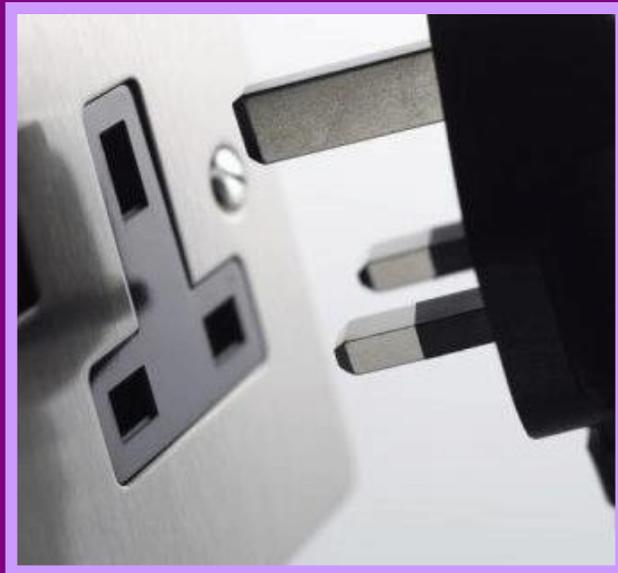




SAINT HELENA **AUDIT SERVICE**

ELECTRICITY USAGE



VALUE FOR MONEY REPORT

V14- MAY 2010

Value for Money audits are conducted by the Audit Service on behalf of the Legislative Council, in order to determine whether St Helena Government resources have been used with proper regard to economy, efficiency and effectiveness.

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Report Distribution: Chief Administrative Health and Social Service Officer, Manager/HOD PW&SD, Chief Agriculture & Natural Resources Officer, Chief Education Officer, Chief Finance Officer, Chief Secretary and Legislative Council.
 The executive summary is provided to the Public Accounts Committee and Audit Committee.
 It is available to the public through our website (www.audit.gov.sh), in the Public Library and at the Audit Service Offices.

EXECUTIVE SUMMARY

This review forms part of the Value for Money (VFM) Audit Plan 2010/11. The objective of the audit was to review the efficiency of electricity usage and how this resource is used across the Saint Helena Government (SHG).

The Saint Helena Government (SHG) spends approximately £250K on electricity expenditure per year amongst their thirteen departments. We focussed on the seven sections within SHG that accounted for 75% of the electricity expenditure. These seven sections consisted of Public Works and Services Department – Water Authority and Street and Security Lighting, Public Health and Social Services Department – General Hospital and the Community Care Complex, Finance – General and Administration, Education – General and Administration and Agriculture and Natural Resources Department – General and Administration.

Based upon the work undertaken and the findings detailed in the body of this report, the overall opinion is given below. The range of possible audit opinions given for Value for Money is good, adequate and inadequate. Definitions of the audit opinions can be found at Appendix A to the main report.

ELECTRICITY USAGE

ADEQUATE	Management arrangements are generally conducive to achieving Value For Money – but further important enhancements could be made.
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The report includes three recommendations none of them have been rated high priority. We have included a recommendation as a follow-up measure to monitor the progress of energy efficiency plans over the coming year in relation to the Water Authority, the 'Reducing Reliance on Diesel Fuel project' and the General Hospital.

The two remaining recommendations are for Education and A&NRD in respect of the overall management of electricity budget for their departments.

In general we found that of the seven sections sampled, the majority of these sections currently have energy efficient measures in place such as solar heating or are exploring alternative methods for energy generation.

The assistance given by all SHG staff and third parties is acknowledged with appreciation. A list of those involved is included at Appendix C.

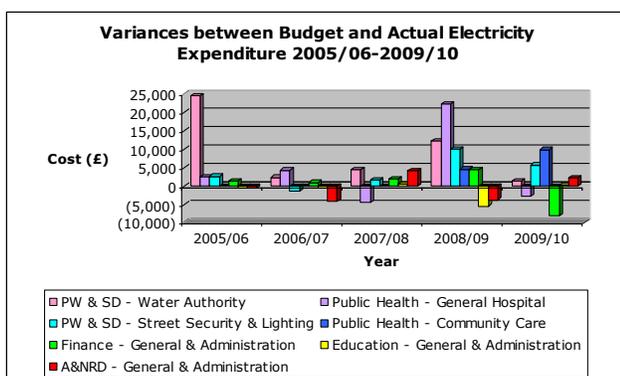
1. FINDINGS AND CONCLUSIONS

1.1 The main findings and conclusions are presented here and are based upon the actual work undertaken and evidence gathered.

Budget and Actual expenditure compared

1.2 Budgeted electricity expenditure for the top seven sections within SHG was compared with actual for a five year period from 2005/06 – 2009/10.

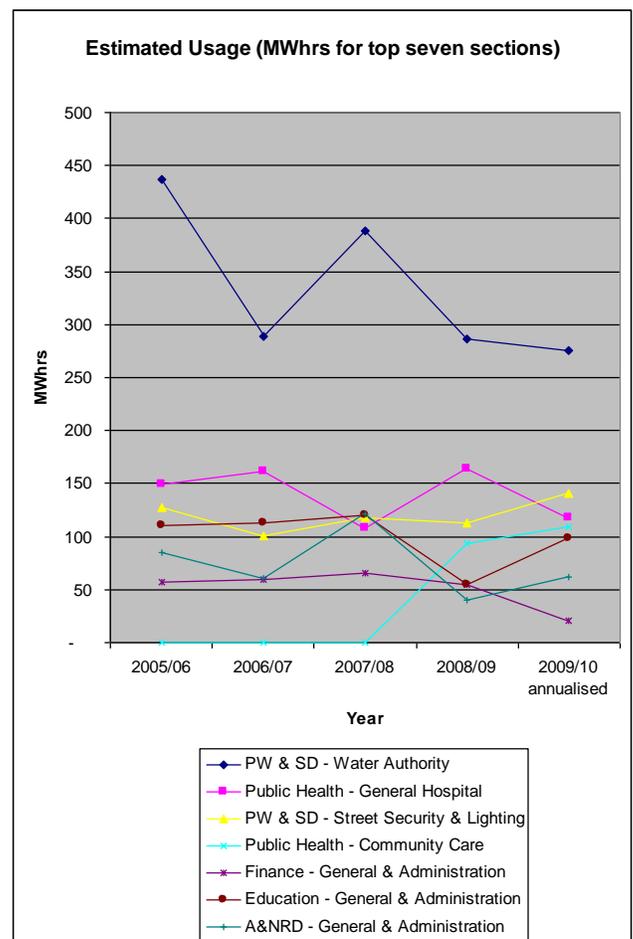
1.3 The results of the comparison between budgeted electricity expenditure and actual is shown in the graph below.



1.4 We found that consistent explanations between the sections for the variances between actual and budgeted electricity expenditure were:

- (a) The increase in electricity Tariffs on 6 November 2007 affecting the 2007/08 financial year;
- (b) The increase in electricity Tariffs on 1 August 2008 affecting the 2008/09 financial year;
- (c) The change in the new Billing system so that payments were based on estimated readings instead of actuals.

1.5 Estimated electricity usage for the top seven sections is shown as follows in Mega watt hours:



1.6 Public Works and Services – Water Authority was the highest user of electricity by a considerable margin.

Public Works & Services Department

Water Authority

1.7 The Water Authority uses lots of electricity in pumping water from boreholes and to reservoirs. It also uses a smaller amount of electricity for water treatment.

1.8 The Water Division incurs on average approximately £59K per year on electricity expenditure.

1.9 The amount of electricity used in any one year is variable because it depends on the quantity and distribution of rainfall.



1.10 Pumping is triggered automatically when reservoir levels fall below set levels.

1.11 Until recently, the island's electricity was overwhelmingly diesel generated. As a result, the cost of generating an additional unit of electricity varied little over the day, between times of peak demand and times of low demand.

1.12 The island's increasing wind power generation will lead to a situation where at night more wind power is generated, at very low additional cost per unit, than there is demand for.

1.13 It is likely to be too expensive in terms of metering equipment to offer discounted night time electricity to retail customers in the immediate



future, but the Water Authority is well placed to consume 'spare'

night time electricity for pumping water, resulting in considerable cost savings for SHG.

1.14 Management in PW&SD is actively exploring these options. (See recommendation 1).

Street & Security Lighting

1.15 Street and Security Lighting incurs on average approximately £22K per year on electricity expenditure. All street lighting on St Helena is powered off the electricity distribution grid and so is predominantly diesel generated.

1.16 Street lights are sensor operational which ensures that they are only on when necessary and some places they operate via a timer. They are vital for the island to ensure safe movement for motorists or pedestrians.

1.17 An increase in electricity usage over the years was largely as a result of increased provision of street lighting.

1.18 We found that the department has looked into energy efficient methods to reduce the usage of electricity within the department and Saint Helena Government overall. This is evident from the project 'Reducing St Helena's reliance on Diesel Fuel'.

Reducing Reliance on Diesel Fuel Project

1.19 The project purpose is to reduce St Helenas reliance on Diesel fuel. This will be achieved by energy efficiency measures and increasing numbers of solar energy installations. The project memorandum strongly recommends not to invest heavily in solar panels until at least 2010 when the price of panels is expected to reduce by at least 30% and the efficiencies of solar panels could double.

1.20 The project memorandum states that the project will support an approach to electricity usage that recognises that electrical supplies are an essential to the public service, but also that (a) generation of

unnecessary electrical energy has an impact upon St Helena as a whole (b) energy savings can (and should) be made without detracting from overall quality of life, or compromising economic performance.

1.21 There are three main outputs to this project namely (1) a programme of energy efficiency and energy saving measures within SHG departments, and a public awareness programme to reduce energy wastage, (2) progressive installation of photovoltaic (PV) panels at some SHG sites to offset electricity costs at these sites and (3) financial assistance with installation of solar water heaters and low energy light bulbs in domestic, commercial and Government properties.

1.22 Estimated project costs include:

Project Component Title	Estimated Project Cost (£'000)
Photo-Voltaic (PV) Solar Panels	£750
Energy Efficiency incidentals	£30

1.23 Benefits of the solar panels depend on many factors such as the future costs of purchasing and transportation of solar panels to St Helena or solar energy to electrical energy conversion efficiency.

1.24 The benefit per year for the PV panels on government sites is estimated to be £200,000 per year.

1.25 There are elements under this project that is covered by the Infrastructure plan, however work is intended to be carried out in the first quarter of the financial year 2010/11.

Public Health and Social Services Department

1.26 The Public Health Department incurs on average approximately £26K per year on electricity expenditure for the General Hospital and £23K on electricity expenditure for the Community Care Complex.

1.27 The Expenditure budget for electricity includes the General Hospital, office block and the Dental Clinic. The Public Health Department operates via one electricity meter board as this is connected to the back-up generator.



1.28 Hot water in the Community Care Complex is generated by Solar Panels which is also backed up by electricity for low heat days. Water in the General Hospital is generated only by electricity.

1.29 Management confirmed that a Hospital re-development plan is being developed and that solar heating for the General Hospital will be explored (recommendation No. 1).

1.30 The Community Care Complex that was in operation from the financial year 2008/09 operates a laundry service which is one of their main users for electricity.

1.31 Since the contracting out of the Laundry Service in August of 2009, laundry at the Community Care Complex includes the laundry of the General Hospital as well.

1.32 The Laundry room of the complex has its own separate meter board and

the electricity consumed by the laundry is paid by the Public Health department and then reimbursed by the contractors at the end of the quarter

- 1.33 Electricity consumption in both the General Hospital and the Community Care Complex is demand led. An increase in inpatient bed days contributes to an increase in electricity consumption.

Education Department

- 1.34 The Education Department incurs approximately on average £17K on electricity expenditure in a year. The budget consists of budgeted Income and Expenditure for the General & Administration – Education, Primary Schools, Prince Andrew School, Adult Vocational Education Centre, Teacher Training and the Public Library.

- 1.35 Prince Andrew School which is the biggest section has the highest consumption of electricity within the Education department. The majority of the electricity consumed is from hand dryers, cookers, lights (including security lights), and IT equipment.



- 1.36 The General and Administration budget includes budgeted expenditure for electricity usage for the whole department.

- 1.37 All expenditure for electrical items and utility bills are processed through the General and Administration Office. Bills are received for each section of the department.

- 1.38 The overall budget is monitored against actual on a monthly basis but

Electricity usage within the department is discussed against the budget during the annual budgeting process with sector heads.

- 1.39 Heads of sectors and sections for the Education Department who incur the cost of electricity usage for their section do not monitor their usage against budget on a regular basis.

- 1.40 Efficient use of electricity would be promoted by including electricity budgets in section budgets so that the responsibility lies with those who are in a better position to control the cost. (Recommendation No. 2)

Finance Department

- 1.41 The Finance Department incurs approximately on average £11k per year. The department is responsible for the Electricity budget for the Finance department offices as well as the Office of the Chief Secretary and Archives.

- 1.42 The electrical wiring within the department does not allow the different departments to be separately metered.

- 1.43 The majority of the electricity consumption for the department is consumed by the Finance Department Server room, which operates the server for all those SHG departments on the @sainthelena.gov.sh connection. Four Air conditioning units are used to keep this equipment at the right temperature.

Agriculture and Natural Resources Department

- 1.44 The Agriculture and Natural Resources Department incurs

approximately on average £12K on electricity per year.

1.45 The department consists of five sections all of whom the electricity usage is budgeted under the subhead - General and Administration Section.

1.46 The three main sections that contribute to the highest consumption of electricity



usage within the department are the Main Office block, Pump House and Poultry Complex.

1.47 The appliances that contribute to the majority of the electricity usage within the Poultry Complex are the incubators and brooders for their chickens.

1.48 A&NRD operate two pump houses at Harpers and Longwood respectively. The Pump at Harpers pumps water to a tank at St Pauls and the Longwood pump house is used to provide irrigation to farmers in the Ex-ADA fields.

1.49 Separate electricity bills are received for the different sections of the department which are authorised for payment by heads of sections.

1.50 Section heads authorise their sections utilities bill.

1.51 The electricity expenditure budget is not included in section budgets within the department. The implication of this is that section heads cannot therefore monitor their actual usage against what is budgeted for. Efficient use of electricity would be promoted by

including electricity budgets in section budgets so that the responsibility lies with those who are in a better position to control the cost., (recommendation no. 3).

2. MANAGEMENT RESPONSE AND ACTION PLAN

	RECOMMENDATION	Officer responsible for implementation	Priority	Implementation expected to be completed by: (Month, Year)	Management Comments
1	<p>We note management plans to make more efficient use of electricity by:</p> <ul style="list-style-type: none"> ▪ <u>Water</u> <p>The Water Authority is well placed to consume 'spare' night time electricity for pumping water, resulting in considerable cost savings for SHG.</p> <p>Management in PW&SD is actively exploring these options.</p> <ul style="list-style-type: none"> ▪ Reducing St Helena's Reliance on Diesel Fuel' project <p>Outputs include purchasing energy efficient bulbs, purchase of Photovoltaic solar panels for set up on Government sites as well as the introduction of solar lighting for street lights.</p> <ul style="list-style-type: none"> ▪ <u>Hospital</u> <p>Inclusion of energy efficiency measures such as solar</p>	Chief Auditor	Medium	31/03/11	

	RECOMMENDATION	Officer responsible for implementation	Priority	Implementation expected to be completed by: (Month, Year)	Management Comments
	<p>heating for water generation in the General Hospital into the Hospital Re-Development Plan to ensure efficient use of resources.</p> <p>We will follow up on progress on these matters in between six months and one years time.</p>				
2	<p>Education</p> <p>The General and Admin section of the Education Department is responsible for the overall management of the electricity expenditure budget for the entire department.</p> <p>Heads of Sections that incur the cost of electricity do not have the responsibility for monitoring their section’s usage against budgeted as the electricity budget is not separated into sections.</p> <p>Consideration should also be given to establishing separate budgets for the individual primary schools, for the same</p>	CEO	Medium	01 April 2011	Agreed. Senior managers are happy to manage and monitor their own electricity usage under their budget subhead.

	RECOMMENDATION	Officer responsible for implementation	Priority	Implementation expected to be completed by: (Month, Year)	Management Comments
	<p>reason.</p> <p>We recommend that electricity budgets be included in section budgets so that the responsibility lies with those who are in a better position to control the costs.</p>				
3	<p>Agriculture & Natural Resources Department</p> <p>The electricity expenditure budget is not separated into sections for the Agriculture department. Monitoring of electricity expenditure is therefore not performed by section heads who are responsible for the electricity that is consumed by their section.</p> <p>We recommend that the budgeted electricity be included in section budgets so that the responsibility lies with those who are in a better position to control the costs.</p>	CANRO	Medium	01 April 2011	Agreed. In the new budget appropriation headings we have proposed for the Department for 2011 budget session, if approved, should remove this shortcoming and focus all expenditure incurred for a particular service against that service area.

APPENDIX A**AUDIT OPINION DEFINITIONS**

Every Value for Money audit concludes with an overall opinion based upon individual opinions that are applied to each of the review areas identified in the scope of the audit. The range of opinions, together with an explanation of their meanings, is as follows:

<i>Value For Money Opinions</i>	
GOOD	Management arrangements are conducive to achieving Value For Money and only minor enhancements, if any, can be identified.
ADEQUATE	Management arrangements are generally conducive to achieving Value For Money – but further important enhancements could be made.
INADEQUATE	Management arrangements are not considered to be adequately conducive to achieving maximum Value For Money.

APPENDIX B**SCOPING AND RESOURCING**

To examine whether the objectives were achieved with regard to economy, efficiency and effectiveness, the Audit Service assessed the following:

- Top seven sections within SHG that contributed to 75% of the Electricity Expenditure;
- Identify the appliances within these sections which contributed to the majority of the electricity usage;
- Review graph patterns between budget electricity expenditure and actual for a five year period;
- Identified whether these sections have considered all possible options for the efficient use of electricity within SHG.

This was done by:

- Interviewing heads of departments and other key SHG employees;
- Comparing Budgeted electricity expenditure with Actual for a five year period to determine patterns and obtained explanations from management on significant variances;
- Review of the Project Memorandum on 'Reducing St Helenas reliance on Diesel Fuel';

The audit was undertaken during the period February to April 2010. The total cost of undertaking the audit was £2,300.

APPENDIX C**LIST OF PERSONS CONSULTED**

The assistance given to the Audit Service by all those listed below during the course of the audit is acknowledged with appreciation.

Names	Title	Department
Derek Richards	Manager/HOD	PW&SD
Peta Henry	PA to Manager	PW&SD
Herman Williams	Senior Engineer - Water Division	PW&SD
Martin Squibs	Water Engineer	PW&SD
Karen Thomas	Executive Officer - Accounts	A&NRD
Jocelyn Constantine	Executive Officer - Admin	A&NRD
Lila Oliver	Chief Education Officer	Education
Joanne Crowie	Executive Officer - Accounts	Education
Desmond Wade	Chief Finance Officer	Finance
Helen Lawrence	Assistant Secretary	PH&SSD
Lily Andrews	Senior Executive Officer	PH&SSD