted from the internal audit report on RHCYP/DCN, including looking at internal systems of control relating to areas of governance and assurance.

2. Management Action Plan

Finding 2.1 – An assurance pathway should be put in place which outlines key approvals and governance to provide assurance over actions undertaken (cont.)

Medium

Recommendation

Linking to the work currently being performed to enhance the systems of internal control and governance arrangements in relation to capital projects, NHS Lothian should set out a clear assurance pathway for the management of water safety during the design, installation and operation of healthcare premises. This should outline key requirements from the SHTM 04-01 and other relevant guidance and set out key approvals required at each stage. It should also incorporate any additional procedures NHS Lothian would wish to undertake to provide added assurance, such as the requirement for independent audit reports prior to handover.

Additionally, the NHS Lothian Water Safety Management Policy should be updated to recognise the requirements in relation to water safety in new builds, with reference to any process or assurance pathway created within this.

Management Response

Management agree with the audit finding and recommendation.

Significant capital projects, with established project teams under the leadership of a Capital Programme Director, establish the Construction Phase Water Safety Group which will feed into the Board Water Safety Group as directed. Smaller projects will report in a consolidated way to the Board Water Safety Group through a representative from Capital Planning and Projects. The format for such reporting will reflect the requirements of the Board Water Safety Group from time to time.

Management Action

For all projects under the project management of Capital Planning and Projects, the Assurance Framework developed over 2020/ 21 and reported to LCIG on 7th February 2022, will be utilised and updated to reflect any changes in requirements of the Board Water Safety Group. In recognising that there are four key phases in the development of a new capital build or major refurbishment (namely briefing, design, construction, commissioning and handover) there will still be continuous engagement with colleagues in clinical service, IPCT and Estates as envisaged by the relevant SHTM (e.g. 04-01). Clear guidance from the Water Safety Groups is a necessity as part of the briefing phase onwards and engagement with the specialist services will continue throughout the development phases.

Responsibility

Target Date

Director of Capital Planning and Projects
 Director of Estates & Facilities
 Associate Medical Director, Critical Care, Anaesthesia & Theatres
 Head of Operations Hard FM

31 July 2022

2. Management Action Plan

Finding 2.2 – The Board Water Safety Group needs to formally ratify supporting water safety group's terms of reference

Medium

The Water Safety Management Policy within NHS Lothian states that the Capital Projects Director has the delegated responsibility for ensuring new build sites are designed, installed and accepted for completion. In practice, this responsibility is discharged via a multidisciplinary Board Water Safety Group. The Board Water Safety Group is supported by site specific Water Safety Groups which report to the main group. The policy recognises that through these water safety groups, NHS Lothian will be able to demonstrate that there is effective governance, competence and accountability arrangements in place to assist in the delivery of safe water in NHS Lothian's premises. Please see Appendix 3 for a diagram of the Governance Groups and Committees for Water Safety Management and their respective reporting lines.

For new build sites, a Construction Phase Water Safety Group (CPWSG) is established. The terms of reference for the Board Water Safety Group does not make any reference to CPWSGs, nor does it set out a requirement to ratify the terms of reference for any CPWSGs or site specific WSGs.

The CPWSGs' Terms of References reviewed set out the specific remit of the groups which includes activities like ensuring risk assessments, documentation and work specifications are prepared and ratified and providing documentation to the Board Water Safety Group including proformas for Handover of new buildings and permits to open a section or area. In practice, the CPWSG meet more regularly than the Board Water Safety Group and this has resulted in contractual decisions being made by the CPWSG, such as the acceptance of handover from a water perspective, rather than at a Board Water Safety Group level. This may be appropriate, however the responsibility for accepting handover has not been formally delegated from the Board Water Safety Group. Additionally, without the Board Water Safety Group ratifying the terms of reference of the CPWSG, there is a risk that the CPWSG's remits are not as expected, with potentially too much or too little delegated. This also extends to the membership of the CPWSG, where we would expect the Board Water Safety Group to ratify membership as being appropriate.

It was also noted through review of the term of references for these groups, that the requirement for quorum differs. The Board Water Safety Group requires that 8 members of the group are present, however it specifically mentions that this would need to include the following individuals:

- the Chair;
- the Designated Person (Water) or Responsible Person (Water);
- the Consultant Microbiologist or their deputy; and
- the Authorising Engineer.

The CPWSG requires that 60% of members are present for business to be transacted, however, this does not mention whether this would need to include specific individuals. Additionally, for the CPWSG, quorum is also extended to include deputies. There is, therefore, a risk that key decisions made by the CPWSG may be made where the make-up of members is not in line with what would be expected at a Board Water Safety Group level.

Recommendation

Clarity needs to be provided over who has delegated authority for ensuring new build sites are designed, installed and operated effectively. This should be provided via the NHS Lothian Water Safety Management policy as well as via the ratification of the terms of reference of the Board Water Safety Group by the Board and CPWSG's by the Board Water Safety Group.

The Board Water Safety Group should specifically consider whether it is comfortable with the remit of the CPWSG, and if it is appropriate to delegate contractual matters such as the acceptance of handover of a building, as well as consider the membership and quorum requirements for each group. Whilst we did not consider ongoing site specific water safety groups as part of this review, we would also expect the Board Water Safety Group to be ratifying their terms of references to ensure they are in line with expectations.

2. Management Action Plan

Finding 2.2 – The Board Water Safety Group needs to formally ratify supporting water safety group’s terms of reference (cont.)

Medium

Management Response

Management agree with the audit finding and recommendation.

Management Action

Terms of reference in Construction Phase Water Safety Groups will be taken forward under the respective Capital Programme Director to reflect updates from the Board Water Safety Group.

Responsibility

Director of Capital Planning and Projects
Director of Estates & Facilities
Associate Medical Director, Critical Care, Anaesthesia & Theatres

Target Date

31 July 2022

2. Management Action Plan

Finding 2.3 – There is a lack of clarity over decision making and advisory roles

Medium

NHS Lothian's Water Safety Management Policy defines the roles and responsibilities of individuals in relation to water. This includes the Designated Person for Water (being the Director of Facilities), the Responsible Person for Water (being the Head of Hard FM) and the Capital Projects Director, among others.

Some of the individuals identified within the policy are noted as being 'advisory roles.' This includes NHS Lothian's Consultant Microbiologist, Infection Prevention Control Nurse and Independent Professional Advisor (i.e. the Authorising Engineer). However, this contradicts the Board's Water Safety Group quorum requirements, discussed at Finding 2.2 above, where quorum can only be met if the Consultant Microbiologist and Authorising Engineer are present. This implies they are key decision makers, and meetings should not go ahead without their input. Additionally, the Water Safety Management Policy does not define what an 'advisory role' constitutes or expectations for their input. Further, responsibilities of 'advisory roles' are not defined by NHS Lothian from the point of view of pre-commissioning and pre-occupation of premises.

NHS Lothian have created lead HAI Scribe Infection Prevention Control Nurse posts (2 WTE) and these posts are currently filled by qualified IPCNs whose remit focuses on providing operational support/advice on infection prevention control in the built environment and risks associated with general design, construction and management of refurbishment and build projects. They also take a key role in supporting completion of the mandatory HAI Scribe process. Pre-handover checks & confirmation of compliance is required in Stage 4 of the HAI Scribe process. However, the HAI Scribe IPCN role is not one which is currently recognised within the Water Safety Management Policy, in either a decision making or advisory capacity.

There is a risk that without defining the expectations of roles within the process for water safety in new build sites, that the right input is not obtained at the right stages. Additionally, without recognising the expertise of some members such as the HAI Scribe IPCN role within the policy, there is a risk that they are not utilised as expected.

Recommendation

NHS Lothian should review the Water Safety Management Policy and terms of references of the various Water Safety Groups to ensure roles and responsibilities are appropriately defined. This should include the roles and responsibilities for both ongoing management of water and the management of water during construction phases.

Linked to finding 1.1, NHS Lothian should build into the assurance pathway for water safety in new build sites who the key approvers and key advisors are at each stage in the process, with responsibilities for key decisions being formally laid out.

Management Response

Management agree with the audit finding and recommendation.

Management Action

It is key for the Assurance Framework, referenced in the response for 2.1, in response to the requirements from the Board's Audit and Risk Committee, that roles are defined including those of external consultants and advisers. Under the STHMs and the emerging requirements of NHS Scotland Assure, the ongoing engagement from in house expertise in, for example, Estates and IPCT is required. Therefore all roles will be reflected in the Construction Phase Water Safety Groups' remits with the further clarity of the roles and engagement with the Board Water Safety Group.

Responsibility

Target Date

Director of Capital Planning and Projects

31 July 2022

Director of Estates & Facilities

Associate Medical Director, Critical Care, Anaesthesia & Theatres

Head of Operations Hard FM

Appendices

Appendix 1 – Staff Involved and Documents Reviewed

Staff Involved

- Medical Director
- Director of Capital Planning and Projects
- Director of Estates
- Project Director, East Lothian Community Hospital
- Project Director, RHCYP/DCN
- Head of Health & Safety Services
- Consultant Microbiologist
- Associate Director – Infection Prevention Control
- Clinical Nurse Manager, DCN

Documents Reviewed

- NHS Lothian Water Safety Management Policy (December 2019)
- Scottish Health Technical Memorandum 04-01 Parts A-G
- DL (2015) 19 – HCAI and AMR Policy Requirements
- DL (2019) 23 – HCAI and AMR Policy Requirements
- ELCH– Construction Phase Water Management Group Terms of Reference v0
- ELCH Pre-Handover Report October 2019
- ELCH Phase 3 Commissioning Activity Schedule
- ELCH OPD Cold water temps graph
- ELCH Water Samples – Oct 23rd
- ELCH – Microbiological Sampling Criteria 1903930
- ELCH – Authorities Construction Requirements – Final – 11 08 2016
- ELCH Building User Guide – final draft
- ELCH – Facilities Management Maintenance Matrix
- ELCH – Legionella Control Association Certificate 2020
- ELCH – Completion Requirements Checklist 151019
- ELCH – Certificate of Practical Completion – Phase 3 281019
- ELCH – Phase 2 Technical Demonstration Programme – 250118
- ELCH CPWSG – Meeting Minutes
- ELCH – MEP SOR Tracker 101019
- ELCH – Sample Progress Reports (Report 31, 28 and May 2019)
- ELCH – Technical Advisor Stage 2 Report – Turner and Townsend – 150416
- ELCH – DBFM Agreement
- DRAFT NHS Lothian Narrative for Item 3.14 of Annex 1, Request for Information (to assist in the Scottish Hospitals Inquiry) and associated documents (please note that this contained many documents relevant to the RHCYP/DCN and water safety arrangements, including independent audits undertaken among other things)

Appendix 2 – Our IA Report assurance levels

The table below shows the levels of assurance we provide and guidelines for how these are arrived at. We always exercise professional judgement in determining assignment assurance levels, reflective of the circumstances of each individual assignment.

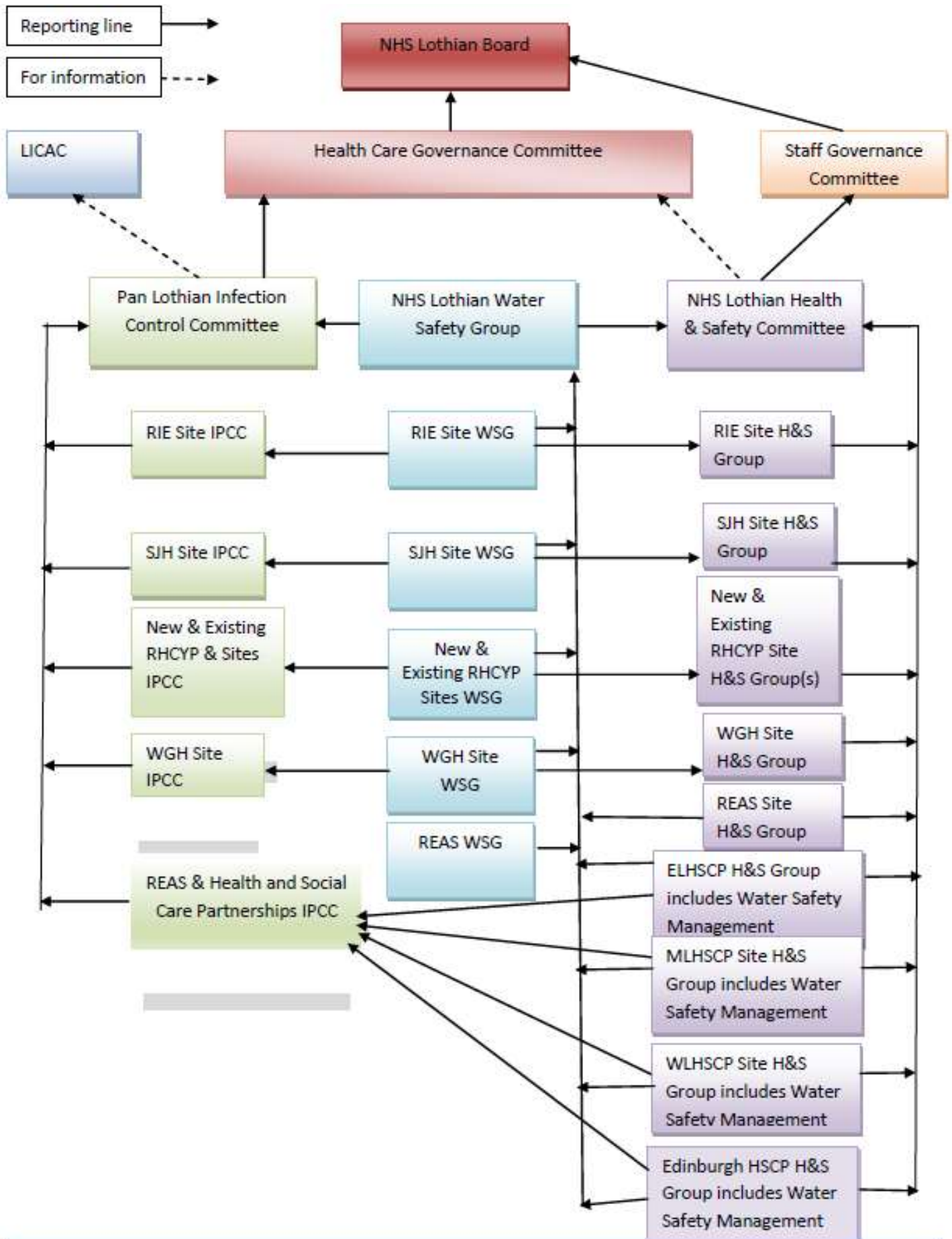
Rating	Definition	When Internal Audit will award this level
Significant assurance	<p>The Board can take reasonable assurance that the system(s) of control achieves or will achieve the control objective.</p> <p>There may be an insignificant amount of residual risk or none at all.</p>	<p>There is little evidence of system failure and the system appears to be robust and sustainable. The controls adequately mitigate the risk, or weaknesses are only minor (for instance a low number of findings which are all rated as 'low' or no findings)</p>
Moderate Assurance	<p>The Board can take reasonable assurance that controls upon which the organisation relies to achieve the control objective are in the main suitably designed and effectively applied.</p> <p>There remains a moderate amount of residual risk.</p>	<p>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".</p> <p>The controls are largely effective and in most respects achieve their purpose with a limited number of findings which require management action (for instance a mix of 'medium' findings and 'low' findings)</p>
Limited Assurance	<p>The Board can take some assurance from the systems of control in place to achieve the control objective, but there remains a significant amount of residual risk which requires action to be taken.</p>	<p>This may be used when:</p> <ul style="list-style-type: none"> There are known material weaknesses in key control areas. It is known that there will have to be changes that are relevant to the control objective (e.g. due to a change in the law) and the impact has not been assessed and planned for. <p>The controls are deficient in some aspects and require management action (for instance one 'high' finding and a number of other lower rated findings)</p>
No assurance	<p>The Board cannot take any assurance from the audit findings. There remains a significant amount of residual risk.</p>	<p>The controls are not adequately designed and / or operating effectively and immediate management action is required as there remains a significant amount of residual risk (for instance one Critical finding or a number of High findings)</p>

Appendix 2 - Continued

The table below describes how we grade our audit recommendations based on risks

Rating	Description	Possible features
High	Findings that are fundamental to the management of risk in the business area, representing a weakness in the design or application of activities or control that requires the immediate attention of management	<ul style="list-style-type: none"> ▪ Key activity or control not designed or operating effectively ▪ Potential for fraud identified ▪ Non-compliance with key procedures / standards ▪ Non-compliance with regulation
Medium	Findings that are important to the management of risk in the business area, representing a moderate weakness in the design or application of activities or control that requires the immediate attention of management	<ul style="list-style-type: none"> ▪ Important activity or control not designed or operating effectively ▪ Impact is contained within the department and compensating controls would detect errors ▪ Possibility for fraud exists ▪ Control failures identified but not in key controls ▪ Non-compliance with procedures / standards (but not resulting in key control failure)
Low	Findings that identify non-compliance with established procedures, or which identify changes that could improve the efficiency and/or effectiveness of the activity or control but which are not vital to the management of risk in the business area.	<ul style="list-style-type: none"> ▪ Minor control design or operational weakness ▪ Minor non-compliance with procedures / standards
Advisory	Items requiring no action but which may be of interest to management or which represent best practice advice	<ul style="list-style-type: none"> ▪ Information for management ▪ Control operating but not necessarily in accordance with best practice

Appendix 3 – Governance Groups/ Committees for Water Safety Management



Note that the above diagram was taken from the Water Safety Management Policy (18/12/2019) v1.1



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