

Internal Audit



Utilities Management

March 2014

Overall Opinion	Satisfactory
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Executive Summary

Overall opinion	Satisfactory
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Risks	Control Opinion
Costs for utilities are excessive	Satisfactory
Carbon emissions are excessive	Satisfactory

Overall opinion

Overall, a reasonable framework exists for managing utilities, with electricity, gas and water supplied under national framework agreements.

To help check invoices received from suppliers, a suite of spreadsheets has been developed which allows supplier invoices to be checked against target consumption rates based on several years' historical data.

As part of monitoring carbon emissions, regular reports are presented to the Estates Strategic Meeting, and information about energy and water use and CO₂ levels are provided each month to NHS Health Facilities Scotland. Also, national HEAT targets which are reported to NHS Lothian's Board include two targets relating to energy and carbon emissions.

Costs for utilities

In line with CEL 05 (2012) Key Procurement Principles, NHS Lothian purchases electricity, gas, water and waste-water services through national framework agreements set up by the Scottish Government. As part of the framework, NHS Lothian has signed the required agency agreements, with the Energy & Environment Manager acting as the main contact with suppliers.

Under the agreements, electricity and gas suppliers apply various charging rates. The Energy & Environment Manager uses a suite of 46 reasonably complex spreadsheets as part of the process for approving invoices, including target consumption rates based on several years' historical data. Apart from the Energy & Environment Manager's experience, no specific criteria have been defined for following up on differences between expected and actual charges, with no evidence kept to confirm that queries have been answered satisfactorily. Also, the rates charged on invoices are not checked against agreements (issue 1).

While water bills are paid annually in advance, monthly invoices are issued for information by [REDACTED] (part of [REDACTED]). While [REDACTED] provides statements of annual water use and charges at the year-end, NHS Lothian does not reconcile the statements to confirm that payments made were correct (issue 1).

Across most hospitals, building management software helps control energy use, mainly through regulating temperatures within buildings. In addition, software can detect when problems arise in the operation of key equipment and facilitate switching to standby equipment. At least for the time being, building management software has not been installed for more remote buildings (eg Calareidh House or Marchhall House) or smaller sites where facilities management is provided by external companies (eg Ellen's Glen House or Tippethill Hospital).

To minimise disruption should utility supplies fail, Estates has put in place various plans and processes. For electricity supplies, all sites with inpatients have back-up generators which are fuelled to provide up to 200 hours of electricity. However, records show that maintenance is not being carried out as regularly as scheduled. Between January and December 2013, records on Backtraq show that maintenance jobs expected to be done each week are being

completed on average 77% of the time (issue 2). For gas supplies, no specific emergency plans have been developed, although important equipment such as industrial boilers operate on a dual-fuel basis, with gas as the main fuel and oil as the back-up. For water supplies, emergency plans have been developed for most sites with inpatients, with plans being reviewed during early 2014.

Carbon emissions

As part of monitoring carbon emissions, regular reports are presented to the Estates Strategic Meeting, and information about energy and water use and CO₂ levels are provided each month to NHS Health Facilities Scotland.

In June 2009, the Executive Management Team approved the Carbon Management Plan which sets out NHS Lothian's target for reducing CO₂ emissions. The plan includes various carbon management projects to be carried out within the plan's 5-year timetable, with a revised plan due to be drafted by March 2014. As part of the overall carbon management programme, NHS Lothian has partnered with the Carbon Trust to achieve the Carbon Trust Standard for financial years 2010/11 to 2013/14.

The Carbon Reduction Commitment Energy Efficiency Scheme (CRC) requires that health boards monitor energy use and report on energy supplies annually to NHS Health Facilities Scotland. Health boards' compliance with the CRC scheme is independently assessed. In March 2012, Scottish Environment Protection Agency awarded NHS Lothian a Pass with Improvement Actions and, in July 2013, Green Energy Partners assessed NHS Lothian as Partially Compliant. Green Energy Partners highlighted a lack of written procedures, along with the potential for manual errors when collating data. The Energy & Environment Manager advises that actions are underway to address these aspects, including plans to purchase a software package to replace the suite of spreadsheets currently used for monitoring energy costs.

As part of national HEAT targets, health boards are required to meet two targets relating to energy and carbon emissions: reduce energy consumption by 2.97% and reduce carbon emissions by 8.73% by March 2015. While NHS Lothian reported the best performance among territorial health boards as at July 2013, changes by the Scottish Government to baseline calculations mean that NHS Lothian's early achievements are no longer counted. Also, the HEAT target relates solely to the consumption of fossil fuels which only represents 30% of NHS Lothian's carbon emissions. The Scottish Government is currently reviewing future requirements for the two HEAT targets.

Background, Objective & Scope

Background

Each year, NHS Lothian spends around £19 million on gas, electricity, water and waste-water services, with £100k spent on oil. In complying with Scottish Government requirements, national contracts are used for the purchase of utilities. Meanwhile, utilities costs for externally provided facilities, such as the Royal Infirmary of Edinburgh, are included within providers' operating charges.

The Property & Asset Management Strategy requires energy consumption and carbon emissions to be reduced, with Invest to Save projects aimed at improving energy efficiency. To support targets set under the Climate Change (Scotland) Act 2009, the Scottish Government has set HEAT targets for health boards to reduce energy consumption by 2.97% and energy-based carbon emissions by 8.73% by March 2015. Each month, energy data is provided to NHS Health Facilities Scotland.

Scottish Health Technical Memorandums issued by NHS Health Facilities Scotland require health boards to make arrangements to minimise the impact from interruptions to energy supplies. Across NHS Lothian, emergency generators can provide a minimum of 200 hours of electrical power. Also, water storage tanks in several locations provide limited supplies in the event of mains failures. Meanwhile, alternative fuels such as oil can be used should gas supplies fail.

The Director of Operations for Facilities is responsible for utilities. The director is supported by the Energy & Environment Manager who monitors energy consumption, and several Operations Managers within Estates who monitor the efficiency of plant and equipment.

Objective

The objective of the audit was to evaluate the adequacy and effectiveness of internal controls for managing services from electricity, gas and water suppliers.

The audit focused on specific risks.

- Costs for utilities are excessive.
- Carbon emissions are excessive.

Scope

The scope of the audit included:

- contracts for supply of services;
- promoting efficient use of utilities;
- monitoring of use, including bills; and
- contingency arrangements for failures in supplies.

The scope excluded:

- telecommunications – separate audit; and
- transport fuel & fuel cards – part of another audit.

Audit Issues & Recommendations

Issue 1	The accuracy of payments to suppliers is not fully checked
Important	
<p>Each year, NHS Lothian spends around £19 million on electricity, gas and water services (£18.9 million in 2012/13 and £19.6 million budgeted for 2013/14). Monthly invoices are paid for electricity and gas, while water is paid for annually in advance based on estimated use. Electricity and gas suppliers apply various charging rates, normally split between transmission and energy charges. While transmission charges are published by the Office of Gas & Electricity Markets (Ofgem), energy rates are set within national contracts agreed by the Scottish Government.</p> <p>As part of the process for approving invoices for electricity and gas, the Energy & Environment Manager uses a suite of 46 reasonably complex spreadsheets, based on more than 10 years of historical data. The spreadsheets include target consumption rates for each supply point which are used for checking invoices. While invoices are always paid, significant differences between invoices and targets require to be followed up with suppliers. Apart from the Energy & Environment Manager's experience, no specific criteria have been defined for following up on differences between expected and actual charges. Although comments are sometimes recorded in the spreadsheets, no specific evidence is kept to confirm that queries have been answered satisfactorily.</p> <p>When the Scottish Government agreed energy rates within national contracts, details about the rates were to be made available to health boards. The Energy & Environment Manager advises that NHS Lothian was not made aware of the rates, so NHS Lothian has not been able to check that suppliers are charging the correct rates. Meanwhile, NHS Lothian has engaged external consultants to review energy charges and identify potential financial savings, without any significant savings being reported.</p> <p>Although water bills are paid annually, monthly invoices are issued for information by ██████████ (part of ██████████) and checked to targets recorded in the suite of spreadsheets maintained by the Energy & Environment Manager. At the year-end, ██████████ provides a statement showing water charges for the year along with payments received, with the statement indicating whether a balancing payment or refund is due. While ██████████ has provided statements for financial years 2011/12 and 2012/13, the statements are still to be reconciled with NHS Lothian's records to confirm that the correct amounts have been paid.</p> <p>By not checking the accuracy of all payments to suppliers, errors or overcharges may not be noticed.</p>	

Recommendation

Within the suite of spreadsheets, the Energy & Environment Manager should develop criteria to identify any significant differences between invoices and target consumption rates. Where differences require to be investigated, evidence of what was done and outcomes should be kept.

Also, the statements from ██████████ for 2011/12 and 2012/13 should be reconciled against NHS Lothian's records to confirm the accuracy of charges. Thereafter, statements should be reconciled each year.

In addition, the Energy & Environment Manager should regularly check all elements of suppliers' charges, including confirming that energy rates are in line with agreed tariffs.

Management Response

A new Energy M&T system is being developed to replace the time-honoured spreadsheet system and will commence from 1 April 2014. This new system will be adapted to include exception reporting so that significant variances of consumption and cost are recorded in a new file. This new file will include an action log which will be kept and maintained as part of the M&T system.

While neither Scottish Environment Protection Agency nor Green Energy Partners rated NHS Lothian as fully compliant, the partial compliance refers to updates to the written policies and procedures which are required as the CRC system has been changed. These updates will ensure future compliance. In addition, the change to NHS Lothian's M&T system does not mean that the present system is non-compliant, but that the manual insertion of data is better to be replaced with a fully electronic system of data transfer. There is no guarantee that an electronic system is any better than a manual system and, therefore, without thorough checking procedures there is a high risk that an electronic system can carry larger errors than a manual system. Therefore, the new M&T system will include a system of internal audit to verify that it is recording and processing accurately.

With regard to payments to [REDACTED], it is important to stress that these payments are part of a "payment 1 year advance" to capture a significant contract discount. The annual advance payment is supplemented by a within-year interim reconciliation and the balance either settled at the time or carried forward to next annual payment. Running in parallel is the monthly system of "invoices for information only" on a site-by-site basis. These site invoices are checked for accuracy by the Energy & Environment Manager and the output used to determine value of payment in advance and interim reconciliation. These two systems of pay-in-advance and monthly checking can only be compared at the end of a contract period and are designed so that reconciliation is retrospective. NHS Lothian's Energy & Environment Manager and Management Accountant are required to work this out together.

The issue of lack of information on energy tariffs as competitively tendered by Scottish Procurement is a national issue. The information is not available from Scottish Procurement which acts as an agency on behalf of NHS Lothian, and NHS Lothian is informed that it can only be obtained from the supplier. The Energy & Environment Manager has met with representatives of Scottish Procurement and the electricity supplier, in the first instance, to agree a way forward.

Management Action

New electronic energy and CO₂ monitoring system to be in place from 1 April 2014 including its own internal audit procedure.

Reconciliation of [REDACTED] payment in advance / interim reconciliation to the checking system of monthly site invoices to be completed each year by 30 June for the immediately preceding financial year.

The return of suppliers' information on actual tariffs to be forwarded by the Energy & Environment Manager to Scottish Procurement for assessment and further advice by 31 May 2014.

Responsibility:

[REDACTED]
Energy & Environment Manager

Target date:

As stated above in Management Action

<p>Issue 2</p> <p>Important</p>	<p>Back-up generators are not being maintained as often as scheduled</p>
<p>To minimise disruption should utility supplies fail, Estates has put in place various plans and processes.</p> <p>For electricity supplies, Scottish Health Technical Memorandum 2011 (Part 1) requires that sites with inpatients have back-up generators which provide up to 200 hours of electricity. While all inpatient sites are covered by generators, records show that maintenance is not being carried out as regularly as scheduled. Between January and December 2013, records on Backtraq show that maintenance jobs expected to be done each week are being completed on average 77% of the time. Jobs that are expected to be done every 4 weeks are completed 61% of the time, while 11% of quarterly jobs and 5% of annual jobs are carried out. Rather than required maintenance being missed, the Director of Operations for Facilities has commented that maintenance frequencies may need to be altered to focus on the more important tasks.</p> <p>While no specific emergency plans have been developed for gas supplies, important equipment such as industrial boilers operate on a dual-fuel basis. Gas is used as the main fuel with oil as the back-up, providing up to 200 hours of supply. Business continuity plans are followed where supplies to other gas equipment fail.</p> <p>For water, Scottish Health Technical Memorandum 04-01 requires health boards to plan for any loss of supplies. In October 2010, emergency plans were developed in conjunction with ██████████ to cover most sites with inpatients (plans have yet to be developed for 4 smaller sites). As part of regular customer review meetings, a review of current plans has been agreed with ██████████, with reviews planned for early 2014.</p> <p>While appearing reasonable, plans for handling emergencies may not run smoothly, especially if back-up equipment has not been maintained satisfactorily.</p>	

Recommendation

With the Estates Systems & Contracts Manager, the Director of Operations for Facilities should review maintenance frequencies for back-up generators. Thereafter, completion rates for maintenance work should be reviewed regularly, with actions taken to address any shortfalls.

Management Response

As part of the recent Planned Preventative Maintenance Review, schedules for maintaining standby generator plant have been revised in accordance with Scottish Health Technical Memorandum guidance. The agreed schedules are as follows:

- weekly – non-intrusive visual inspections;
- monthly – on-line load tests;
- quarterly – non-intrusive functional tests;
- annual – engine mechanical performance checks; and
- ad hoc – full service as per manufacturers’ recommendations.

The above schedules and priorities may be subject to local amendments depending on infrastructure and clinical function, with deviation from the schedule supported by risk assessments.

Management Action

Once all generators have been identified, Planned Preventative Maintenance schedules within Backtraq will be altered to reflect the new maintenance priorities. Thereafter, maintenance carried out will be benchmarked against priority KPIs and reviewed at monthly operational meetings within Estates.

Responsibility:
George Curley
Director of Operations, Facilities

Target date:
30 April 2014

Definition of Ratings

Audit Opinions

- Fully satisfactory - the control framework is fully adequate and effective to manage the main risks within acceptable limits.
- Satisfactory - although improvement is possible, controls are adequate and effective to manage the main risks within acceptable limits.
- Requires improvement - significant issues exist with the adequacy or effectiveness of controls which could result in disruption, loss or reputational damage.
- Unsatisfactory - the control framework is generally inadequate or ineffective with issues that require immediate attention to prevent disruption, loss or reputational damage.

Issue Ratings

- Critical - the issue has a material effect upon the wider organisation.
- Significant - the issue is material for the subject under review.
- Important - the issue is relevant for the subject under review.

Audit Team

██████████, Principal Auditor
██████████, Deputy Chief Internal Auditor

Distribution List

Tim Davison, Chief Executive
Susan Goldsmith, Director of Finance
Alan Boyter, Director of Human Resources & Organisational Development
Alex Joyce, Employee Director
George Curley, Director of Operations, Facilities
██████████, Associate Director of Operations
██████████, Energy & Environment Manager
██████████, Estates Systems & Contracts Manager
Stuart Wilson, Director of Communications & Public Affairs
Audit Scotland, External Audit

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