ST HELENA AIRPORT PROJECT

ANNUAL ENVIRONMENTAL REPORT 2013-14

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Prepared by
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CEMPC

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FOREWORD

Over the past year, construction activities on St Helena have increased with continuation of works on the BFI, Access Road and Dry Gut Fill and commencement of works on the Terminal Buildings, Permanent Wharf, Apron and Runway layerworks and concrete works.

With these additional works comes an increase in personnel, which in July 2104 reached a peak of 609 personnel working on the project on St Helena.

Basil Read's involvement in the project has had a massive impact on social aspects on St Helena.

Apart from the increased employment and spending and the positive effect on the local economy, numerous skills training activities have taken place. In addition, Basil Read has been involved in many direct sponsorships to various organisations on St Helena. The Open Days at the site have proved popular and have shown those that are not directly involved in the project, the scale of the project and what it involves.

Initiatives such as the Stakeholder Engagement Forum and other forms of community liaison have allowed the project team to interact with the public and address any issues of concern.

The increase in activity in the works has increased the challenge for the Environmental Team.

Good progress has been made since the last audit in addressing all aspects of the key performance indicators (KPI's). However, as the works will continue at the same high tempo well into 2015, it is incumbent on all parties involved in the project to make sure that we continue to improve on achieving our KPI targets.

Finally, I would like to thank Bryony Walmsley and the On Island team of, Annina van Neel, Hugh Jacobs, Margie Fowler, John Reid, Sasha Benjamin, Albert Bennett, Isabella Bezuidenhout, Carmen Schwartz, Walter Williams and Douglas Sim for their efforts over the past year and their on–going efforts into 2015.

Jimmy Johnston
Basil Read Project Director

ACKNOWLEDGEMENTS

A number of people have contributed to this second Annual Environmental Report for the St Helena Airport Project, notably: George Vorster, Annina van Neel and her team, Jeremy Johns. Charles Schwartz, Deon de Jager and all the on-island production managers. Dr Robert Kleinjan of the Project Management Unit provided constructive comment and criticism.

Graham Temlett reviewed the report and Denain Venter provided much appreciated administrative support.

LIST OF ACRONYMS

ADA	airport development area
ADAB	airport development area boundary
ADT	articulated dump truck
AER	annual environmental report
AIDS	auto-immune deficiency syndrome
AN(OT)O	Air Navigation (Overseas Territories) Order
ASSI	Air Safety Support International
BFI	bulk fuel installation
BR	Basil Read
CECO	Contractor's Environmental Control Officer
CEMP	Contractor's environmental management plan
CEMPC	Contractor's Environmental Management Plan Coordinator
CLO	Community Liaison Officer
dB(A)	decibel (A-weighted)
DfID	Department for International Development
DVOR	doppler VHF omni-directional radar
EC	European Commission
EIA	environmental impact assessment
EMD	Environmental Management Division
EMP	environmental management plan
EMS	environmental management system
ES	environmental statement
EU	European Union
GDP	gross domestic product
HEF	high energy fuel
HIV	human immune-deficiency virus
ISO	International Standards Organisation
kg	kilogram
km^2	square kilometres
KPI	key performance indicator
kWh	kilowatt hour
LEMP	landscape and ecological mitigation plan
m	metre
m^2	square metre
m^3	cubic metre
mg	milligram
ml	millilitre
mm	millimetre
MSDS	material safety data sheet
NGO	non-governmental organisation
OTAR	Overseas Territories Aviation Requirements
PBP	Prosperous Bay Plain
PM10	particulate matter (smaller than 10 micron)
PMU	Project Management Unit
ppm	parts per million
ppt	parts per thousand

RMS	Royal Mail Ship
SEF	stakeholder engagement forum
SHEQ	Safety, Health, Environment, Quality
SHG	St Helena Government
SHNT	St Helena National Trust
TA	technical assistant
TDS	total dissolved solids
TFF	temporary fuel facility
TSP	total suspended particulates
µg	microgram
UK	United Kingdom
WHMP	wildlife hazard management plan
WHO	World Health Organisation
WMP	(Contractor's) waste management plan

EXECUTIVE SUMMARY AND KEY PERFORMANCE INDICATORS

In November 2011, the South African construction firm, Basil Read (Pty) Limited, was awarded the contract to construct an airport on St Helena Island by the St Helena Government (SHG). Site establishment and temporary early works commenced on the island in January 2012, while the permanent works commenced in July 2012. One of the deliverables during the airport construction period, as specified in Schedule v4.1.19A: Environmental Management Requirements, is an annual environmental report (AER) of the permanent construction works. This document is the second AER and therefore covers the 12-month period from July 2013 to June 2014.

During the reporting period Basil Read (BR) established and maintained their commitment to responsible environmental stewardship, and to minimising and eliminating potential adverse environmental impacts. This was achieved by putting in place the necessary human and financial resources to implement the environmental requirements specified in the Design, Build and Operate contract.

A set of key performance indicators (KPIs) has been developed for the annual environmental report and these are grouped under the following headings:

- Legal compliance;
- Environmental structures;
- Environmental systems; and
- Environmental performance (social and biophysical).

For each KPI, an assessment rating has been provided. 'Yes' in green means that the target or goal has been achieved. 'Partial' in orange means that there has been progress made towards achieving the goal, or that the KPI has been partially achieved. 'No' in red indicates where the KPI has not been achieved in the current reporting period. The table below provides a brief comment, with reference to the section in the annual report where the matter is discussed more fully.

Of the 30 KPIs, nine have not been achieved during the reporting period, three have been partially met and 17 (57%) indicators have been attained. There is one indicator (hectares rehabilitated) that is not yet applicable as Basil Read is still waiting for third parties to develop planting plans.

Overall there has been significant progress since last year, with improved progress on seven indicators and thirteen have remained positive. However, performance against five indicators has regressed: more than 4 complaints were received on average per month (against a target of 3 or less) and five of them were serious (against a target of nil); and there were four incidents of drunk driving (against a target of nil incidents of anti-social behaviour and crime). In addition, there were two level 3 incidents relating to biosecurity and rare and endangered species respectively (against targets of no level 3 incidents). The annual number of days that dust limits can be exceeded (in terms of the Guidelines) was breached during the short-period that crushing took place on Pipe Ridge.

Key performance indicator	Description	Assess-ment rating 2013	Assess-ment rating 2014	Comments
LEGAL COMPLIANCE				
Legal compliance with laws and regulations of St Helena	No non-compliance notices, stop orders or penalties have been issued in terms of environmental laws in force	Yes	Yes	
Compliance with the Contractor's Environmental Management Plan (CEMP)	No environmental incidents with ratings of level 3 or more have occurred	No	No	Three level 3 incidents occurred during the year. Appropriate corrective actions were taken and the incidents have been closed out. *See section 3.3.*
ENVIRONMENTAL STRUCTURES				
The environmental management team, as specified in the Contract is in place	Appointment and employment of the following positions throughout the reporting period: CEMP Coordinator (CEMPC); Contractor's Environmental Control Officer (CECO); Technical assistants (TAs) Community Liaison Officer (CLO)	Partial	Yes	*See section 3.1.*
Reporting commitments achieved (as per requirements of contract)	100% completion of the following: Weekly CECO reports Monthly CECO reports 6-monthly update of CEMP (Oct '13, April '14) 6-monthly audit (Sept '13, Feb '14) Annual	Partial	Partial	100% completion of the following: • Weekly CECO reports; • 6-monthly update of CEMP; • 6-monthly audit; • Annual Environmental report. 42% completion of CECO monthly reports. *See section 3.4.*

Key performance indicator	Description	Assess-ment rating 2013	Assess-ment rating 2014	Comments
	environmental report (Dec '13)			
Meetings held (as per requirements of contract)	The following meetings occur as scheduled: Weekly environmental management meeting Monthly environmental management meeting Weekly project meeting	Yes	Yes	*See section 3.4.*
ENVIRONMENTAL SYSTEMS				
Ongoing input to design	Environmental issues are taken into account during project design	Yes	Yes	Regular attendance by CEMPC at technical design meetings in Johannesburg and at weekly project meetings by CECO. Site walkovers are conducted prior to construction in each new area. *See section 5.1.*
Environmental monitoring systems are in place (as per the requirements of the contract and CEMP)	The following are monitored on a regular (as specified in the CEMP) basis: air quality (inhalable and total dust), water (marine, surface water and groundwater), noise, vibration, building condition, waste quantities, resources use, wirebirds, pests, invasive species, visual impact, climate and heritage.	Partial	Partial	All aspects listed were monitored as per requirements. However the PM10 monitors were off-island for a few months undergoing routine calibration. *See section 6.*
Comments hot line and complaints	Meaning that there is a 24 hour hot	Yes	Yes	*See section 4.5.*

Key performance indicator	Description	Assess-ment rating 2013	Assess-ment rating 2014	Comments
procedure established (as per contract)	line and all complaints are registered and followed up within 1 day			
ENVIRONMENTAL PERFORMANCE: SOCIAL & COMMUNITY SERVICES				
Stakeholder engagement forum (SEF) established by PMU and functioning	SEF set up and monthly meetings held	Partial	Yes	SEF meetings were held on a monthly basis until April 2014, when it was agreed to hold them on a quarterly basis. *See section 4.4.*
Number of complaints received	No serious complaints received. Less than 3 minor complaints per month.	Partial	No	Five serious complaints were received during the year. An average of just over 4 complaints were received per month. *See section 4.5.*
Employment of Saints	Direct creation of 112-225 construction jobs for Saints	Yes	Yes	As of end of June 2014, 357 Saints were employed on the airport project as staff or contractors *See section 4.1.*
No additional pressure on island medical facilities	BR to appoint own primary health care practitioner. BR to pay full cost if hospitalisation required	Yes	Yes	
No incidents of communicable diseases caused by BR and its sub-contractors	HIV and AIDS awareness and testing programmes are in place for all staff	No	Yes	HIV awareness forms part of the Induction programme and ongoing training. Posters are in place and condoms available in all male ablution facilities. Staff are counselled about the need to have HIV tests.
Anti-social behaviour and crime	No BR employee or sub-contractor is convicted of any crime while on the island	Yes	No	There were 4 convictions for drunk driving during the year.
Incidents of disturbance to heritage resources	No level 3 incidents or higher reported	No	No	The southern end of Rupert's Lines was damaged in March 2014. *See section 3.3.*

Key performance indicator	Description	Assess-ment rating 2013	Assess-ment rating 2014	Comments
Impact on housing and accommodation	No impact on local housing markets from immigrant workers. Benefit to local guest houses and rental market.	Yes	Yes	The majority of the expatriate workforce is housed at Bradley's camp. 47 private residences are leased out to BR staff and short-stay project visitors. *See section 4.1.*
Impact on existing waste landfill facilities	The waste generated from construction works must not put pressure on island waste disposal facilities	Yes	Yes	As much waste as possible is re-used, recycled or minimised, but the scope for recycling on the island is limited due to economies of scale. *See section 6.2.5.*
Safe disposal of hazardous waste	BR must store all hazardous waste in a safe and non-polluting manner until the permanent island-based hazardous waste solution has been put in place.	No	Yes	All hazardous waste is stored in a bunded area at Bradley's Workshop. A drum compactor is used to reduce the size of drums and oil filters. Plastic jerry cans are washed out with biodegradable degreaser. Contaminated soil is 'cleaned' on bioremediation pads at Bradley's and at the temporary fuel farm (TFF). *See section 6.2.5.*
Minimise impact on Island water supplies	BR to minimise use of island water supplies and develop new sustainable sources of water for construction	Yes	Yes	Island water supplies are only used for potable water use and for concrete mixing at the Rupert's batch plant. All other water (e.g. for dust suppression, compaction of the Dry Gut fill, Prosperous batch plant and potable water at Prosperous) is obtained from project boreholes in Dry Gut. *See section 6.2.6.*
ENVIRONMENTAL PERFORMANCE: BIOPHYSICAL				
Incidents of dust emissions over prescribed limit	No exceedances over permitted limits recorded	No	No	Dust levels were in excess of the guideline limits on too many occasions during crushing on Pipe Ridge. *See section 6.2.1.*
Incidents of noise emissions over	No exceedances over permitted	No	No	Noise limits have been exceeded in Rupert's Valley on several

Key performance indicator	Description	Assess-ment rating 2013	Assess-ment rating 2014	Comments
prescribed limit	limits recorded			occasions. *See section 6.2.3.*
Incidents of vibration (peak particle velocity) readings over prescribed limit	No exceedances over permitted limits recorded	No	Yes	*See section 6.2.4.*
Incidents of water quality over prescribed limit	No exceedances over permitted limits recorded	Unknown	Yes	No significant variations in baseline water quality have been noted. *See section 6.2.2.*
Incidents of significant accidental spills (oil, diesel, concrete)	No level 3 incidents or greater involving accidental spills	No	No	Two level 3 incidents involved hydrocarbon leaks and spills. *See section 3.3.*
Total land used for project outside of Airport Development Area (ADA) boundary.	Additional land taken by the project must not exceed 10% of the total ADA.	Yes	Yes	Only 21.9% of the available ADA is being utilised by project construction activities. Additional land take e.g. for the open channel did not exceed 10% of the total ADA.
Incidents of illegal driving, plant collection, animal trapping	No level 3 incidents or greater occurred	No	Partial	No level 3 incidents occurred but there were a number of level 2 incidents *See section 3.3.*
Rare and endangered species affected (excluding Wirebirds)	No level 3 incidents or greater involving biodiversity issues	Yes	No	One level 3 incident occurred involved damage to 2 Tea Plants *See section 3.3.*
Number of Wirebird territories disturbed	No displacement of Wirebirds beyond the ADA	Yes	Yes	*See section 6.2.8.*
Bio-control measures are in place	No contaminated containers allowed onto the island	Yes	No	One incident occurred. *See section 6.2.11.*
Land rehabilitated as per LEMP	No. hectares planted per year.	-	-	Planting plans not yet available *See section 5.4.*

1 INTRODUCTION

In November 2011, the South African construction firm, Basil Read (Pty) Limited, was awarded the contract to construct an airport on St Helena Island by the St Helena Government (SHG). Site establishment and temporary early works commenced on the island in January 2012, while the permanent works commenced in July 2012. One of the deliverables during the airport construction period, as specified in Schedule v4.1.19A: Environmental Management Requirements, is an annual environmental report (AER) of the permanent construction works. This document is the second AER and covers the 12-month period from July 2013 to June 2014.

During the reporting period Basil Read (BR) established and maintained their commitment to responsible environmental stewardship, and to minimising and eliminating potential adverse environmental impacts. This was achieved by putting in place the necessary human and financial resources to implement the environmental requirements specified in the Design, Build, Operate contract.

The guiding principles for ongoing management of the airport construction project are found in the Environmental Management Plan (EMP), completed by AECOM in February 2011. Using this as the base, BR developed a detailed Contractor's Environmental Management Plan (CEMP) to guide day-to-day activities across the entire project site. The CEMP is the cornerstone for environmental management on this project and, through its six-monthly updates, it is a living document which is responsive to the ever-evolving project demands.

Duty of care to the environment and compliance with the CEMP are the responsibility of the entire construction team. The role of the environmental management team is to ensure that all staff practice good environmental management and stewardship, within the time and budgetary constraints which are inevitably part of such a large capital project.

The airport access project comprises many different components and stretches across the island from Rupert's Bay in the north-west, to the site of the airport and all appurtenant works at Prosperous Bay Plain (PBP) in the north-east (Figure 1). For ease of reference, the various construction areas and activities have been allocated letters, as shown on Figure 1 and in Table 1 below. As of June 2014, all of the construction elements had commenced, but some items that were originally envisaged in the Reference Design are no longer required: for example, the discovery of suitable quantities of groundwater in Dry Gut meant that sourcing water from Fisher's Valley and/or abstracting seawater for rockfill compaction was no longer required.

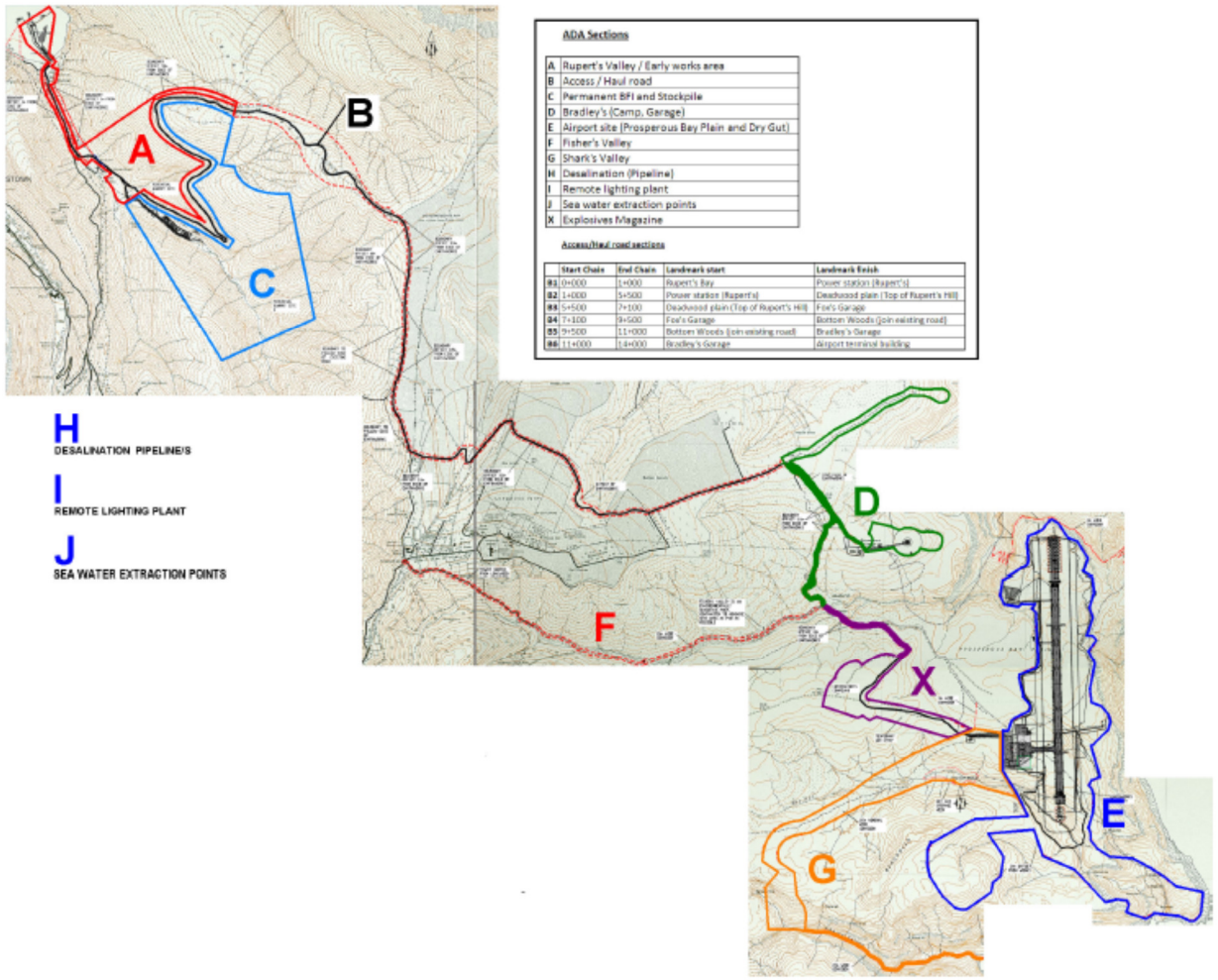


Figure 1: Map of the airport works areas

Table 1: Airport construction work areas and status as of end June 2014

Designation	Area name	Construction works	Construction status at end June 2014
A	Rupert's Valley	• Temporary jetty • Public road upgrade • Workshops • Laboratory • Stores • Laydown areas, • Temporary fuel facility (TFF) • Permanent wharf access road • Permanent wharf • Lower quarry	• Complete, operating • Not yet started • Operational • Complete, operating • Complete, operating • Complete, operating • Complete, operating • Design stage • Under construction • Quarry opened up, but not in use
B	Access / haul road	• New construction from Rupert's Valley to Deadwood • Road upgrade from Deadwood to Foxy's garage • New construction from Foxy's to Bottom Woods • Road upgrade from Bottom Woods to Bradley's • New construction from Bradley's to PBP	• Haul road complete • Access road layerworks and stormwater drainage in progress[1]
C	Upper Rupert's Valley	• Permanent bulk fuel facility (BFI) • Road spoil area • Concrete waste disposal area • Temporary water reservoirs and pump stations • Concrete batch plant for wharf • Laydown area for Core-locs and block walls for wharf • Drainage diversion channel • BFI offices and lab	• Concrete bund works • Complete, to be rehabilitated • Complete, operating • Complete, operating • Complete, operating • Operating • Under construction • Design stage
D	Bradley's	• Temporary contractor's camp • Workshop • Doppler VHF omni-directional radar (DVOR) beacon • Temporary waste disposal and recycling area • Bioremediation pad	• Complete, operational • Operating • Design under review • Operational • Operational

[1] The haul road is considered complete when it is available for construction traffic to use on a regular basis. The access road is considered complete when the base layers have been laid and the road has a Cape seal surface.

Designation	Area name	Construction works	Construction status at end June 2014
E	Prosperous Bay Plain (PBP) and Dry Gut	• Contractor's laydown area • Site offices • Vehicle refuelling • Batch plant • Crusher • Runway • Combined buildings • Terminal buildings • Apron • Car park and entrance area • Dry Gut fill • Open channel works area	• Operational • Operational • Operational • Operational • Operational • Bulk earthworks 85% complete; runway layerworks approx.. 35% complete • 95% complete • 25% complete • 90% complete • Layerworks and stormwater drainage in progress • 90% complete • Complete
F	Fisher's Valley	• Cook's Bridge crossing	• Under construction
G	Shark's Valley and upper Dry Gut	• Temporary boreholes, water reservoirs and pump stations in Dry Gut • Permanent water supply (boreholes, piping, tanks)	• Operational • In progress
H	Rupert's to PBP	• Desalination pipeline	• No longer required
I	Around airport	• Remote lighting and navigational aids	• In progress
J	Gill Point	• Sea water abstraction pumps and pipelines	• No longer required
X	Tungi Flats	• Explosives magazine • Borrow pit	• Operational • Operational

2 AIMS AND OBJECTIVES OF THE ANNUAL ENVIRONMENTAL REPORT

This AER presents an overview of the environmental performance of the airport contractor (Basil Read) over the reporting period 1st July 2013 to 30th June 2014 relating to the following aspects of the project:

- The environmental governance structures (Chapter 3);
- Our progress in building relationships with our stakeholders (Chapter 4);
- An overview of some of the studies undertaken during the year, with a report-back on the outcomes of some the studies described last year (Chapter 5);
- Our environmental monitoring activities (Chapter 6); and

- The targets and challenges for the 2014-15 year ahead (Chapter 7).

A summary of performance and progress against key performance indicators is presented in the Executive Summary.

In last year's AER, we described our environmental monitoring systems and looked at what was predicted in the Environmental Statement and whether those predictions were correct according to our monitoring data. In this year's environmental report, we focus on social issues and some of the corporate social responsibility programmes that have been implemented (Chapter 4).

In the previous report, we described two major amendments to the Environmental Statement that were undertaken: for the permanent wharf and for the Dry Gut open channel. Construction on the permanent wharf commenced in March this year, and the open channel project was completed. This, therefore, is an opportune moment to reflect on whether our predictions were correct and whether the recommended remedial measures were successful or not (Chapter 5).

3 ENVIRONMENTAL GOVERNANCE STRUCTURES

3.1 Environmental Management Team

The Airport Contract requires a 'suitably trained' Contractor's Environmental Management Plan Coordinator (CEMPC) to be appointed on site. In view of Basil Read's commitment to environmental sustainability (as articulated in the Safety Health, Environment and Quality (SHEQ) Policy in Appendix A), and in recognition of the sensitivity of the environment in which the project is situated, we have adopted a much more robust structure as shown in Table 2 and Figure 2 below. With the exception of the CEMPC, who is based in South Africa, the rest of the team works full-time on the project site.

The CECO reports directly to the CEMPC and the SHEQ Manager (Figure 2).

Supervising the entire airport project on behalf of the St Helena Government (the Employer), is the Project Management Unit (PMU). The PMU team includes an Environmental Monitor who has been appointed for the duration of the contract and resides on the island to oversee all environmental management activities.

Table 2: Environmental management team

Name, position and location	Tasks	
Bryony Walmsley CEMPC	CEMP updates; 6-monthly audits; preparation of the Annual Environmental Report; input to design; attendance at design meetings and monthly environmental management meeting with the Island	

Annina van Neel Contractor's Environmental Control Officer (CECO)	Team manager. Weekly and monthly reports; attendance at environmental and project meetings; site walkovers, implementation of the CEMP; environmental monitoring and day to day auditing; liaison with PMU	
Hugh Jacobs Technical Assistant (TA-CECO)	Responsible for monitoring and auditing in Rupert's Valley and haul road to Millennium Forest, data logging, photo log, tool box talks and induction	
Margie Fowler Conservation TA	Responsible for monitoring and auditing in the area from Millennium Forest to PBP, fauna and flora monitoring, plant rescue, seed collection, waste monitoring, toolbox talks, rehabilitation	
John Reid Field assistant	Responsible for noise, vibration, water quality, air quality and marine monitoring in Rupert's Valley	

Sasha Benjamin Field assistant	Responsible for wirebird, fauna and flora monitoring on PBP	
Albert Bennett Field assistant	Responsible for pest and predator control, seabirds, biosecurity	
Isabella Bezuidenhout Field assistant	Conducts inspections, seabird monitoring, water quality monitoring, general assistance	
Carmen Schwartz General assistant	Data logging, photo log	
Walter Williams and Douglas Sim Waste operators	Responsible for receiving, cleaning, compacting and storing hazardous wastes at Bradley's workshop.	 

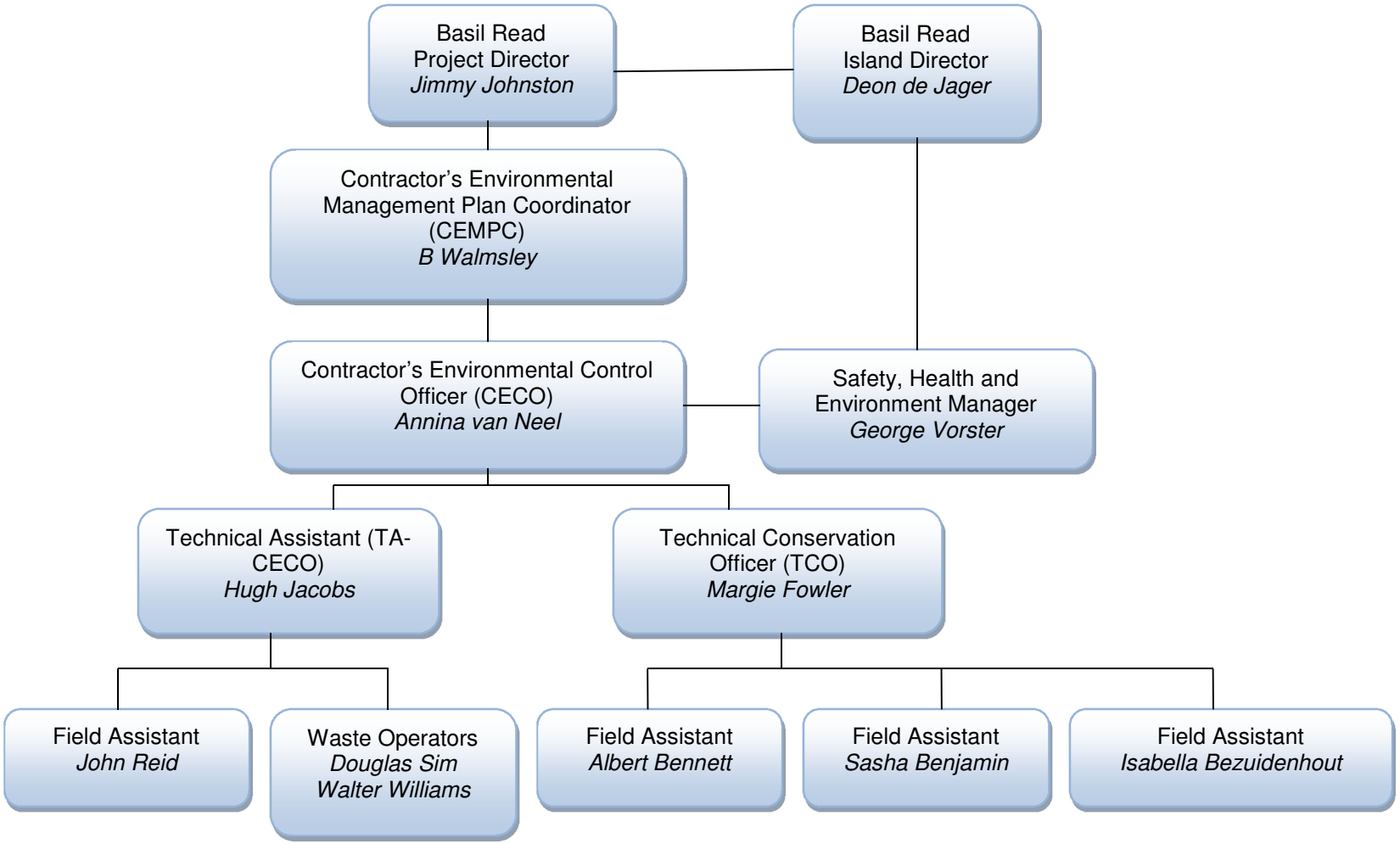


Figure 2: Basil Read environmental reporting structure as at end June 2014

3.2 Environmental Management Plans

As reported in the previous Annual Environmental Report, environmental management on site is controlled by a hierarchy of plans:

- The **Environmental Management Plan** (EMP);
- The **Contractor's Environmental Management Plan** (CEMP) which is updated every six months to ensure that it is responsive to the evolving nature of the construction site; and
- Various **protocols, procedures and management plans** are added as appendices to the CEMP as and when the need arises.

3.3 Compliance Monitoring and Auditing

There is a comprehensive system of compliance monitoring and auditing in place on site:

Prior to new sites being developed, **site walk-overs** are conducted by the CECO, relevant BR manager, PMU, SHG and any relevant local specialists or interested parties to determine the key environmental issues of concern. The aim of the walkovers is to highlight any environmental sensitivities or aspects, as well as areas of ecological constraint that might be affected by the activity.

Site walkovers have taken place for the following:

- Rupert's Hill quarry (Plate 1) (did not go ahead – see section 5.2.1);
- Routes for the new fuel line (Plate 2);
- Deadwood Plain road construction materials site (did no go ahead);
- North-west fill to determine where surface material should be stripped and stockpiled;
- Open channel prior to construction to determine lichen translocation areas;
- Pre-cast yards and concrete batch plant site in upper Rupert's Valley.

Plate 1: Inspection of the potential site for a quarry at the top of Rupert's Hill. The quarry was not developed due to environmental and geotechnical constraints

Plate 2: Inspection of routes for the new fuel pipeline from the wharf to the new bulk fuel installation

Work-place audits are conducted by the CECO team every week and the findings are captured in the weekly report. The weekly audits are site-specific and are carried out with the site manager or the foreman in charge.

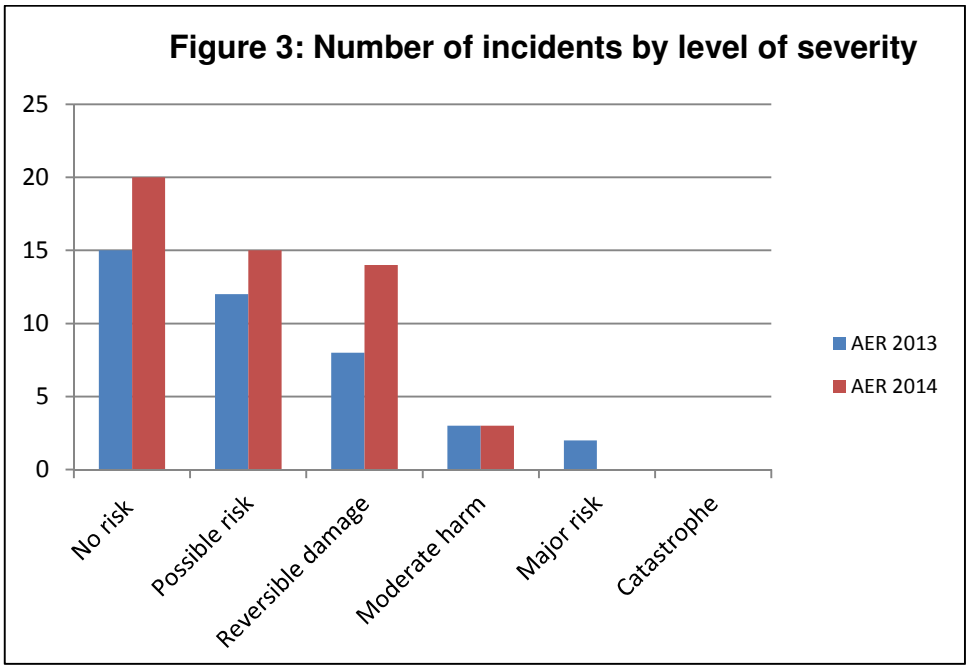
Site inspections are carried out on a daily basis by the CECO team and any environmental incidents are noted in the CEMP log and reported to the PMU within 24 hours of the incident occurring. Any observations noted by the CECO are communicated to the site foreman in charge at the time of the inspection.

Fifty-two environmental incidents were recorded during the 12 month reporting period (1st July 2013 to 30th June 2014), but all have been successfully closed out. The incidents are rated on a scale of 1-5 as shown in Table 3.

Table 3: Incident rating scale

Loss type	1 Insignificant	2 Minor	3 Moderate	4 Major	5 Catastrophic
Harm to people (safety & health)	First Aid case;	Medical treatment; Exposure to minor health risk	Lost time injury; Reversible, moderate impact on health	Single fatality or loss of quality of life; Irreversible impact on health	Multiple fatalities; Impact on health ultimately fatal
Environmental impact	Possible risk to the environment	Reversible damage to the ecosystem	Moderate environmental harm or degradation of the ecosystem	Major environmental harm; Legal non-compliance	Irreversible, significant environmental harm; Loss of species; Ecological disaster
Impact on reputation	Slight impact; public awareness but no public concern	Limited impact; Local public concern	Considerable impact; Regional public concern	National impact; National public concern and outrage	International impact; Major public outrage

A summary of these incidents is provided in Figures 3 and 4 below.



Of the 52 recorded incidents in the 2014 reporting year, it can be seen that the majority (94%) involved no damage or low to minor, reversible harm to the environment. However, project activities caused 3 incidents which had a moderate impact on the environment and/or the health and safety of local communities over the past 12 months (Figure 3).

The three incidents that caused moderate harm were:

- It was noted that there was a build-up of litter, two illegally dumped piles of high energy fuel (HEF) and evidence of off-road driving in the mole spider recolonisation area on Prosperous Bay Plain. It was evident that the danger tape and signage was not providing effective protection for this area and a more permanent gravel berm was built to prevent large vehicles from entering the area.

- The second incident concerned the water pump at the water reservoir in Dry Gut that was constantly leaking oil, even though it had been repaired several times over a period of 3 months. No hydrocarbons leaked into the dams or the water course as the generator was on a built-in drip tray. The generator was replaced by an electrical pump powered by grid electricity.

- The third incident occurred in May when drilling and blasting activities on the cliff edge at the north-east end of the runway caused some large rocks to roll down the slope causing damage to two teaplants, which subsequently died. Following this incident, drilling, blasting and excavation work was modified and the remaining teaplants were afforded protection against flyrock.

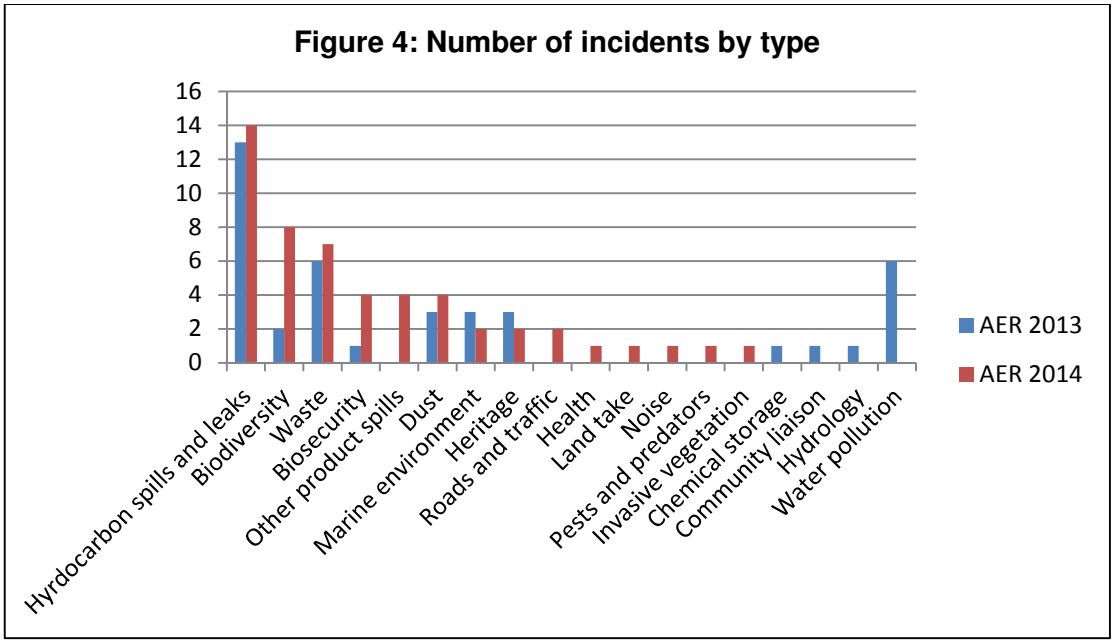
Figure 3 shows that there was a 30% increase in the number of incidents during the current period, even though it was shorter (12 months compared to the 18 month reporting period in 2013). This reflects the significant increase in construction activities, including the start-up of the wharf, but is

disappointing given the continuous efforts by the CECO team to raise awareness amongst all staff. However, the fact that there were no major incidents compared to two last year is a pleasing improvement.

Incidents involving hydrocarbon spills and leaks were again the main contributor to the total – reflecting an increase in the wear and tear of an ageing vehicle fleet and some procedural non-compliance (Figure 4). All contaminated soil was taken to the bioremediation pad. There was a slight increase in incidents relating to waste management, noise, dust control, roads and traffic, health and alien species control but disappointingly, there was a significant rise in the number of actions which had an impact on biodiversity (eight compared to two in the previous year) and biosecurity incidents. The latter is due to the increase in the amount of material being imported to the island for construction work and also due to greater vigilance around this issue.

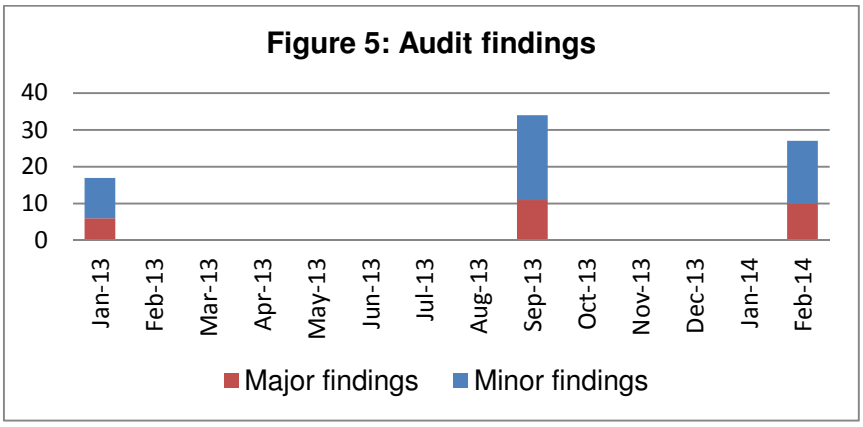
No incidents relating to water pollution, hydrology, chemical storage or community liaison issues were recorded this year.

Figure 4: Number of incidents by type



The Contract requires a **full site audit** to be conducted by the CEMPC every six months during the construction of the permanent works phase. Thus, audits took place in September 2013 and again in February 2014. The next audit will take place in September 2014.

There has been a steady improvement in environmental management on the site since the current CEMPC commenced auditing in September 2013, as shown in Figure 5.



Note: the January 2013 audit was conducted by the previous CEMPC according to an early version of the CEMP

After each audit, the CEMPC compiles an audit report, listing the major and minor findings, together with an action plan to rectify the problems. In most cases the issues are rectified promptly and closed out (see Table 4).

Table 4: Status of close-out of audit findings

Audit date	No of major findings	Status as at next audit			No of minor findings	Status as at next audit		
		Closed out	In progress	Not adequately addressed		Closed out	In progress	Not adequately addressed
Sept13	11	10	1	0	23	14	9	0
Feb14	10	9	1	0	17*	8	7	1

* one item could not be rectified as recommended due to logistical constraints.

After the February audit, the auditor commended Basil Read management staff and especially the environmental team on much improved environmental management on site. However, she noted that the biggest issue facing the project was the ongoing lack of a permanent solution for the disposal of hazardous wastes and bulky non-hazardous wastes. It is gratifying to note that since then, the situation has improved considerably (see section 6.2.5).

Litter control and waste management is an ongoing issue on site and the need for correct disposal is constantly being reaffirmed through tool box talks, correct signage and the provision of bins. A Good Housekeeping Policy was signed by the BR Island Director, all site managers and Halcrow (PMU) on 20th March 2014 in a new initiative to prevent littering.

3.4 Meetings and Reporting

As reported in the last AER, members of the environmental team attend a number of meetings to raise issues and to ensure that environmental management actions are implemented where necessary:

- Weekly environmental meetings (on island);
- Monthly environmental management meetings (on island);

- Weekly and Monthly Client meetings (on island);
- Weekly production meetings (on island);
- Weekly SHEQ meeting (on island);
- Bi-monthly technical meetings (off island).

In addition to the meetings listed above, the environmental management team issues the following reports on a regular basis.

- Weekly environmental report;
- Monthly environmental report;
- Six-monthly audit report;
- Annual environmental report.

All these reports are submitted to the PMU for acceptance and then distributed to island and off-island BR management personnel, SHG, Access Office and DfID. Unfortunately due to workload, only five monthly reports were completed during the 12 month period.

The 2012-13 Annual Environmental Report was presented to the public on the island by the Access Office at one of the Stakeholder Engagement Forum (SEF) meetings and is published on the Access Office website (www.sainthelenaaccess.com).

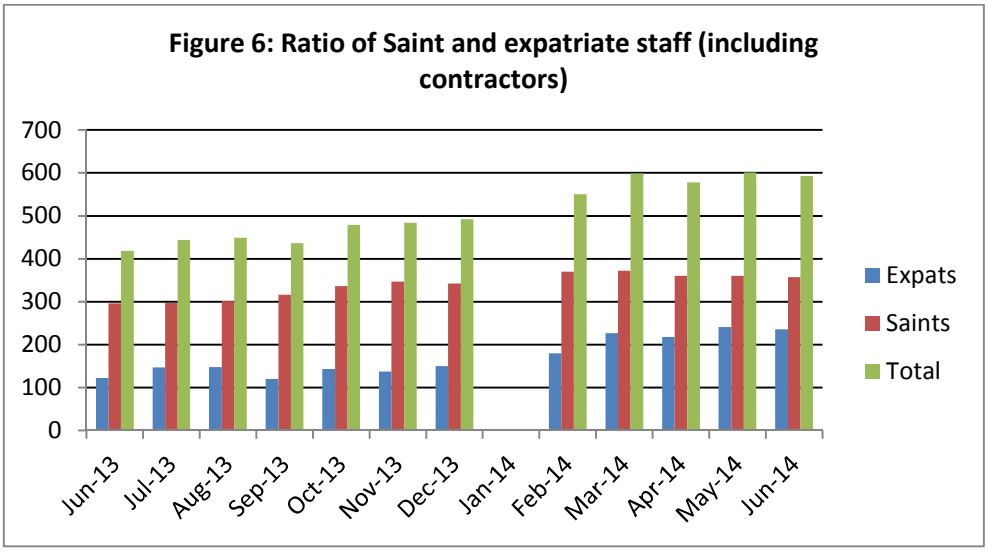
In addition to these regular reports, *ad hoc* studies are commissioned as required. These studies and their associated reports are described in Chapter 5.

4 BUILDING RELATIONSHIPS WITH STAKEHOLDERS

4.1 Employment and Employee Development

At the commencement of the construction of the Airport project in November 2011, St Helena had a population of 4,111 and an aging workforce of 2,109 of which the majority was in the lower skilled vocational and service industries. Most of the islanders had few or no formal qualifications and the average annual income was £6,000. Many of the Saints were migrating overseas to seek work opportunities abroad resulting in a negative population growth and gross domestic product (GDP). It is against this background that both the direct and indirect social contribution and impact of Basil Read on the Island must be viewed.

Basil Read is currently the largest private employer on the Island. As at the end of June 2014, a total of 593 people were working on the project of which 357 were Saints (Figure 6). Included in this total were 73 Saints who have returned from abroad to work on the project, thereby contributing to the 10.1% population increase of the Island since 2011.

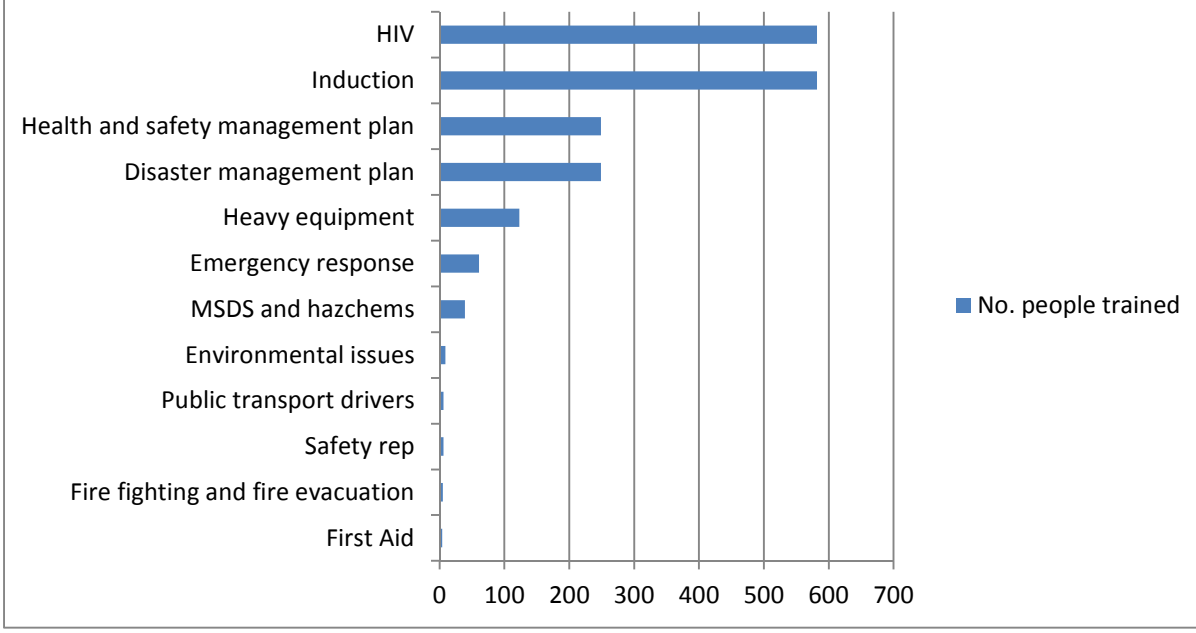


Employment opportunities impacted on all age and gender groups which was made possible by our commitment to certified training and imparting of skills as opposed to sourcing skills elsewhere. Forty-two Saints under the age of 21, 53 Saints over 60 years of age and 66 female Saints were employed as at the end of June 2014. Joint initiatives with local institutions have all reduced unemployment and assisted in crime reduction. For example, the project has assisted in the rehabilitation of offenders by offering job opportunities to over 30 individuals (since the project started to date) that have been through the police system i.e. on probation, licence or in custody.

As of the end of June 2014, the project had contributed almost £1 million in taxes and paid £7.27 million in wages and salaries to Saints. Local business has been extensively utilised for the provision of engineering, retail, construction and other services to the project, to the value of £2.4 million. Currently 47 private premises are leased to meet expatriate housing demands. The employment boom together with an influx of over 300 expatriates to the Island has resulted in increased spending and economic optimism.

There is a comprehensive programme of skills training in place and in addition to the basic Induction and HIV Awareness training which every employee has to undertake, most staff have received training on disaster management and health and safety issues (see Figure 7). In addition, where relevant to their work place and skills requirements, employees have been trained in fire-fighting, first aid, emergency response and preparedness, hazardous chemicals, and various specialised environmental subjects such as pest and predator control, seabird monitoring and archaeological site preservation. Heavy equipment training has included certification to operate cranes, fuel bowsers, articulated dump trucks (ADTs), excavators, heavy rollers, bulldozers, spinner trucks, etc.

Figure 7: Total number of people trained



The CECO and technical assistants give weekly toolbox talks to all construction teams to raise awareness on specific environmental issues, such as: litter, waste separation and recycling, oil spill response (marine and terrestrial), protection of natural resources, traffic management, biosecurity, etc. However, additional toolbox talks are presented on an *ad hoc* or activity-specific basis to address pertinent issues.

4.2 Corporate Social Responsibility

Over the past two and a half years, Basil Read has become part of island life, joining local celebrations such as St Helena Day, creating its own celebrations and competing in island cricket and football leagues, golf and fishing competitions. They even managed to fit 17 BR staff into one mini! If you look carefully at the photo in Plate 3B you will see the Project Director was included in this feat.

Direct sponsorships in the form of cash donations, prizes, material supply, clothing and building improvements have exceeded £44,000 during this period. The main beneficiaries include: schools, sports clubs, scouts and guides, churches, New Horizons, SHAPE, the SPCA and other island-wide charities. Gravel and tyres have been donated to several school playground projects (Plate 3C).

In addition to donations, BR staff have given their time to causes such as tree planting at Horse Point, seabird monitoring, cat trapping at Gill Point and spray painting cannons and an anchor for the Museum (Plate 3A).

Children from the various primary schools on the island have been given a tour of the site – budding engineers and equipment operators got a taste of what a 'real' truck looks like (Plate 3)! Some lucky children even got to witness a blast – from a safe distance.


A


B


C

Plate 3: BR engaging in Island life

4.3 Open Days and Milestones

There have been several open days on site to celebrate construction milestones such as the fifty percent completion of the Dry Gut fill on 23rd November 2013, but the most memorable moment was the Commemorative Stone ceremony.

History was made on the 28th June 2014 when HE Governor Capes unveiled a commemorative stone at the front entrance of the terminal building. Lord Bishop Richard Fenwick blessed the building and a time capsule was buried by Prince Andrew School students.

Plate 4: Unveiling the Foundation Stone at the terminal buildings. From left: Bishop Fenwick, HE Governor Capes and Deon de Jager, BR Island Director

Plate 5: Over 100 invited guests enjoyed the ceremony

The placing of the commemorative stone, a local basalt rock, marks one of many key milestones of Airport construction. In his speech to over 100 invited guests, Governor Capes spoke of the ceremony as a landmark, one that just over 2 ½ years on since the Airport contract signing between St Helena Government and Basil Read, marks the 'massive progress achieved by Basil Read' (Access Office, 2014).

Thanking all who have worked so hard on this historic undertaking, particularly 'the many Saints and the workers from further afield' Governor Capes spoke of the benefits and challenges that need to be overcome when the Airport becomes operational, particularly the need for St Helena to position itself to take full advantage of the social and economic opportunities that the air access will present.

To ensure that future generations of Saints are aware of this moment in time, a Time Capsule was buried at the airport entrance (Plate 6). The Time Capsule was filled with a range of unique St Helena items including arts and crafts items, seeds of native plants, newspapers of the day, current electoral register, first day cover stamps featuring the airport, coins and books on the natural history of the island. It also included all the Access Office airport update bulletins to provide a history of the airport construction process. The idea is that when the capsule is opened in 100 years' time, it will provide future Saints with a snapshot of life in 2014 and that people will be able to look back and reflect on how the island has achieved the dreams of those who worked so tirelessly to bring the airport to fruition in 2014.

Plate 6: Students from St Andrew School took it turns to bury the time capsule

Plate 7: One of the public tours of the site

In addition to the public open days, the CLO gives a guided tour to tourists on the Sundays when the RMS is 'in', which are very popular (Plate 7).

In February 2014, St Helena was honoured to receive the Queen's Baton as it toured the entire Commonwealth ahead of the Commonwealth Games held in Glasgow in July this year. The Baton was accompanied by Louise Martin CBE, Vice-Chair of the Organising Committee, a BBC camera team, the St Helena Chef de Mission and team members. It would be the last time that the Baton has to travel to the Island on the RMS *St Helena* – next time it will be flown in! To commemorate this poignant moment, the Baton team were hosted at the airport site, where they encouraged as many people as possible to hold the Baton.

Plate 8: St Helena Commonwealth Games team member, Patrick Young, holding the Queen's Baton during its last trip on the RMS *St Helena*

Plate 9: Airport construction staff with the Baton on the future runway

4.4 Stakeholder Engagement Forum.

The Stakeholder Engagement Forum (SEF) was started as an additional communication process between the project team and the community, which in this case consists of the island's stakeholders that may be directly or indirectly affected by the construction of the project. The main purpose of the

SEF is to contribute to the effective delivery of the airport project through regular exchanges of information and views on environmental matters between the project and local stakeholders.

The SEF is chaired by the Project Management Unit and is open to the general public. Meetings were held monthly up until April 2014, but are now held on a quarterly basis or when a specific need arises. Meetings take the form of a presentation followed by a question and answer session.

Plate 10: Robert Kleinjan of the PMU facilitating the SEF meeting held in Rupert's Valley.

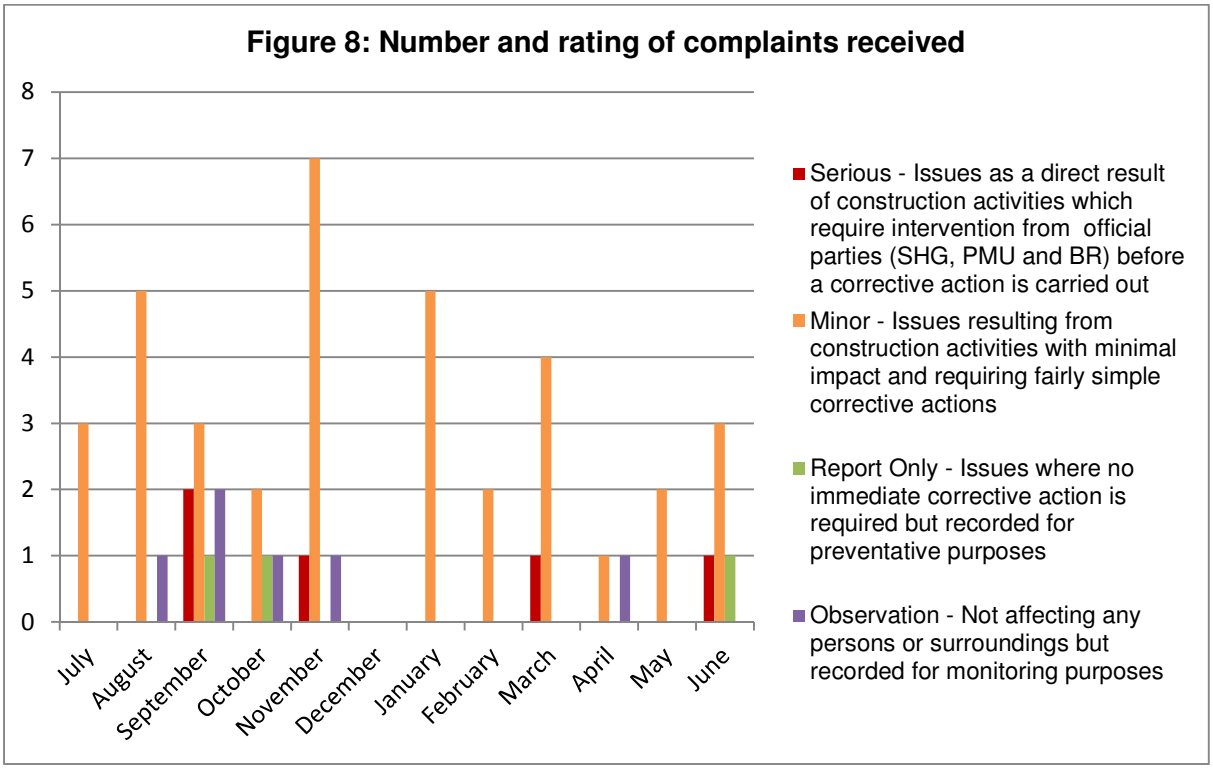
4.5 Community Liaison

In addition to the Stakeholder Engagement Forum and Open Days described above, there are various other forms of community liaison. The Access Office provides an update on the airport project every month, which is circulated via the two island newspapers and on the Access Office website (www.sainthelenaaccess.com).

BR has a full-time Community Liaison Officer (CLO) who provides a constant communication link between the contractor, the affected communities, as well as the broader island community. There is a 24 hour hotline and a complaints reporting and recording system in place.

In the twelve month period up to 30th June 2014, a total of 53 complaints were received, but three of these were actually for SHG's account (Figure 8). Seventy-eight percent of the complaints were classed as minor and were quickly rectified. A total of 12% were classed as 'report only' or 'observations' where no corrective actions were required. However, there were 5 (10%) complaints which were classified as 'serious' and needed immediate intervention. These were:

- A flooding of property incident in Rupert's Valley;
- An access to property issue in the Bilberry Field area, which required planning permission;
- The impact of dust on grazing land on Deadwood Plain affecting cattle and grass production;
- A boulder from road construction activities rolled down the hillside into the old BFI fence;
- A BR employee was reported as having trespassed on private property on several occasions.



It can be seen from Table 5 that most of the complaints have concerned the impacts associated with road construction such as dust (26%), road condition, and traffic management (26%), property impacts (16%), noise and vibration (8%), particularly where construction occurred close to the residential areas of Deadwood, Rupert's Valley and Bottom Woods. Impacts on utilities and infrastructure accounted for 12% of the complaints.

Table 5: Nature of complaints by area

Nature of complaints	Road sections								
	Lower Rupert's	Upper Rupert's	Deadwood	Mulberry Gut	Bilberry Field	Bottom Woods	Bradley's	Airport site	General
Roads and traffic	•		•	•		●			
Property impacts	•			•	•	•		•	
Dust	•		⬤	•					
Utilities and infrastructure	•		•			•	•		
Land use and agriculture			•	•		•			
Water use							•		
Noise and vibration			•						
Visual impact							•		
Trespassing									•

⬤ indicates 10-15 complaints; ● indicates 5-9 complaints; • indicates fewer than 5 complaints

5 ENVIRONMENTAL MANAGEMENT ACTIVITIES

This chapter summarises some of the environmental work undertaken during the reporting period.

5.1 Input to Design

Although the bulk of the design phase is complete, there were still many project elements being finalised during the reporting period. Environmental issues are considered in the design process through an ongoing process of design iterations, review, site inspection and comment by various parties such as the CEMPC, CECO, PMU and SHG. Some of the key environmental inputs made during the year are summarised in Table 6 below.

Table 6: Summary of selected environmental inputs to the design phase

Area of development	Areas where environmental inputs were considered during design
A – Lower Rupert's Valley	• Route for the permanent fuel pipeline. • Route for the permanent access road to the wharf.
B - Access/haul road	• Erosion control measures at culvert outlets to protect downstream slopes from erosion, especially in Rupert's Valley where slave grave areas may be at risk. • Rehabilitation and reinstatement of the temporary haul road across Deadwood Plain in conjunction with the Deadwood Syndicate. • Road junction to Millennium Forest and Horse Point landfill. • Layby and access to Central Basin.
C – Upper Rupert's Valley	• Temporary drainage issues.
D - Contractors camp at Bradley's	• A system for hazardous waste reduction. • Research into appropriate incinerators.
E - Prosperous Bay Plain and Dry Gut	• Size and footprint of the localiser site. • Construction methods required to protect the tea plant population. • Measures required to minimise the impact of earthworks for landing light construction on the sensitive historical buildings at the north end of the runway. • Fence line around the airport site. • Treatment of the clear and graded area. • Final alignment of the discharge point of the open channel to the Little Dry Gut water course. • The size of blasts was minimised near Central Basin to limit the amount of fly rock.
X - Site compound and explosives magazine	• Delineated area for the borrow pit to minimise the footprint and the impact on Wirebirds.

5.2 Studies Commissioned

During the course of construction, a number of specialist studies have been commissioned. The reasons have included:

- Some areas within the proclaimed ADA were found to be more environmentally sensitive than previously thought;
- Significant changes to the Reference Design;

- The specialist studies commissioned as part of the AECOM EIA did not cover all areas of the ADA in sufficient detail; and
- Changes to the reference design resulting in works needing to take place outside of the ADAB or in areas not previously surveyed.

The two main studies undertaken this year were:

- The Rupert's Hill quarry site invertebrate, plant and lichen survey by David Pryce and Rebecca Cairns-Wicks and commissioned by Basil Read;
- The St Helena Airport north runway invertebrate, plant and endemic lichen survey by David Pryce and Mikko Paajanen and commissioned by the Air Access Office.

These are summarised below.

5.2.1 Rupert's Hill quarry site

In an attempt to find suitable high-grade rock for using as fill for the permanent wharf project, a number of possible sources were identified, including existing sites in Rupert's Valley used earlier in the construction phase. Unfortunately the existing rock sources in Rupert's Valley were not suitable and so alternative sites were evaluated. One of these was a rocky outcrop just below the westernmost switchback at the top of Rupert's Hill, bounded by the haul road on three sides. The primary vegetation comprises low *Opuntia-Lantana* scrub, dominated by non-native invasive species, such as wild mango, red tungy, creeper, lantana, wild coffee and African fountain grass (Plate 1). However, a high diversity of lichens was noted, with at least 27 species being identified in the time available. The species found are all fairly common on the island and are not of conservation concern, except for one species of ground lichen which has not been formally identified (Pryce, 2014).

In addition to the floral study undertaken by Rebecca Cairns-Wicks, an invertebrate survey was carried out by entomologist, David Pryce. A total of 1,210 specimens representing 89 species were recovered during the survey from nine samples taken in December 2013 to January 2014. Of the species identified, 21 (33%) are endemic to St Helena with five of these (6%) belonging to endemic genera (Pryce , 2014) (Plates 11-12). Fortunately, the site identified at the top of Rupert's Hill was deemed not suitable for rockfill and no further actions needed to be taken. Rock is being sourced from a commercial quarry at Horse Point and trucked to the wharf site.

Plate 11: Female *Helenolius dividens*. © D Pryce

Plate 12: A - *Peripsocus leleupi* (smaller, paler specimens) and a possibly new species (larger, darker); B – *Stenosis sanctae-helenae.* © D Pryce

5.2.2 Survey of the northern end of the runway

Although Prosperous Bay Plain itself, along with a scattering of sites across the Eastern Arid Area was thoroughly surveyed entomologically prior to the airport development (Ashmole & Ashmole, 2004 for the Environmental Statement, 2008), specialist sampling techniques were not employed and only limited identification resources were available, resulting in the fact that these surveys were not as comprehensive as they could have been (Pryce and Paajanen, 2014).

As construction of the runway moves northwards the natural land surface will be lost at an increased rate as there is less material to be moved and levelled in this area. In order to record the invertebrates present in the area and to get a better understanding of the distribution of endemic, native and invasive non-native plant species, the Air Access Office commissioned the St Helena National Trust (SHNT) to conduct a survey of the area prior to its loss as a part of the Landscape and Ecology Mitigation Programme (LEMP). Particular emphasis was to be placed on the fringes of Prosperous Bay Plain that were to be lost as this area is of particularly high ecological value (Pryce and Paajanen, 2014).

Despite the barren and inhospitable nature of the site, it holds a diverse invertebrate fauna including many endemic species, some of which are apparently quite scarce. It is probable that these species are more widespread in the area as they are poorly studied and little is known of their ecology. Further endemic species are almost certainly present amongst the taxa that could not be identified to species level (Pryce and Paajanen, 2014). While it was concluded that the impact of construction works on the invertebrate fauna would be quite low, as all species are known from other sites, some mitigation works were undertaken in June, 2014. This involved the removal of 20 trays of grass tufts which had been identified as preferred habitat for the St Helena grass fly (*Anarista vittata*), to a new location about 50 m away (Plates 13 and 14).

Plate 13: The endemic St Helena grass fly (*Anarista vittata*)

Plate 14: Translocation of Tropical Finger Grass and Fishbone Grass - the preferred habitat for the St Helena grass fly

The scarce endemic lichen *Dimelaena triseptata* was found to be present across the site in good numbers and so 64 trays of the soil crust containing the lichen were collected and replaced in similar

habitat nearby (Plate 15). In addition 16 trays of lichen-covered rocks were collected and placed to the east of the site in an area that will be unaffected by the runway works.

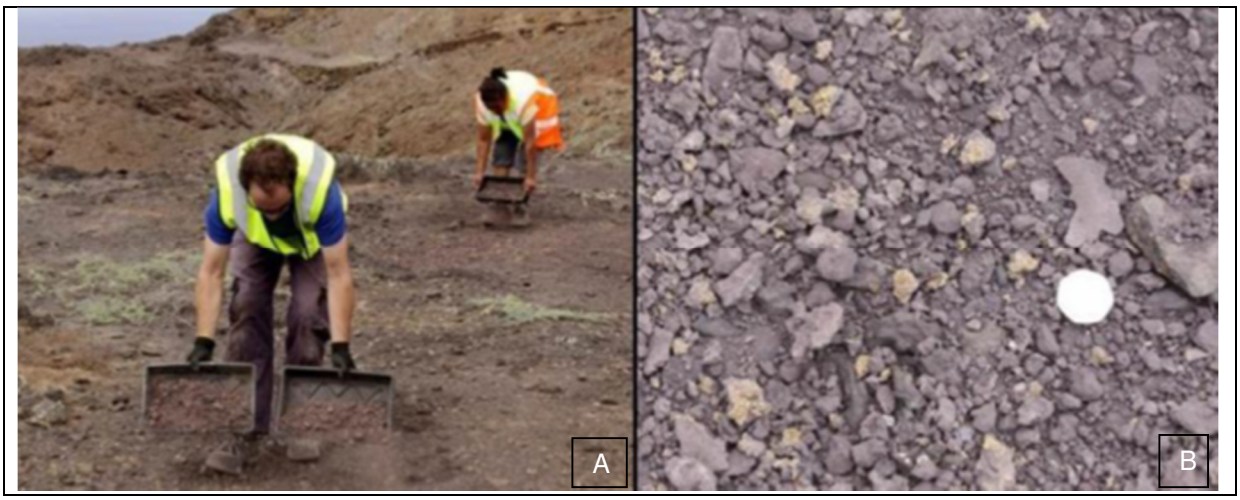


Plate 15: Scattering the soil crust, *Dimelaena triseptata,* at the storage site (A) and a close up of the soil crust at the storage site (B)

The most important area for endemic plants was found to be the upper portion of the eastern sea cliffs where Scrubwood (*Commidendrum rugosum*) and Tea Plant (*Frankenia portulacifolia*) are present. Although this area will not be directly affected by construction, it was recommended that care should be taken when engineering works are being undertaken in this area, to minimise any impact on these plant populations (Pryce and Paajanen, 2014). Although two Tea Plants were accidentally damaged by falling rocks, the rest were protected by employing less damaging rock removal methods and covering the nearest Tea Plants with drums during excavation works.

5.3 Feedback on Earlier Studies

Two major environmental impact assessment (EIA) studies were undertaken in 2013 for the permanent wharf and the open channel. The former warranted a new EIA by virtue of the fact that the reference design had changed considerably during wharf optimisation studies, while the second project had not been anticipated when the Environmental Statement was originally done (in 2008). Construction of the wharf started in 2014 and is ongoing while the open channel was completed during the reporting period. Below, we reflect on whether the predictions in the EIAs were correct or not.

5.3.1 Permanent wharf

The EIA Addendum for the permanent wharf, completed in May 2013, predicted that the main impacts of wharf construction after mitigation is applied would be:

- Noise, dust, vibration and road safety issues related to the increase in heavy traffic, especially in Rupert's Valley, but also where the haul road passes close to the residential areas of Deadwood and Bottom Woods;
- Noise, dust and vibration from quarrying activities in mid- and upper Rupert's Valley, especially for the residents of Deadwood and Rupert's Valley;

- Loss of access to the beach and picnic area for a period of time;
- The economic impact of loss of access to Shears jetty for fish unloading activities for a period of time.

The design of the wharf involves the placement of concrete block walls on top of a layer of crushed rock. Once each block wall is placed, it is filled with crushed rock to create a level platform for the next block wall to be placed on top (Plate 16). The toe of the wharf will be protected from the swells and currents by Core-locs which are interlocking concrete structures that diffuse wave and current action and protect the wharf structure from damage (Plate 17). Manufacture of the block walls and Core-locs commenced in January 2014 at specially constructed facilities in Rupert's Valley (Plate 18).

Plate 16: A block wall being filled with crushed rock

Plate 17: Core-locs being transported from the pre-cast yard in Upper Rupert's Valley to the wharf site

Plate 18: From left to right: concrete batch plant, Core-loc yard and block wall pre-cast yard in upper Rupert's Valley

Actual construction of the wharf was delayed slightly due to the difficulties in finding adequate quantities of suitable rock anywhere near the wharf site (see also section 5.2.1) and the late arrival of some equipment. The eventual solution was to purchase rock from one of the Island's commercial quarries at Horse Point and transport it to the wharf. Construction of the wharf access road commenced in March 2014 and the preparation of the base of the wharf started in June. Completion of wharf construction is expected in October 2015.

In terms of impacts, dust, noise and vibration have indeed been experienced by residents of both Rupert's Valley and Deadwood from increased heavy traffic (see Chapter 6), but the expected quarrying impacts did not materialise as explained above. Access to the beach was interrupted for a short period while the large cranes were being assembled, but since then, public access has been unrestricted, although car access is no longer possible and the public has to park on the inland side of Rupert's Lines.

Whenever possible, fish continue to be offloaded at Shears Jetty, but on some occasions, the catch has to be landed in Jamestown to avoid conflicts with wharf construction activities. The economic impact of this is unknown.

Turbidity levels in the sea around the wharf construction site are monitored daily and the sediment usually disperses fairly rapidly (within an hour), but on 'bad' days, the dispersion can take up to two hours, as predicted in the EIA Addendum. Indeed, the sediment plume from the discharge into the sea from Rupert's Run persists for longer than following rock dumping.

Prior to the commencement of construction at the wharf, the Marine Darwin Project team, with the assistance of BR divers conducted a rescue and translocation of marine species to similar habitats nearby (Plate 19). In addition, the Marine Darwin personnel identified a suitable sandy area to the seaward side of the wharf where sediment pumped from the footprint of the wharf could be deposited without smothering important marine life. Subsequent marine surveys in the area have shown that the impacts on marine life have been minimal, as predicted in the EIA study.

A snorkel survey of marine life is conducted once per month and a full dive inspection takes place quarterly. Marine life appears to be returning, with seaweed already starting to grow on the block walls three days after placement. The presence of humpback whales and dolphins in the bay is being recorded.

Plate 19: A group of divers prepares to conduct a marine species rescue and translocation operation at the wharf

5.3.2 Open channel

The environmental study conducted prior to approval of the open channel, found that with the recommended mitigation applied, the impact of the work on the ecology of the site would be 'minor adverse'. The main mitigation measures were carried out in July 2013, when a joint team comprising members of the BR environmental team, PMU, the St Helena National Trust, EMD, work experience students and David Pryce, the entomologist, conducted a search and rescue operation for two species of rare lichens and darkling beetles. Two translocation sites were identified at similar elevations and with the same aspect and marked off. The darkling beetles were released and rocks covered with the two lichens, *Rocella sanctae-helenae* and *Dimelaena triseptata* were placed on the ground. The original idea was for these rocks to be replaced on the benches of the open channel cut slopes, but the nature of the rock made it difficult to create well-defined terraces. While this has resulted in a more natural looking slope (Plate 20), another area had to be found for the lichen rock replacement; the new area will be the so-called 'green route' which was the old access route to the open channel. The lichens will be monitored regularly once they are in their new location.

The construction of the open channel had two main objectives: to provide rock for the Dry Gut fill and to divert the Dry Gut water course around the fill rather than conveying it through a culvert under the fill. The rock was found to be geotechnically sound for fill material with almost no wastage, and the channel has already received stormwater flows though it (Plate 21). These flows, as well as the winter rains have resulted in a considerable amount of natural revegetation along the base and sides of the channel (Plate 22), but care will have to be taken to ensure that invasive species such as wild mango do not proliferate; the environmental team is monitoring this.

From the above evidence, it would seem that the prediction in the EIA Addendum that the open channel would have a minor adverse impact on the ecology was correct and that natural systems are already recovering. However, it will take time for the walls of the channel to be colonised with lichens and other natural species.

Plate 20: The open channel was completed on 14th June 2013. It discharges into Little Dry Gut valley (out of picture). Note Dry Gut fill in foreground left of picture.

Plate 21: Rainfall in the upper Dry Gut catchment on the following day (15th June) resulted in flow through the channel.

Plate 22: Natural revegetation of the bed and sides of the open channel after rain. Note the Dry Gut fill in the background.

5.4 Landscape and Ecological Mitigation Plan

The Landscape and Ecology Mitigation Programme (LEMP), an important component of the airport project, is a four year programme focussing on habitat restoration and landscaping of areas damaged during *temporary* construction works for the airport project. Another aim of the LEMP is to provide alternative habitats and landscape treatments to reduce and offset the permanent direct loss of habitat resulting from *permanent* construction works. The LEMP applies to the entire ADA and also in adjacent areas. The primary objective is to reinstate endemic flora (and dependent endemic fauna) particularly in the more remote and sensitive parts of the Island, but there are plans to introduce native species, and possibly some non-native, non-invasive species, such as fruit trees into residential areas for the benefit of local communities (Access Office, 2014).

> Ross Towers, the SHG LEMP Project Manager, commented that "One significant derived benefit of the Airport Project is the increased knowledge of the flora and fauna of the Island that will be gained, which would have been unlikely to have happened otherwise. The LEMP – in partnership with all the Airport Project stakeholders - will seek to ensure that all these species and habitats are protected as best as possible for generations to come."

The LEMP is a legal requirement for the completion of the Airport project and it will leave a lasting legacy for the Island. BR will implement the LEMP within the ADA, while SHG will be responsible for the roll-out over the rest of the Island. A dedicated project manager, Ross Towers was recruited by SHG and he started work on the LEMP in August 2013, with responsibility for:

- Coordinating LEMP partners in the design and production of Detailed Landscape Designs for the entire Airport Development Area (ADA);
- Providing specifications to BR for the pre and post-construction environmental mitigation measures required in terms of the EMP, such as translocation of endemic and native flora, invasive species control, stripping and stockpiling of surface soils, ground preparation earthworks (mounding and earth shaping) to complement the landscape, planting and care and maintenance of planted areas;
- Ensuring that surveys are conducted of important habitats and species to ensure their protection;
- Up-scaling existing, and setting up and staffing new plant nurseries to produce the quantities of mostly endemic plants required by the programme.

The LEMP project will continue even once the Airport is operational in 2016.

In anticipation of the appointment of the LEMP Project Manager and the implementation of the LEMP, BR has already conducted a number of activities such as species rescue and translocation, site preparation and monitoring natural growth.

5.4.1 Species rescue and translocation

In addition to the species rescue and translocation work described in sections 5.2.2 and 5.3.2 above, the following mitigation works have also been undertaken by BR together with other stakeholders such as ENRD nursery staff and the SHG LEMP team:

- Ripping and topsoiling the old site access road on Creeper Hill in October 2013 (Plate 23);
- Weeding out of Common Goosefoot on the northern side of Creeper Hill to prevent it from hybridising with the endemic St Helena Goosefoot, and collection of seeds from the latter;
- A number of specimens of St Helena Goosefoot, Samphire and Babies Toes were rescued from the access road alignment below Tungi Flats and taken to the BR nursery at Bradley's camp (Plate 24). Some of the samphire plants suffered from root mealy bug and over-watering, but other rescued plants were planted out on Mole Spider Hill;
- Live specimens of Barn Fern and Bone Seed Grass were collected from areas about to be covered with rock in Dry Gut in August 2013 and taken to the Bradley's nursery (Plate 25);
- Ongoing collection of seed from Babies Toes, Samphire, native grasses. Much of this has been sown on the Dry Gut terraces (Plate 26);
- Collection of Tufted Sedge plants on Pipe Ridge in July 2013, which were taken to the Bradley's nursery. Unfortunately all the plants died of root mealy bug;
- Rescue of Babies Toes from the foot of Tea Plant hill to the Half Tree Hollow nursery;
- Removal of invasive plants around scrubwood communities on Tungi Flats (near the Bradley's nursery) and on Pipe Ridge;
- Erection of additional shade-cloth fencing to protect the gumwood trees in the Millennium Forest from road dust.

Plate 23: Four different self-sown species in rehabilitated area of Creeper Hill (babies toes, samphire, salt plant and creeper)

Plate 24: Samphire seedlings in Bradley's Nursery. These were later planted out on Creeper Hill

Plate 25: Vanessa Thomas of EMD rescuing Barn Fern plants from Dry Gut

Plate 26: Babies Toes flourishing on the Dry Gut terraces

5.4.2 Site preparation work

From April to the end of June 2014, five site specifications were prepared by the SHG LEMP Manager and issued to BR by PMU, detailing the site clean-up, ground preparation and topsoiling requirements for various completed areas within the construction footprint. These areas included:

- The terraces of the Dry Gut fill;
- The 'green route' access road used initially to open up the open channel;
- The North-west fill footprint area;
- Dry Gut fill +250 'triangle' area;
- North-west fill terraces.

These specifications have been completed and signed off by all parties. BR is waiting for the revegetation planting plans from AECOM for these sites – expected sometime in 2015.

5.4.3 Revegetation

In the meantime, the stockpiling of topsoil and the subsequent replacement of these soils is reaping rewards, as many areas are showing a considerable amount of natural regrowth, particularly in the following locations:

- Dry Gut open channel (Plate 22);
- Dry Gut fill terraces;
- Line of sight batter (Plate 27A);
- Cut slopes behind terminal building (Plate 27B);
- Mole spider hill (Plate 23);
- Topsoil stockpiles (Plate 27C);
- On slope below haul road leading out of Rupert's Valley (Plate 27D);
- On cut and fill slopes along the access road.

A

B

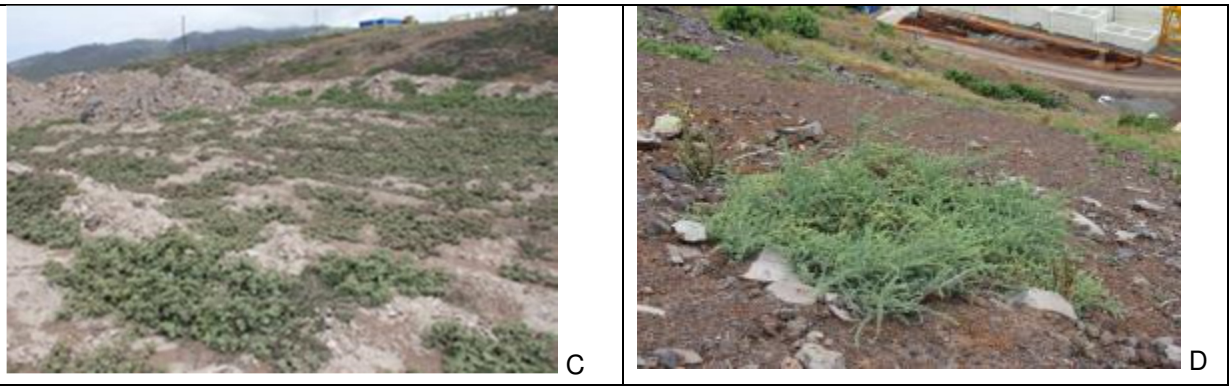

C D

Plate 27: Natural revegetation is occurring across the site

5.5 Operations Environmental Management System

During the reporting period, work commenced on the development of an Environmental Management System (EMS) for the operation of St Helena Airport. The need for an EMS was informed by the requirements of the following:

- The Employer's requirements, set out in Volume 3c of the Design, Build and Operate Contract require the Contractor to "*operate the Airport within the context of an approved Environmental Management System that complies with ISO 14000 or an agreed equivalent and the Employer's Environmental Management Plan*" (Clause 2.1.5.1).
- The enabling document is the Environmental Management Plan (EMP) for the St Helena Airport and Supporting Infrastructure (2011): General Matters Applicable to Operation under the EMP (Section 3);
- Air Safety Support International (ASSI) airport certification requirements.

None of these documents provides the complete 'blueprint' for a bespoke EMS for the St Helena airport. But rather than having separate, parallel environmental management systems, one environmental management system is being developed, informed by various legal and contractual requirements of all of the above (see Figure 9).

The EMS forms one part of a suite of Manuals that makes up the Aerodrome Manual. The latter covers every aspect of airport operation and management and forms the basis for airport certification by ASSI. The EMS Manual will be supported by Standard Operating Procedures that detail the day-to-day management of various environmental management activities. This topic will be covered in more detail in the next Annual Environmental Report.

Another key Manual is the Wildlife Hazard Management Plan (WHMP). In the case of St Helena airport, the hazards posed by wildlife relate mostly to seabirds in the aircraft approach and departure airspace. Monitoring of the airspace is ongoing (see section 6.2.9) so that the risk assessment contained in the WHMP can be evidence-informed and appropriate responses can be developed. The development of this Manual was in progress at the end of the annual reporting period and thus more information will be provided in the 2014-15 report.

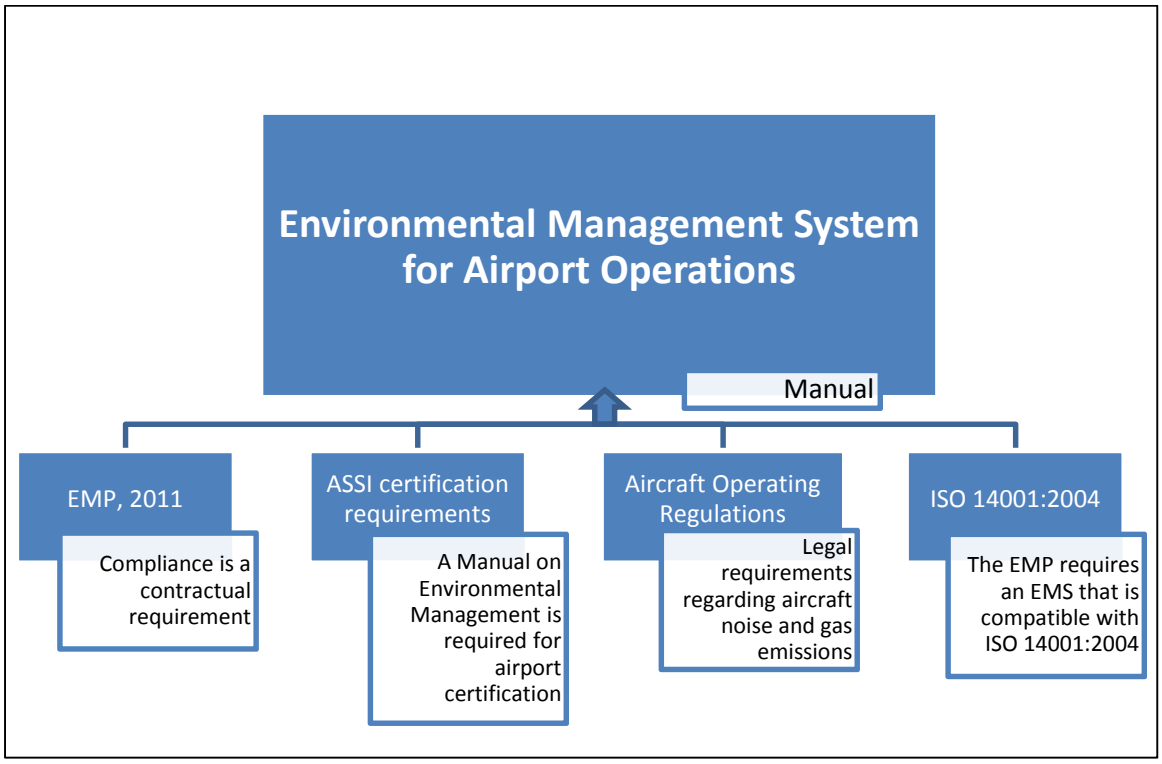


Figure 9: Legal and contractual basis for the EMS

6 ENVIRONMENTAL MONITORING

6.1 Monitoring Programme

The following environmental aspects were monitored on a regular basis during the reporting period:

- Air quality;
- Water quality;
- Groundwater levels;
- Noise;
- Vibration;
- Building condition;
- Waste types and quantities;
- Resource use;
- Mole spiders;
- Wirebirds;
- Seabirds;
- Invasive vegetation;
- Pests and predators;
- Biosecurity;
- Marine environment;
- Visual impact;
- Climate; and
- Heritage.

The responsibility for all monitoring lies with the Contractor's Environmental Control Officer (CECO) and the appointed technical assistants (TAs).

The monitoring programme is shown in Table 7 below.

Table 7: Monitoring frequency

Environmental aspect	Monitoring frequency					
	Daily	Weekly	Monthly	Quarterly	Ad hoc	Comment
Air quality -TSP			X			
Air quality – PM10	X					
Surface water quality		X				When water is flowing; full analysis every 6 months
Groundwater quality			X			Full analysis every 6 months
Groundwater levels		X				
Noise		X			X	When construction work occurs near residential areas and following complaints
Vibration					X	On blast days and following complaints
Building condition					X	Before and after major construction work in a residential area
Waste		X				
Resource use			X			
Mole spiders				X		
Wirebirds		X				
Seabirds – Gill Point			X			
Seabirds – bird strike risk				X		Done daily for a week every quarter
Invasive vegetation			X			
Pests and predators		X	X			
Biosecurity			X		X	Regular monthly monitoring and when NP Glory arrives
Marine water quality (turbidity)	X					
Marine species	X		X	X		Daily observations of cetaceans; monthly snorkel survey; quarterly dive
Visual			X			
Climate	X					
Heritage			X			

6.2 Monitoring Results

6.2.1 Air quality

The main air quality issue on this construction site is dust. The two aspects that are monitored are:

- **PM10:** particulate matter finer than 10 micron (PM10) can enter human lungs and be harmful to health; and
- **Total suspended particulates (TSP):** Nuisance dust can affect domestic, industrial and agricultural activities, it smothers plant stomata, and can close micro-pores in soil affecting soil micro-fauna.

The PM10 monitoring instruments were off site for several months during the early part of 2014 for calibration purposes. When they were returned to the island, one monitor was placed permanently in Rupert's Valley, while the other was at Deadwood from August to November 2013 (during road construction in this area) and then it was located on Pipe Ridge to monitor dust emanating from the crusher used for road construction in this area. The PM10 results are shown in Figures 10-12 together with the European Commission (EC) Directive and World Health Organisation (WHO) guideline limits for PM10.

Figure 10: PM10 Rupert's Valley, May-June 2014

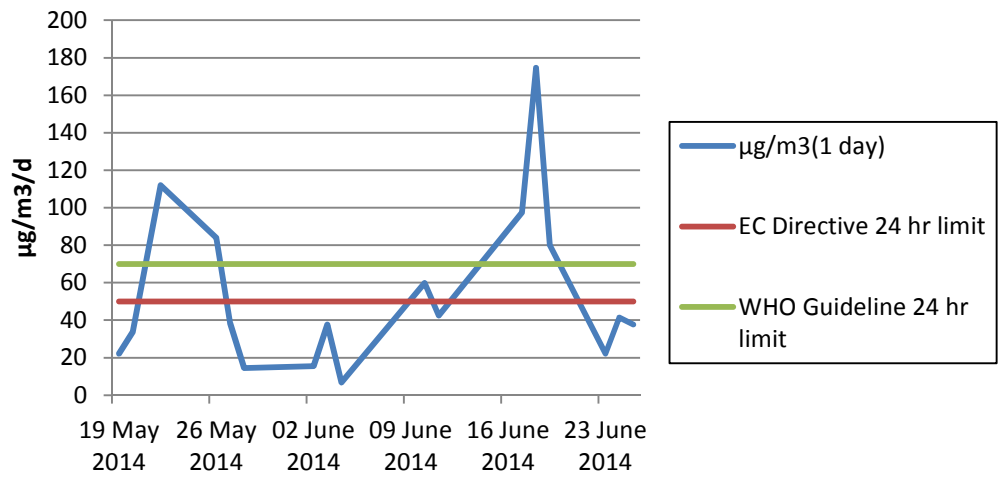
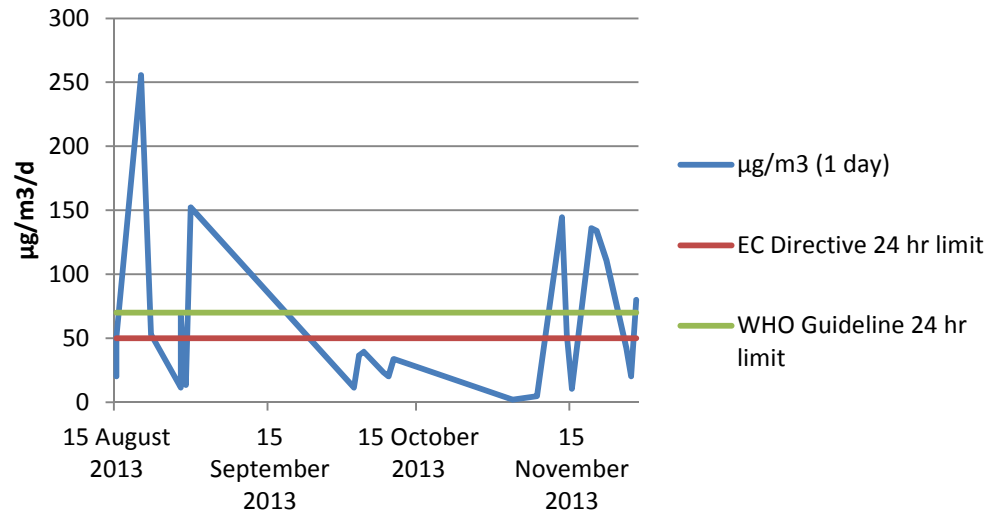
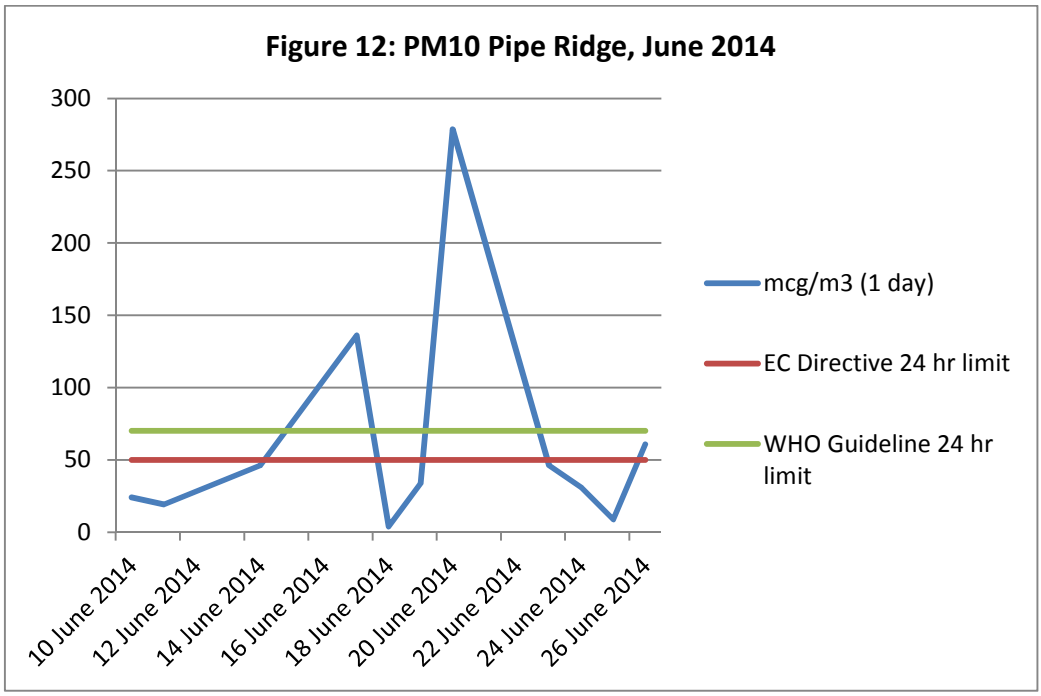


Figure 11: PM10 Deadwood, August-November 2013

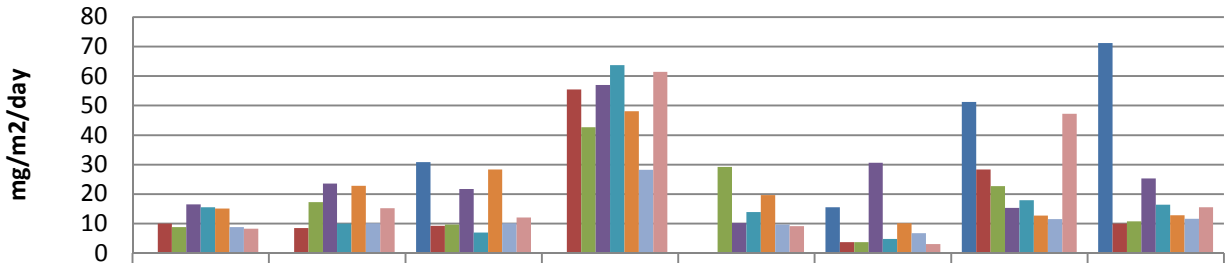




The EC Directive was exceeded on 6 occasions in Rupert's Valley and on 11 days in Deadwood. Even though the Directive allows for 35 exceedances in one year, these figures are high and explain why there were several complaints about dust from residents in both these areas (see section 4.5). Monitoring at Pipe Ridge took place during June 2014 in response to complaints of dust from the crusher that was working in that location. The results show that the guideline limits were frequently exceeded when the crusher was working.

Total suspended particulate (TSP) dust levels were however, well within the UK limit of 200 mg/m^2/day at all locations as shown in Figure 13 below. The Mulberry Gut/Colt Sheds area experienced the highest dust fallout measurements due to heavy traffic through this area and road construction activities. The two dust buckets in Central Basin are located next to the runway construction area boundary and 100 m further in. Although the bucket closest to the works area shows slightly higher dust levels, the bucket 100 m further away shows little decline, indicating that the dust contains a high fraction of fines which remain suspended in the air for longer.

Figure 13: Total suspended particulates, November 2013 - June 2014



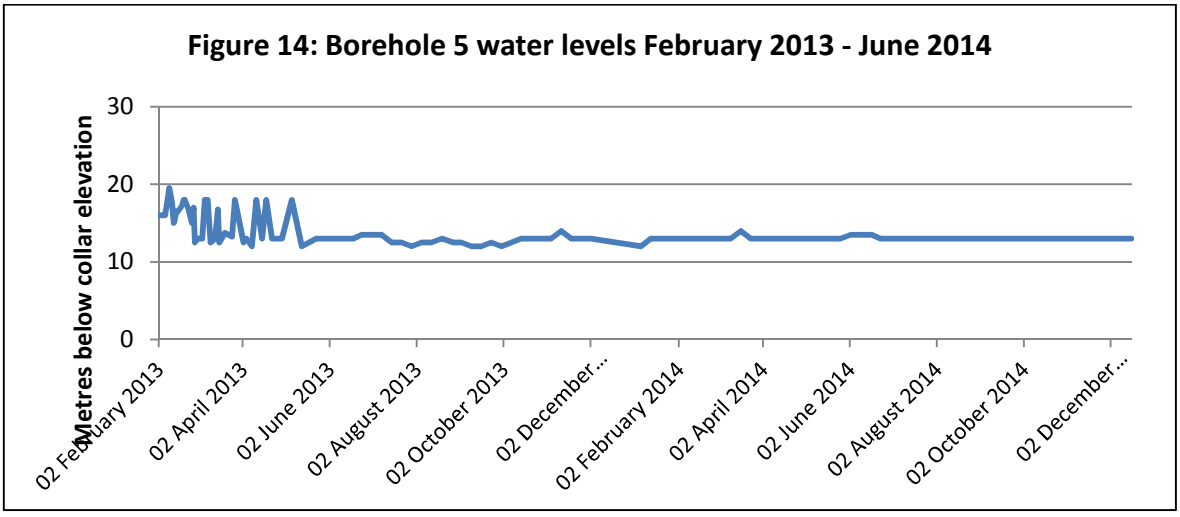
	Argos	Rupert's	Deadwood	Mulberry Gut	Bottom Woods	Bradley's	Central Basin 1	Central Basin 2
Nov-13	0	0	30.81	0	0	15.53	51.21	71.24
Dec-13	10.04	8.45	9.27	55.49	0	3.71	28.36	10.03
Jan-14	8.81	17.22	9.7	42.7	29.2	3.73	22.66	10.77
Feb-14	16.48	23.61	21.7	56.95	10.21	30.58	15.35	25.35
Mar-14	15.58	9.98	6.97	63.69	13.87	4.77	17.97	16.4
Apr-14	15.08	22.75	28.33	48.03	19.63	10.08	12.67	12.85
May-14	8.86	10.11	10.11	28.21	9.63	6.71	11.47	11.59
Jun-14	8.24	15.23	12.10	61.40	9.08	3.01	47.18	15.49

6.2.2 Water quality and groundwater levels

Surface water quality at the various monitoring points across the construction site is highly variable according to location and rainfall, with increasing salinity noted during periods of evaporation and immediately following rainfall. Slight increases in nitrogen concentrations in the pool below the Dry Gut fill indicate contact of runoff water with the nitrogen residues on blasted rock, but levels are all within acceptable levels. No hydrocarbons have been noted in any samples.

Borehole 5 continues to produce unlimited quantities of good quality water. Pumping at over 40 litres per hour, the water level has fluctuated consistently within a 2 m range, once it stabilised after initial pumping in early 2013 (Figure 14).

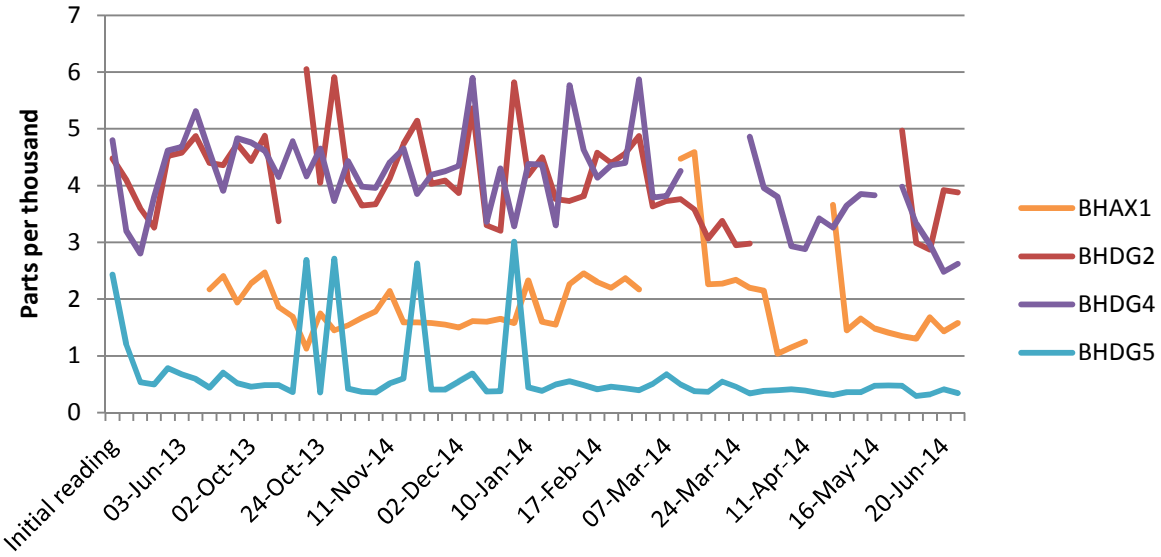
Figure 14: Borehole 5 water levels February 2013 - June 2014



Borehole salinity levels continue to be interesting, with Borehole 5 in Dry Gut having consistent readings of around 0.65 parts per thousand (ppt) (Figure 15). Occasional spikes are difficult to explain but may be anomalous readings, although after the Christmas close down in December, salinity readings in Borehole 5 were taken every few minutes for a 6.5 hour period to check salinity levels and how they are affected by pumping; salinity dropped from just over 3 ppt to 0.8 ppt as the borehole was being pumped. This seems to indicate that this borehole is being constantly recharged from upstream and has little or no residence time in the aquifer. As soon as pumping stops and the water has contact with the host volcanic rock, salinity increases again. Full analyses of water from this borehole (and others) have been undertaken every 6 months at an accredited laboratory in South Africa. The results show that the water from Borehole 5 is of potable quality; thus it is being used for drinking water and for mixing concrete at the airport site in an effort to reduce BR's use of St Helena's limited potable water supply.

The other boreholes within 100 m either side of Borehole 5 in Dry Gut (Boreholes 2, 4 and 6) show no association with Borehole 5 even though they were drilled to the same depth, with salinities (primarily sodium chloride) averaging between 4 and 5 ppt (Figure 15). The provenance of the water in these holes must therefore be completely different to that of Borehole 5.

Figure 15: Borehole salinity readings, March 2013 - June 2014

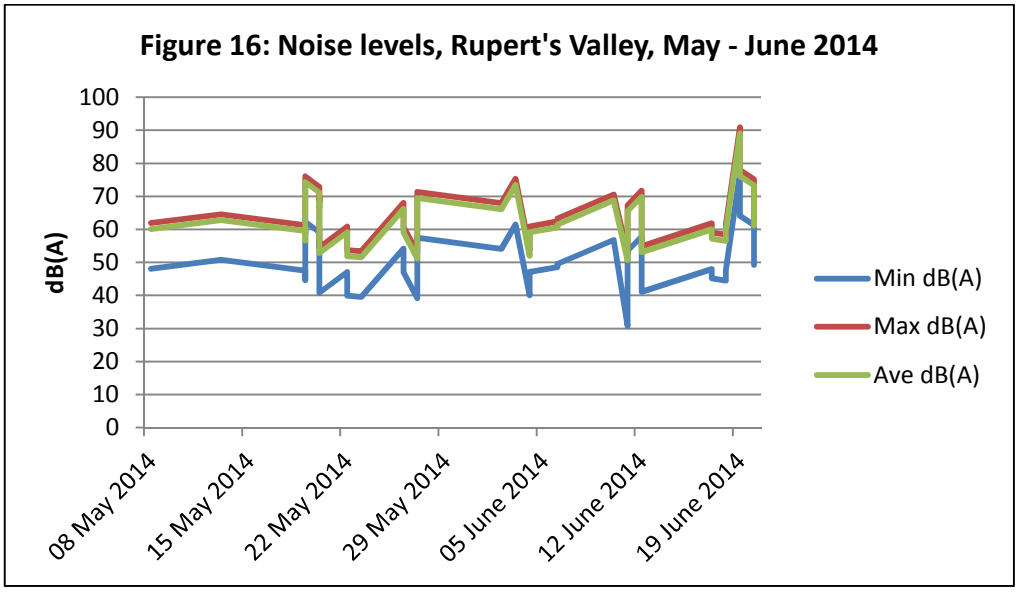


6.2.3 Noise

Noise can affect sleep, concentration and peace of mind and therefore noise on site is monitored on a weekly basis when construction is occurring in residential areas, during blasting, or on an ad hoc basis following complaints.

The only location where noise measurements were taken on a regular basis during the reporting period was in Rupert's Valley, where average noise levels exceeded the limit of 70 dB(A) on seven

occasions (often when the reach stacker was operating and during back-loading of containers) (Figure 16).



Note: decibel levels increase exponentially and therefore the average is skewed towards the maximum

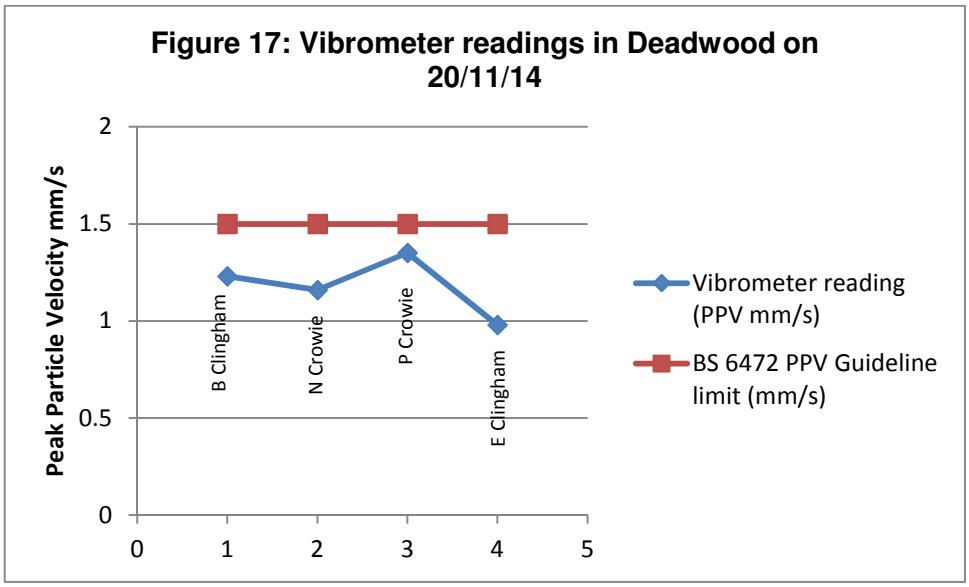
6.2.4 Vibration and building condition monitoring

Vibration readings are taken at the airport site to monitor blasts on the runway and during blasting for the open channel (Plate 28). Readings are within specified limits for buildings (see AER, 2013). Ad hoc readings were also taken following complaints of vibration when the rollers were in use for road construction (Plate 29). Vibration levels (peak particle velocity) were found to be below the British Standard 6472 guideline limit of 1.5 mm/s outside residential buildings (Figure 17).

Plate 28: Blasting for the open channel (February 2014)

Plate 29: Monitoring vibration during use of the heavy roller near a house in Deadwood (November 2013)

Building condition surveys continue to be carried out in residential areas in close proximity to construction work. This year, surveys of all the houses in Deadwood, Colt Sheds, Bottom Woods and Mulberry Gut were surveyed where consent from the owners was received.



6.2.5 Waste management

The amount of hazardous and non-hazardous waste generated is recorded on a weekly basis and waste disposal practices are monitored on a continuous basis by PMU and BR environmental staff during site inspections and audits. Non-compliances are reported by PMU as site observations and BR is required to take immediate action.

A considerable amount of progress has been made during the year on resolving the hazardous waste issue, with the following measures having been taken:

- Centralisation of all temporary hazardous waste storage next to Bradley's workshop on a concrete lined area;
- Arrival on the island of special hazardous waste containers;
- BR purchased a compactor to reduce the size of drums and oil filter waste (Plates 30 and 31);
- The plastic jerry cans are washed out with biodegradable degreaser to render them non-hazardous;
- Two bioremediation pads are in operation (one at Bradley's and the other at the TFF). These are used to 'clean' contaminated soil of hydrocarbons (Plate 32);
- An Incinerator has been purchased by SHG and will be commissioned in late 2014 or early 2015;
- The design and costing of a hazardous waste cell is in progress;
- Two full-time waste operators have been employed to receive, sort, store, compact and clean the wastes.

Plate 30: Drum compactor

Plate 31: Drums containing oil filters after having been compacted. Note that the jerry cans cannot be effectively compacted and still take up excess storage space before being cleaned.

Plate 32: Bioremediation pad in operation at Bradley's. A photo-ionising detector is used to determine when the hydrocarbons have been broken down enough to render the soil as 'clean'.

6.2.6 Resource Use

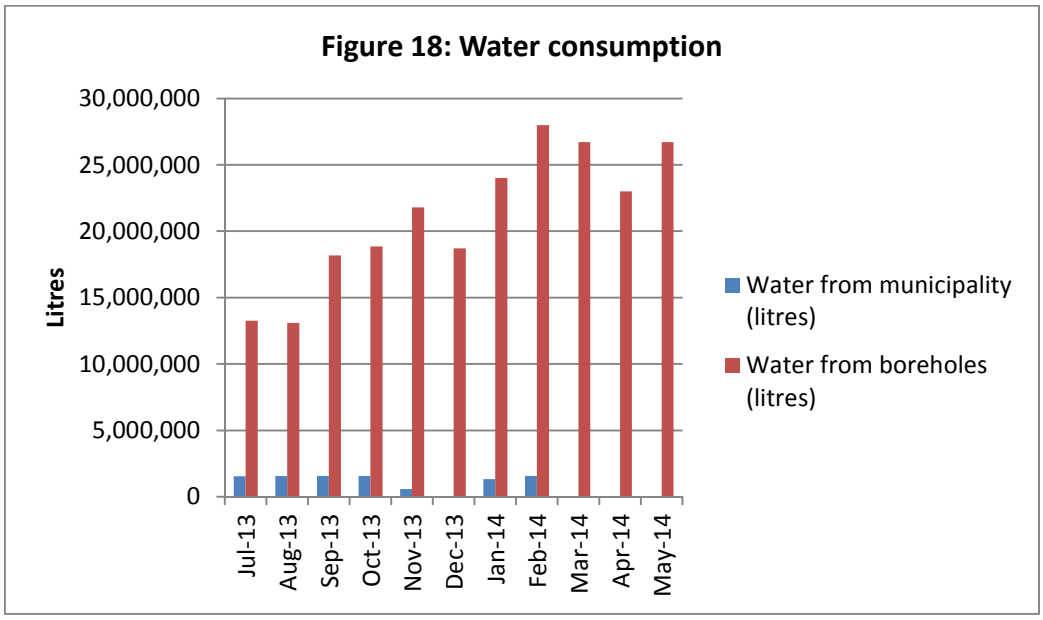
Records are kept of the following and reported on a monthly basis:

- Groundwater pumped from each borehole (litres);
- Municipal water (litres);
- Electricity (kWh);
- Diesel (litres).

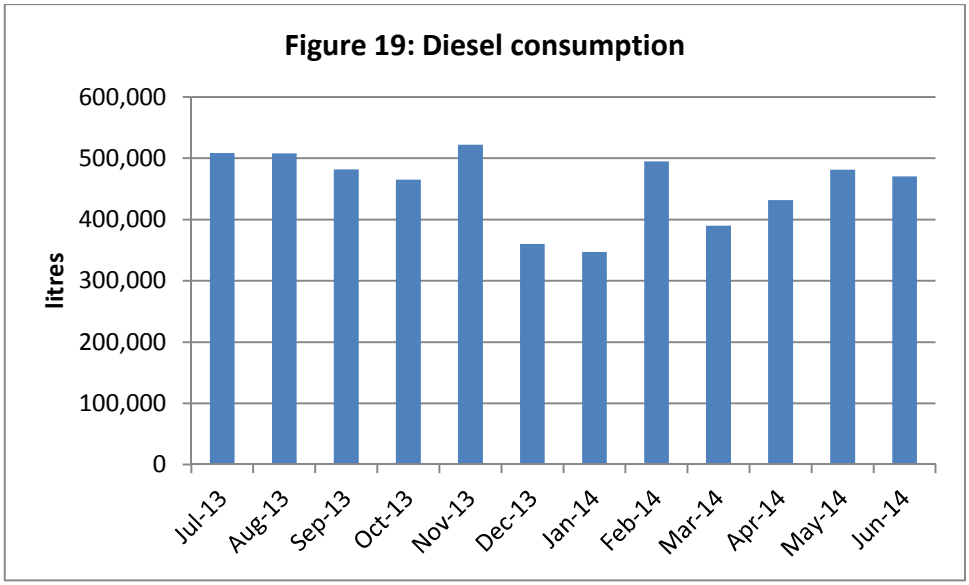
Over an 11-month period from July 2013 to May 2014[2], just over 232 million litres of water was abstracted from the boreholes in Dry Gut Valley and on Tungi Flats (Figure 18). Most of this water was used for wetting the Dry Gut rockfill to aid compaction, but some was also used for dust suppression. The good quality water from Borehole 5 was used for drinking water on site and for mixing concrete at the PBP batch plant.

A total of 9.79 million litres of water were purchased from SHG for office water supply and for concrete mixing at the Rupert's Valley batch plant during the same period (Figure 18).

[2] Note that no pumping figures or billing data are available for June 2014.



Just over 76 million kilowatt hours (kWh) of electricity were consumed over the 12 month period and over 5.4 million litres of diesel (Figure 19). Petrol consumption in comparison was a relatively low amount of nearly 8,000 litres over the same period.



6.2.7 Mole spiders

Mole spiders (*Lycorma* spp) have an extremely limited distribution on the Island, having only been found at three sites on PBP and one just below Bradley's camp. Very little is known of this spider and efforts to find a specialist to identify it to species level have been unsuccessful and so it remains something of a mystery (Cairns-Wicks and Lambdon, 2012). It is a subterranean species and the only clues to its existence are the presence of small mounds (1-2 cm high) usually in groups or colonies.

In view of plans to locate the DVOR beacon (an integral part of the airport's navigational system) just below Bradley's camp in the vicinity of one of the known mole spider colonies, it was imperative to map the colonies so that the DVOR could be located to minimise the impact on the mole spiders while meeting the strict geometric requirements of the DVOR in terms of its X, Y and Z coordinates. Mapping commenced in March 2014 and monitoring has occurred on a quarterly basis since then. The data from the ongoing monitoring will be used to determine the final position of the DVOR with the twin objectives of minimising the impact on the mole spiders and conforming to the positional requirements of the DVOR.

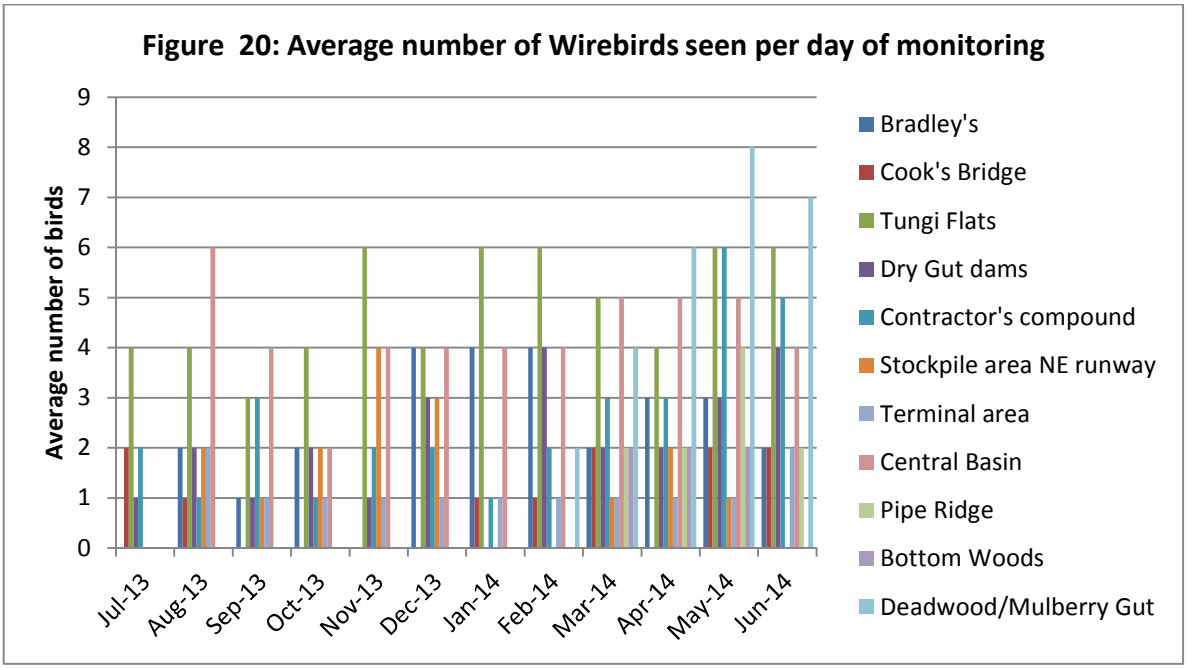
Mole spiders are also being monitored on Creeper Hill to track their migration back into the rehabilitated section.

6.2.8 Wirebirds

Trained BR staff monitor Wirebirds once per week using the 'sweep walk' technique used by SHNT during their regular counts on the island. Eight locations within the construction site were monitored for the full 12 month period and an additional 4 sites have been monitored since March 2014.

From Figure 20, it is apparent that Wirebird populations are stable, with small seasonal variations, and the birds seem to be unaffected by construction activities. The largest population (of the sites being monitored) occurs on Tungi Flats, with an average of 4-6 birds being seen on every visit, while Central Basin also has a healthy population with 4-5 birds seen per visit.

Figure 20: Average number of Wirebirds seen per day of monitoring



6.2.9 Seabirds

Members of the BR environmental staff are assisting the EMD with monthly seabird monitoring at Gill Point. Seabird observations are made at the top and bottom of Gill Point looking out towards Shore and George Islands (Plate 33). Black Noddies are the most numerous species, numbering up to

several hundred during November-January. Brown Noddies are also abundant during this time, but scarce at other times. An average of 3-4 each of Masked Boobies and Brown Boobies are seen per visit. Sooty Terns and Red-billed Tropic Birds are rarely seen at Gill Point.

In addition to the monitoring at Gill Point, the CEMPC requested the environmental team to commence monitoring the airspace at the north and south ends of the runway in order to provide data for the WHMP. Monitoring commenced in March 2014 and is conducted every day for one week every quarter. The northern end of the runway is monitored for 2 hours in the late morning (to coincide with the likely arrival times of planes) and the southern end is monitored for 2 hours in the early afternoon, when planes are most likely to leave.

Plate 33: Monitoring seabirds at Gill Point.

The birdlife in the northern approach airspace is dominated almost entirely by Fairy Terns, occurring mostly in pairs or singly. Mynah birds are rarely seen and then only as individuals.

The south end of the runway paints a very different picture, with Boobies, Fairy Terns and Red-billed Tropic Birds being frequently seen in the airspace. As would be expected, land birds are rare, with only occasional individual pigeons being observed but no mynahs.

It is clear that the large numbers of Black and Brown Noddies observed at Gill Point below the south end of the runway tend to commute from the islands out to sea, rather than venturing closer to land or high up the cliffs, whereas the Red-billed Tropic Birds seem to prefer to nest and roost on high cliffs, rather than on the lower islands. These data will be used to inform the bird strike risk assessment contained in the WHMP.

6.2.10 Pests and predators

The presence of pests can be offensive, present infection hazards, contaminate foodstuffs, damage construction materials or structures and be a nuisance. Once established, pests can be difficult and costly to deal with. Also, predators pose a threat to already endangered or threatened endemic species. Therefore, satisfactory standards of pest and predator control are an integral part of providing an optimum environment for the delivery of the airport project.

Rats and mice are the main pests of concern on the Island of St Helena. Feral cats are their main predator. Although natural predator / prey relationships normally succeed in providing a balance between predator and prey numbers, human interference and activities often disturb natural conditions and hence may cause increased numbers of either pests or their predators. In the case of St Helena Island, an increase in cat numbers will impact on Wirebird populations as the Wirebirds are

natural prey for the cats. Increased numbers of rats and mice may also impact on Wirebird populations as Wirebird nests, and in particular the eggs and young of the Wirebirds, provide a source of food for the rats and mice.

Mynah birds displace other birds and also prey on Wirebird eggs. They also could pose a threat to aircraft safety if they are attracted to the airport site once it is in operation. They are therefore also deemed to be a pest species.

Rabbits are prolific on the island and pose a real threat to emergent vegetation (young growth) and established plants. Furthermore, burrows and scrapes cause extensive damage to the soil and substrate resulting in bare and eroded slopes. It is therefore necessary to monitor and control rabbits so that they do not damage plant growth on newly rehabilitated areas.

These and other pests and predators are managed as shown in Table 8 overleaf.

Table 8: Non-endemic pests and predators

Pest species	Nature of problem	Management target
Feral cats	Predation on Wirebird eggs and chicks	Control and reduce numbers in key Wirebird territories
Rodents (rats and mice)	Predation on Wirebird eggs and chicks Health and safety	Control and reduce numbers in key Wirebird territories and all buildings
Mynah birds	Aeroplane safety Predation on Wirebird eggs	Remove nests from terminal buildings and discourage roosting
Pigeons	Aeroplane safety	Remove nests from terminal buildings and discourage roosting
Rabbits	Impact on indigenous vegetation; can ultimately cause or exacerbate erosion	Remove from rehabilitation areas and Central Basin
Geckos	Prey on indigenous insect populations Invasive nature can impact on native populations	Monitor in area
Ants	Invasion of canteen and storage areas	Eliminate from food storage areas
Weevils	Health and safety of foodstuffs	Eliminate from food storage areas
Termites	Can affect structural integrity of buildings and wooden structures	Eliminate from buildings
Cockroaches	Health and safety of foodstuffs	Eliminate from food storage areas
Flies	Health and safety of foodstuffs	Eliminate from food storage areas

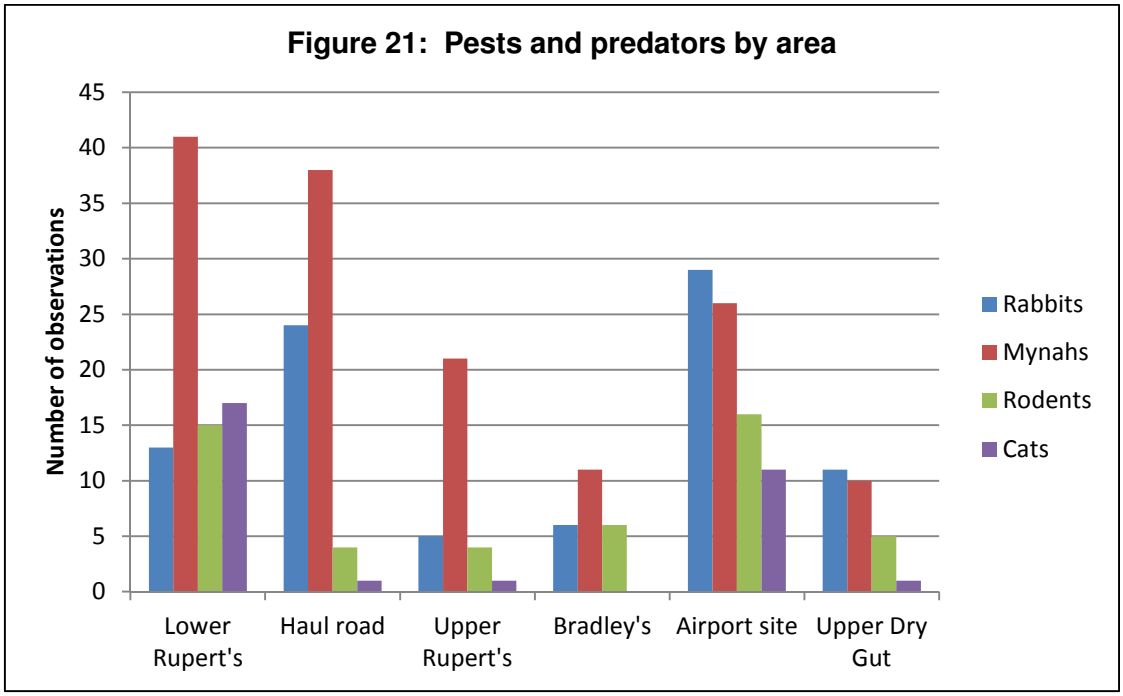
Rabbits, mynahs, rodents and cats are monitored at 45 locations across the entire construction site. Rodents are monitored using tracking tunnels and camera traps (Plate 34), cats are caught using cat traps (Plate 35) and the presence of mynahs is monitored during the monthly Wirebird monitoring 'sweeps'.

Plate 34: SHNT personnel setting up a camera trap near Bradley's

Plate 35: Members of the BR environmental team preparing a cat trap in Middle Fill

It can be seen from Figure 21 that rabbits occur everywhere, but are particularly problematic on the airport site and along the haul road. Their presence will pose a significant threat to the LEMP programme. Rodents (mostly mice) are prevalent on the airport site and in lower Rupert's Valley, Mynahs occur throughout and cats are mostly found associated with residential areas (and possibly with the high rodent population) in lower Rupert's and on the airport site.

Figure 21: Pests and predators by area



6.2.11 Biosecurity

Over the centuries, a number of alien species of animal and bird has been introduced onto the Island of St Helena. Islands are particularly vulnerable to the inadvertent or deliberate introduction of non-native species because without natural predators on the island, some introduced species become invasive and displace, or in the worst case, eradicate native species. Particular vigilance is thus required to ensure that new species are not brought onto the Island via imported cargo, equipment, vehicles and materials.

Thus, all containers, vehicles and equipment are sanitised or fumigated and inspected before they are loaded onto the NP Glory 4 at Walvis Bay and they are inspected again as they are off-loaded in Rupert's Bay (Plate 36). Imported building sand also poses a risk; it is fumigated at source and a random 10% sample of the batch is inspected for live and dead animals or pupae. In addition to regular inspections, monthly monitoring for weeds is carried out where the containers are unloaded in Rupert's Valley and where imported sand is used on site to make sure that no alien species have escaped. One batch of Namibian building sand was found to contain viable seeds of the Namibian ice plant, which started to grow in the sand at the terminal building site. The plants were pulled up and destroyed and procurement of sand from that source in Namibia was discontinued.

Plate 36: Environmental and biosecurity personnel inspecting containers as they arrive

Plate 37: An insect 'hotel' used to monitor whether alien species have escaped into the environment

The monitoring method comprises the deployment of invertebrate refuges or 'hotels' (breeze blocks stuffed with scrunched up newspaper) and two sticky traps in each refuge (Plate 37). The monitoring sites are located at the Customs bonded yard (2), the batch plant at the pre-cast yard (1), Bradley's camp kitchen (1), Bradley's garage (1), explosives magazine (1), Prosperous batch plant (1), BME containers (1) and the combined building site (1).

The monitoring sites are checked on a monthly basis by the Contractor's environmental team when all sticky traps and newspaper are carefully collected and transported to the SHNT for analysis.

6.2.12 Visual Impact

Photographs are taken from numerous fixed positions across the construction site every week. The following plates show selected before and after situations in Prosperous Bay Plain and Bradley's, Deadwood and Dry Gut.

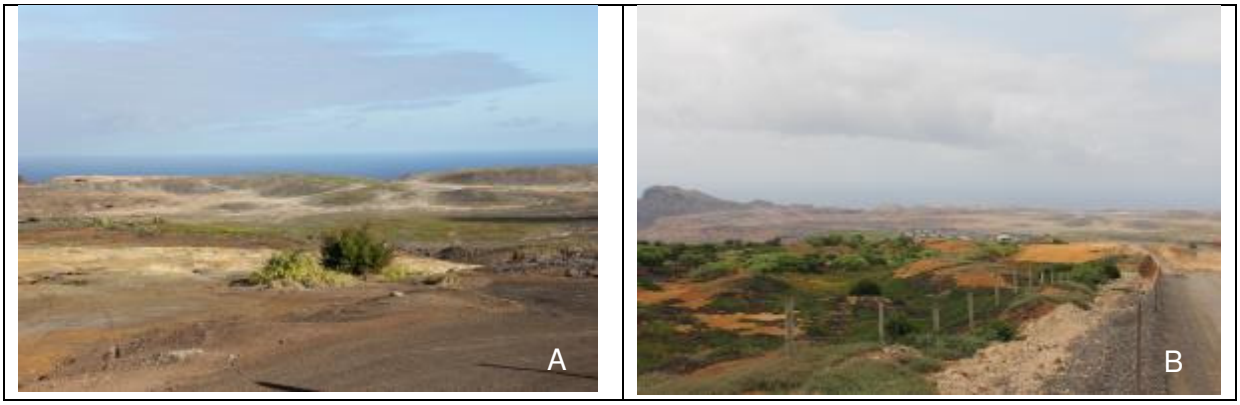


Plate 38: Airport site from Bradley's in January 2012 (A) and in September 2014 (B). Note presence of Bradley's camp and runway elevation

Plate 39: View of the old Deadwood road in January 2012 (A) and the new road in 2014 (B) (Note new wind turbines)

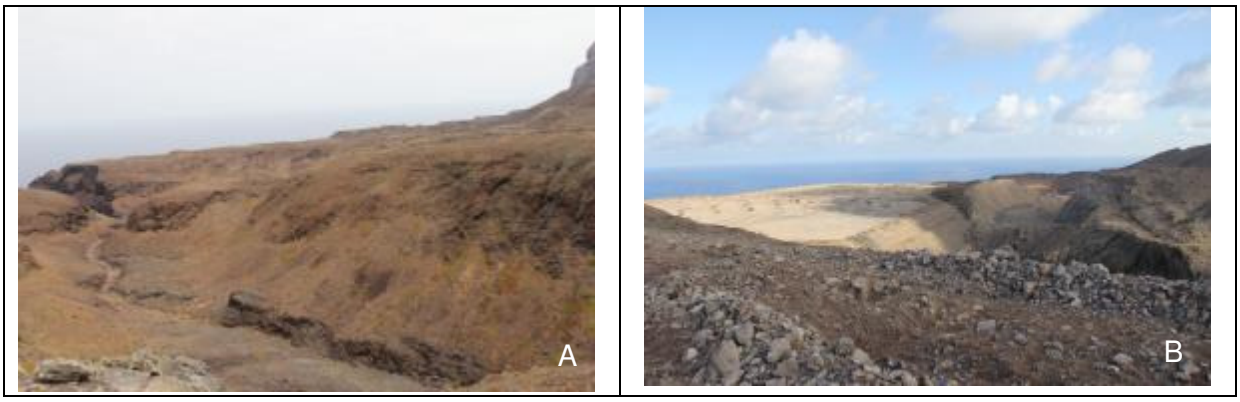


Plate 40: View of Dry Gut prior to filling in January 2012 (A) and a similar view of Dry Gut with rock filling and construction of the open channel in February 2014 (B)

6.2.13 Climate

In order to provide the airport operator and airport users with historic weather conditions, a weather station was installed and commissioned at the St Helena airport site by the Department for International Development (DfID) in June 2012. The weather data are collected and processed once a month by the Basil Read construction team. The following parameters are monitored: wind, temperature, relative humidity, air pressure, precipitation, cloud cover and visibility.

6.2.14 Heritage

Regular observations are made in active construction areas for impacts on, or damage to, heritage sites. Furthermore, building condition surveys are carried out prior to blasting or other activities which may cause an impact to building integrity.

7 CONCLUSIONS

Looking back over the year, it's hard to imagine where we were in June 2013, as so much has happened in twelve months. The project is progressing according to programme and the airport is still scheduled to open in February 2016. The permanent wharf got off to a delayed start but will still finish on time in October 2015. The size of the project in terms of the area involved, the number of different sub-components and the size of the multi-national workforce, makes this a challenge for everyone, not least the environmental management team. To meet this challenge, the environmental team on-island grew to 10 people in order to monitor 18 different environmental aspects, manage the waste systems, carry out all the required reporting, attend meetings, as well as auditing compliance with the CEMP across the entire site – no easy task, but one that is being performed with dedication.

As we look ahead to the coming year, we will start to turn our attention to the reinstatement of temporary work areas, decommissioning temporary infrastructure, developing the future ISO 14000 compatible Environmental Management System, and getting ready for certification of the airport by ASSI. We also look forward to the installation of the waste incinerator and the construction of a hazardous waste cell so that we can get rid of the backlog of hazardous and bulky waste accumulating at Bradley's.

Targets for 2014 – 15

- Completion of 2014-2015 AER in August 2015;
- 6-monthly audits in September 2014 and March 2015;
- CEMP update 5 in October 2014 and CEMP update 6 in April 2015;
- Improved compliance with the CEMP and with the key performance indicators listed in the Executive Summary of this AER;
- Wharf construction impacts - as or less than predicted;
- Reduction of the backlog of hazardous and bulky wastes;
- The LEMP programme will have commenced. The roll out of this programme by SHG has been significantly delayed and the availability of planting plans will be on the critical path for the forthcoming year.

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APPENDIX A

BASIL READ'S SAFETY, HEALTH, ENVIRONMENT AND QUALITY POLICY

BASIL READ

SHEQ POLICY STATEMENT

(Safety, Health, Environment and Quality)

Basil Read is building the future offering clients in the construction industry a comprehensive range of services spanning buildings, roads and civil engineering.

OUR DEFINITION:

The Oxford English Dictionary defines quality as a "degree of excellence".
At Basil Read, our degree of excellence is defined in our ISO 9001 Quality, OHSAS 18001 Occupational Health and Safety and ISO 14001 Environmental implementation.

OUR AIM:

Our SHEQ system serves as an on-going measurement tool to ensure effective management of the priority items identified through our assessments.

OUR OBJECTIVES:

Safety and Health (SH)

- To proactively reduce the frequency and severity of injuries.
- Awareness of risk-.
- To promote an environment where all employees accept responsibility for their own Health and Safety and the Health and Safety of everyone engaged in our core business.
- Ensure we comply with the OHS Act, relevant legal anc other requirements.

Environment: (E)

- Prevent Pollution
- Legal compliance with the relevant Environmental Legislation and other requirements.
- Continual Improvement of monitoring to ensure an effective management system.

Quality: (Q)

- In our company, quality standards are achieved when our joint effort in delivering a service or product meets or exceeds ours client's specified requirements.
- We value and nurture our client relationships.
- We carefully evaluate and select our suppliers, sub-contractors and partners, striving for mutually beneficia relationships.
- We promote learning, increasing knowledge and transferring skills according to an identified programme

OUR APPROACH:

At all levels in the company, managers implement a clear system of Safety and Health, Environmental and Quality checks by:

- Identifying aspects, impacts, hazards and risks.
- Determining priorities.
- Setting SHEQ objectives.
- Formulating action plans.
- Measuring progress regularly and analysing the results by specialists.

By being focused on SHEQ, we control risks and enhance efficiency.

OUR COMMITMENT:

At EXCO level we are personally committed to achieving excellence and we commit all employees to achieve their SHEQ objectives.

IMPROVEMENT:

At Basil Read, we implement an Annual Plan for Improvement. The Improvement Plan is consistent with our business strategy, and ensures continuous improvement of the SHEQ System.

YOUR ASSURANCE:

Our implementation of OHSAS 18001 Occupational Health and Safety, ISO 14001 Environment and ISO 9001 Quality assures successful identification of priorities for effective management.

FROM THE CEO'S OFFICE

20 May 2011

nqa OHSAS 18001 Registered UKAS

nqa ISO 14001 Registered UKAS

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