ST HELENA AIRPORT PROJECT

ANNUAL ENVIRONMENTAL REPORT 2015-16

January, 2017

Photo: Dawid Breed

Prepared by
Bryony Walmsley
CEMPC

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FOREWORD

It is now 5 years since Basil Read signed the Contract to build St Helena Airport, and in the time that has passed, many milestones have been met from the first visit of the NP Glory up to the Certification and opening of the airport in May 2016.

Throughout this time, the Basil Read environmental team on St Helena of Annina van Neel, Sasha Benjamin, Walter Williams, William Crowie and Brian Joshua assisted and guided by Bryony Walmsley, have raised the bar for Basil Read in the way that the stringent environmental considerations have been handled.

Their work with the construction teams has kept the number of environmental infringements at a low level, considering the size and complexity of the project.

My thanks goes to the St Helena Environmental team and to the Construction team in making the St Helena Airport Project a world class project that all in Basil Read are proud to be associated with.

Continue the good work.

Jimmy Johnston
Basil Read Project Director

ACKNOWLEDGEMENTS

A number of people have contributed to this fourth 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 construction managers – present and past. As the project winds down, several key people have left the island or the project: Gideon Niemand, Mike Araujo, Margie Fowler and John Reid are just some of the Basil Read people that made a positive contribution to our environmental work, while Robert Kleinjan and Miles Leask of the Project Management Unit are thanked for their vigilance and support. Ross Towers, the LEMP Project Manager, left the project in September 2016 and is responsible for the successful greening of several of our disturbed and rehabilitated sites.

The environmental team would also like to thank David Pryce for his interest in the project and his willingness to conduct various surveys at short notice. The St Helena National Trust provides ongoing support for our efforts in pest and predator control, Wirebird surveys and heritage protection and we thank them for their positive approach. Elizabeth Clingham and the members of the EMD marine team conduct the six-monthly marine surveys for us in Rupert's Bay which provides us with invaluable information about the impacts of the permanent wharf on the benthic fauna of the bay and the seabed. Jill Key and her team keep a close eye on biosecurity matters and Georgina Young of Environmental Health is thanked for her bi-annual water sample collection and analysis of seawater in Rupert's bay to check for microbiological contamination. Gift Sibanda at the Hospital Laboratory has also provided invaluable support with water sample analysis.

Thanks and acknowledgement must go to the Access Office for their unstinting support and for Plates 21, 24, 25, 41 and 42. Thanks to Darrin Henry (What the Saints Did Next blog) for the stunning photos of the BA Comair flight arriving (Plates 22 and 23) and David Pryce for Plates 28 and 29. All other photos are courtesy of Basil Read personnel, including the front cover by Dawid Breed.

As always, my thanks to Graham Temlett who reviewed the report and Denain Venter, who 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	electrical conductivity
EC	European Commission
EIA	environmental impact assessment
EMD	Environmental Management Division (of SHG)
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
km²	square kilometre
KPI	key performance indicator
kWh	kilowatt hour
LEMP	Landscape and Ecological Mitigation Plan
m	metre
m²	square metre
m³	cubic metre
mg	milligram
ml	millilitre
mm	millimetre
MSDS	material safety data sheet
NFM	near field monitor
NGO	non-governmental organisation
OTAR	Overseas Territories Aviation Requirement
PBP	Prosperous Bay Plain
PM10	particulate matter (smaller than 10 micron)
PMU	Project Management Unit

ppm	parts per million
ppt	parts per thousand
PPV	peak particle velocity
RMS	Royal Mail Ship
ROL	remote obstacle light
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
VHF	very high frequency
WHMP	wildlife hazard management plan
WHO	World Health Organisation
WMP	(Contractor's) waste management plan

EXECUTIVE SUMMARY AND KEY PERFORMANCE INDICATORS

In November 2015, it was the fourth anniversary of the signing of the St Helena Airport Project Contract between the St Helena Government and DfID as the Employer, and Basil Read (BR) as the Contractor. Many construction and contractual milestones were achieved during the year, including the attainment of the Aerodrome Licence from Air Safety and Support International and the handover of the airport from the construction team to the airport operations personnel on 10th May 2016. 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 fourth AER and covers the 12-month period from July 2015 to June 2016.

During the reporting period, the Contractor, 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 AER 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 report where the matter is discussed more fully.

Of the 30 KPIs, seven have not been achieved during the reporting period, one has been partially met and 22 (73%) indicators have been attained. The number of positive indicators is up from 18 last year, but the number of indicators not met has also risen slightly from 6 last year to 7 this year.

Overall however, there has been some improvement since last year, with progress on six indicators, and 22 have remained the same. Performance against only two indicators has regressed (see table below).

KPI	Description	Assess-ment rating 2014-15	Assess-ment rating 2015-16	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[1] or more have occurred	No	No	Six level 3 incidents occurred during the reporting period. *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)	Yes	Yes	*See section 3.1.*
Reporting commitments achieved (as per requirements of Contract)	100% completion of the following: • Weekly CECO reports; • Monthly CECO reports;[2]	Partial	Partial	100% completion of the following: • Monthly/quarterly CECO reports; • 6-monthly updates of CEMP; • 6-monthly audits; • AER.

[1] A level 3 incident is one which could cause moderate, reversible damage to health and/or the environment.
[2] Since December 2015, quarterly reports have replaced the monthly report following approval by PMU.

KPI	Description	Assess-ment rating 2014-15	Assess-ment rating 2015-16	Comments
	• 6-monthly update of CEMP (Oct '14, April '15); • 6-monthly audit (Sept '14, Mar '15); • AER (Dec '15)			All but 6 CECO weekly reports completed. *See section 3.4.*
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	Partial	Yes	Attendance by CEMPC at technical design meetings in Johannesburg or via skype as required 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,	Partial	Yes	Aspects listed were monitored as per requirements. *See section 6.*

KPI	Description	Assess-ment rating 2014-15	Assess-ment rating 2015-16	Comments
	waste quantities, resources use, Wirebirds, pests, invasive species, visual impact, climate, heritage and biosecurity			
Comments hot line and complaints procedure established (as per Contract)	Meaning that there is a 24 hour hot line and all complaints are registered and followed up within 1 day where practically possible	Yes	Yes	*See section 4.5.*
ENVIRONMENTAL PERFORMANCE: SOCIAL & COMMUNITY SERVICES				
Stakeholder engagement forum (SEF) established by PMU and functioning	SEF set up and quarterly meetings held	Partial	Yes	*See section 4.4.*
Number of complaints received	No serious complaints received; Less than 3 minor complaints per month	Partial	Yes	No serious complaints were received during the year, and there were on average just under 2 complaints received per month, which is a significant improvement on the previous year. *See section 4.5.*
Employment of Saints	Direct creation of 112-225 construction jobs for Saints	Yes	Yes	As of end of June 2016, 226 Saints were employed on the airport project as staff or sub-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	Full time medical personnel are present.
No incidents of communicable diseases caused	HIV and AIDS awareness and testing	Yes	Yes	HIV awareness forms part of the Induction programme and ongoing training. Posters are in

KPI	Description	Assess-ment rating 2014-15	Assess-ment rating 2015-16	Comments
by BR and its sub-contractors	programmes are in place for all staff			place and condoms available in selected male ablution facilities. Staff members are counselled about the need to have HIV tests.
Anti-social behaviour and crime	No expatriate BR employee or sub-contractor is convicted of any crime while on the island	No	No	Three employees were found guilty of affray (1), drunk in a public place (1) and drunk driving (1).
Incidents of disturbance to heritage resources	No level 3 incidents or higher reported	No	No	One level 3 incident occurred during the decommissioning of the temporary reservoir in Upper Rupert's Valley when human bones were exposed during removal of introduced material. *See section 6.2.14*
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. 25 private residences are leased out to BR for use by 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	Partial	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. BR has assisted EMD to construct a new bulky waste cell and bioremediation pad at Horse Point landfill site. *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	Yes	Yes	The incinerator is working intermittently and the hazardous waste cell for the disposal of construction waste has been commissioned. Waste is stored temporarily at Bradley's workshop on hard standing with bunding where necessary. *See section 6.2.5.*
Minimise impact on	BR to minimise	Yes	Yes	Island water supplies are only

KPI	Description	Assess-ment rating 2014-15	Assess-ment rating 2015-16	Comments
Island water supplies	use of island water supplies and develop new sustainable sources of water for construction			used for potable water use and for concrete mixing at the Rupert's batch plant. All other water (e.g. for dust suppression, vehicle washing, Prosperous batch plant (before closure) and plant irrigation) is obtained from Borehole 5 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	*See section 6.2.1.*
Incidents of noise emissions over prescribed limit	No exceedances over permitted limits recorded	No	No	*See section 6.2.3.*
Incidents of vibration (peak particle velocity) readings over prescribed limit	No exceedances over permitted limits recorded	Yes	Yes	*See section 6.2.4.*
Incidents of water quality over prescribed limit	No exceedances over permitted limits recorded	Yes	Yes	*See section 6.2.2.*
Incidents of significant accidental spills (oil, diesel, concrete)	No level 3 incidents or greater involving accidental spills	Yes	No	One level 3 incident occurred in which diesel and oil spilt onto the access road near the BFI intersection in Rupert's Valley. *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	The new DVOR fence had to be moved for technical reasons which required a total of 0.95 ha of land take outside the ADA. Total land take outside the ADA for the project does not exceed 10% of the total ADA area.
Incidents of illegal driving, plant collection, animal trapping	No level 3 incidents or greater occurred	Yes	No	Three level 3 incidents occurred: excess offroad driving on each side of the runway, offroad driving outside the ADA near Tank 6 (this received a non-conformance

KPI	Description	Assess-ment rating 2014-15	Assess-ment rating 2015-16	Comments
				notice from PMU) and arum lilies were found growing directly in the ground at Bradley's camp. *See section 3.3.*
Rare and endangered species affected (excluding Wirebirds)	No level 3 incidents or greater involving biodiversity issues	No	Yes	No level 3 incidents occurred affected rare and endangered species. *See section 3.3.*
Number of Wirebird territories disturbed	No displacement of Wirebirds beyond the ADA	Yes	Yes	*See section 6.2.8.*
Biocontrol measures are in place	No contaminated containers allowed onto the island	Yes	Yes	No incidents occurred. *See section 6.2.11.*
Land rehabilitated as per LEMP	Number of specifications completed	Yes	Yes	All accepted LEMP specifications issued to BR were completed. *See section 5.4.*

1 INTRODUCTION

This is the fourth Annual Environmental Report (AER) for the St Helena Airport Project, reporting on construction work for the period July 2015 to June 2016. It has been a momentous year for the St Helena Airport Project, with many milestones achieved, the most important of all being the receipt of the Aerodrome Licence from Air Safety Support International (ASSI) and the handover of the airport from the construction team to airport personnel on 10th May 2016. The permanent wharf in Rupert's Bay was also completed and the first ship to ever dock on the island arrived on 3rd July 2016. The new access road to the airport was completed from Bottom Woods to the airport and large swathes of disturbed ground along this same stretch were re-profiled and topsoiled ready for planting.

Unfortunately, scheduled commercial flights have not yet started up due to wind shear issues on the northern airport approach, but several charter flights started to use the airport during the reporting period, including two medical evacuation flights.

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.

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

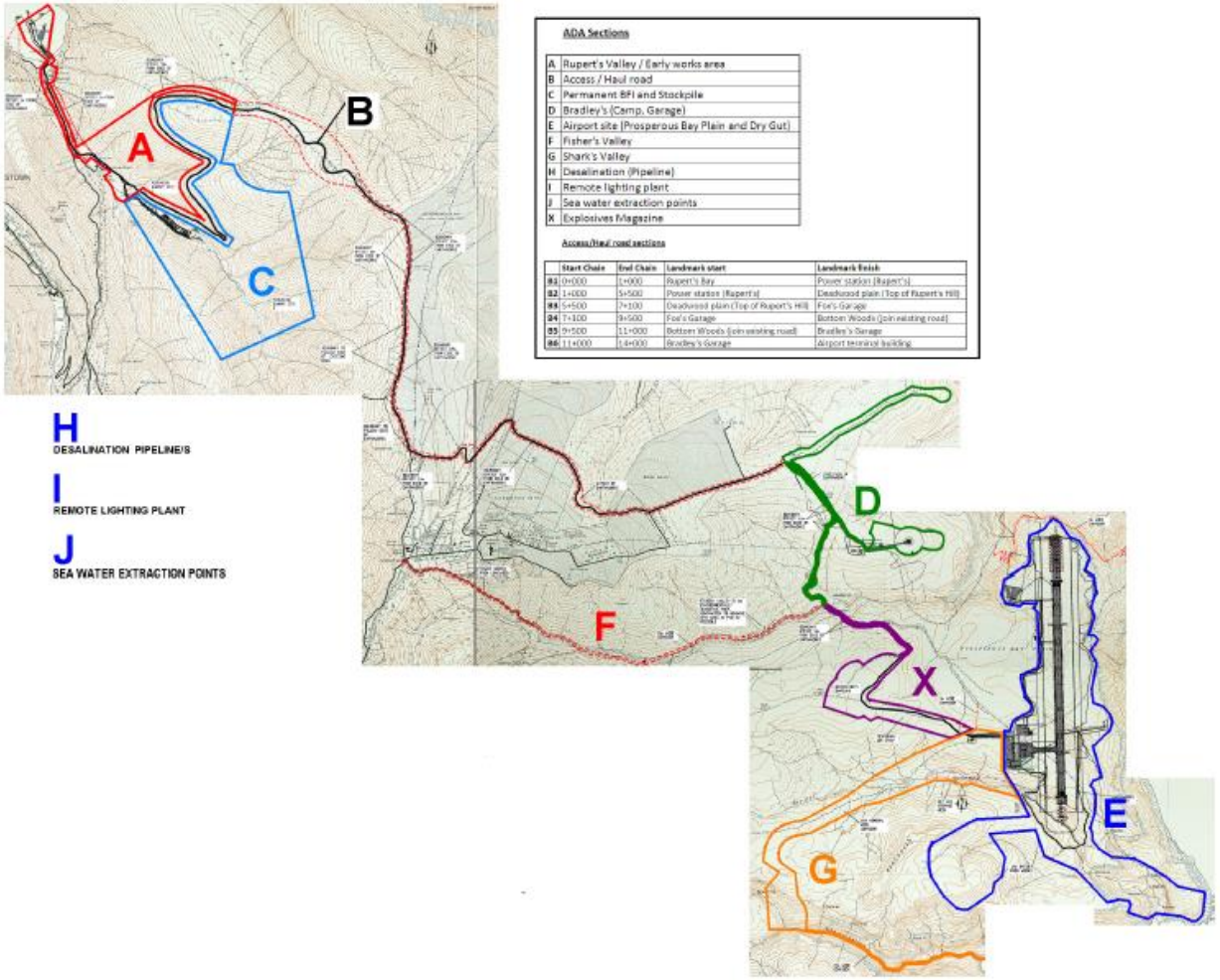


Figure 1: Map of the airport works areas

Figure 2: Map of island showing the location of navigational aids and communications systems

Table 1: Airport construction work areas and status as of end June 2016

Designation	Area name	Construction works	Construction status at end June 2016
A	Rupert's Valley	• Temporary jetty	• Complete
		• Public road upgrade	• Complete except for Bayside BFI access
		• Workshops	• Being used as Stores
		• Laboratory	• Complete, operating
		• Stores	• Use of Fisheries Building ceased; area decommissioned
		• Laydown areas,	• Complete, operating
		• Temporary fuel facility (TFF)	• Part operational; part decommissioned
		• Permanent wharf access road	• Not yet started
		• Permanent wharf	• Complete
		• Lower quarry	• Quarry area used for spoil deposition; landscaping not complete
		• Sea Rescue Building	• 95% complete
		• New sea rescue slipway	• Complete
B	Access / haul road	• Haul road for construction	• Haul road complete[3]
		• New construction from wharf to BFI Junction	• 61.8%
		• New construction/upgrade from BFI Junction to Reggie's	• 78%
		• New construction from Reggie's to airport car park	• 98%
C	Upper Rupert's Valley	• Permanent bulk fuel facility (BFI)	• 68% complete
		• Road spoil area	• Complete, to be rehabilitated
		• Concrete waste disposal area	• Complete, operating
		• Temporary water reservoirs and pump stations	• Decommissioned
		• Concrete batch plant for wharf	• Complete, operating
		• Laydown area for Core-locs and block walls for wharf	• Being used for other temporary storage
		• Drainage diversion channel	• 80% complete
		• BFI offices and lab	• 35% complete
D	Bradley's	• Temporary Contractor's camp	• Complete, operational
		• Workshop	• Operating
		• Doppler VHF omni-directional radar	• Complete; DVOR moved to

[3] 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, the road has a Cape seal surface, the drainage structures have been installed and road signage and markings are in place.

Designation	Area name	Construction works	Construction status at end June 2016
		(DVOR) beacon and VHF mast • Temporary waste disposal and recycling area • Bioremediation pad	airport site • Operational • Operational
E	Prosperous Bay Plain (PBP) and Dry Gut	• Contractor's laydown area • Site offices • Vehicle refuelling • Batch plant • Crusher • Runway and taxiway • Combined building • Terminal building • Ancillary airport buildings • Apron • Car park and entrance area • Permanent electricity supply • Dry Gut fill • Open channel works area • Fire training rig	• Decommissioned, topsoiled • Decommissioned, removed • Decommissioned, removed • Decommissioned, removed • Decommissioned, removed • Complete, operational • Complete, operational • Complete, operational • 95% complete • Complete, operational • Complete, operational • Complete • Complete • Complete • Complete, operational
F	Fisher's Valley	• Cook's Bridge crossing	• Complete
G	Shark's Valley and Upper Dry Gut	• Temporary boreholes, water reservoirs and pump stations in Dry Gut • Permanent water supply (boreholes, piping, tanks)	• Borehole 5 operational; remaining boreholes decommissioned; reservoirs removed and area rehabilitated • Complete, operational
I	Around airport	• Remote obstacle lights 1-12 • VHF mast at Blue Hill	• Complete, operational • Complete, operational
X	Tungi Flats	• Explosives magazine • Borrow pit	• Decommissioned, re-profiled, topsoiled • Decommissioned, re-profiled, topsoiled

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 2015 to 30th June 2016 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 environmental work undertaken during the year (Chapter 5);
- Our environmental monitoring activities (Chapter 6); and
- The targets and challenges for the 2016-17 year ahead (Chapter 7).

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

3 ENVIRONMENTAL GOVERNANCE STRUCTURES

3.1 Environmental Management Team

Environmental management of the airport construction project is the responsibility of a dedicated team of on-island and off-island staff. The Contractor's Environmental Management Plan Coordinator (CEMPC) is based in South Africa and is responsible for liaison with the BR design team in South Africa, the six-monthly audits, updating the CEMP, preparing the Annual Environmental Report (AER) and providing ongoing advice about environmental issues to BR management and the Contractor's Environmental Control Officer (CECO), Annina van Neel. The CECO is based full-time on the island and she has a team of 4 field staff to carry out environmental inspections, monitoring and waste management (Table 2). The CECO reports directly to the CEMPC and the on-island SHEQ Manager (Figure 3).

Table 2: Environmental management team (as at 30th June 2016)

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 CECO	Team manager. Weekly and quarterly reports; attendance at environmental and project meetings; site walkovers, implementation of the CEMP; environmental monitoring and day to day auditing; liaison with PMU
Sasha Benjamin Field Assistant	Responsible for environmental monitoring
Walter Williams Incinerator operator	Responsible for receiving, cleaning, compacting and storing hazardous wastes at Bradley's workshop and the distribution of recyclable materials
William Crowie	Environmental assistant
Brian Joshua	Environmental assistant

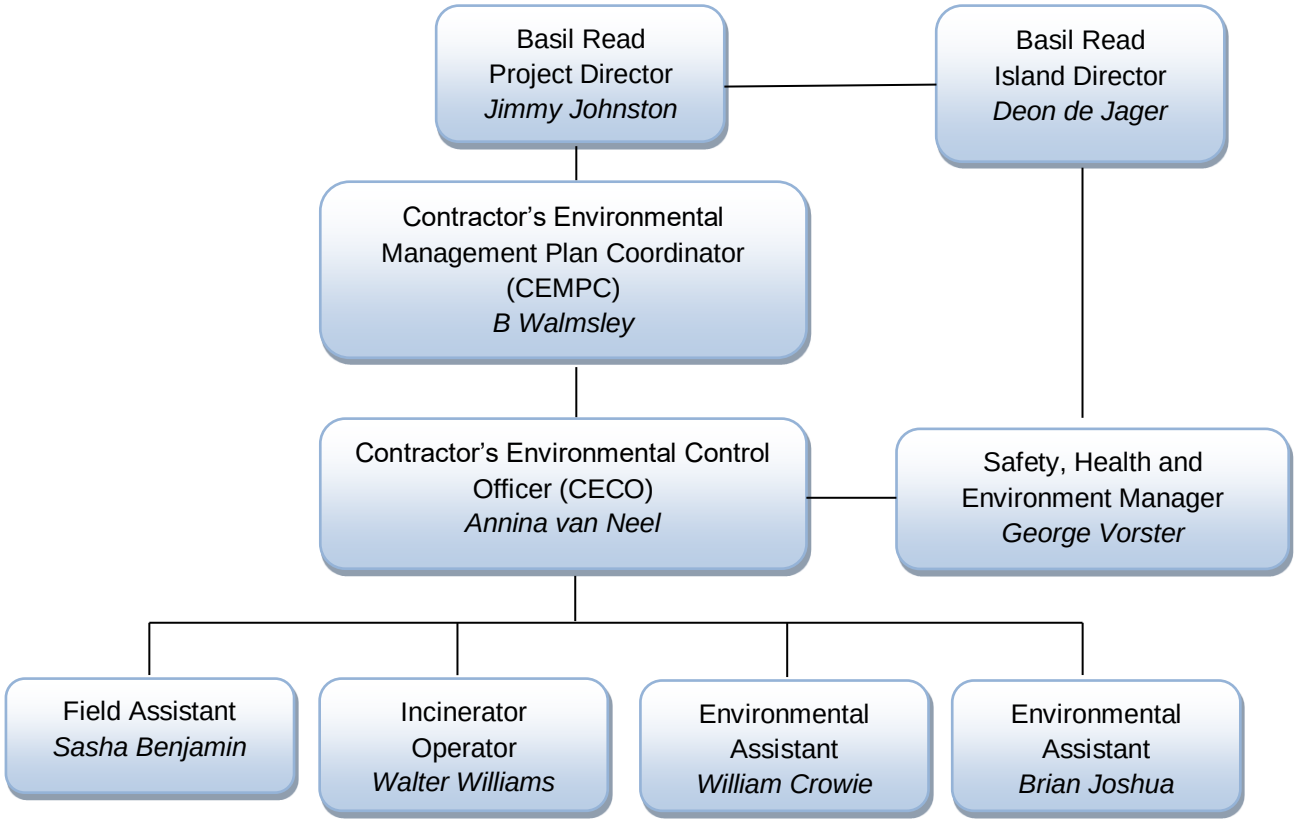


Figure 3: Basil Read environmental reporting structure as at end June 2016

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.

3.2 Environmental Management Plans

As reported in the previous AER, 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 on an ongoing basis with formal acceptance by PMU 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:

Site walkovers
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 constraints, as well as areas of ecological sensitivity that might be affected by the activity.

Site walkovers have taken place for the following:

- Additional construction works linking the near field monitor (NFM) to the localiser (NW end of the runway) on 02/07/15;
- Route for the permanent, buried pipeline from Borehole 5 in Dry Gut to the water storage tanks on 21/07/15;
- Fencing for the Doppler VHF Omni-directional Range (DVOR), Very High Frequency (VHF) mast, NFM and remote obstacle lights 5 and 7 on 30/07/15;
- New slipway for the sea rescue boats in Rupert's Bay on 03/08/15 (Plate 1);
- New road intersection at Foxy's Garage, Deadwood on 04/08/15 (Plate 2);
- Security fence for the airport restricted area on 05/08/15;
- New road intersections at the following junctions: Meteorological Station, Reggie's and Coltsheds on 11/09/15;
- Possible northwards extension of the localiser fill to accommodate it in a new position on 23/10/15 (Plate 3);
- New route for the Gill Point Postbox walk via Dry Gut, the open channel and a terrace on the Dry Gut fill on 17/02/16;
- Relocation of the security fence around the new position of the DVOR to minimise impacts on Central Basin and navigational signals on 15/03/16 (also see s. 5.2);
- New Postbox walk route to King and Queen Rocks on 18/03/16 (Plate 4);

- Upgrading works on road through Rupert's Valley on 21/04/16.

Plate 1: Walkover at Shears Jetty regarding the new slipway

Plate 2: Walkover at the intersection near Foxy's garage

Plate 3: Inspecting the area north of the localiser fill

Plate 4: Looking for a new Postbox walk route to King and Queen Rocks via Fisher's Valley. Photo shows descent into Fisher's Valley

Workplace audits

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 and incident reporting

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. The PMU's Environmental Monitor also conducts site inspections and issues Site Observation notices, or the more serious Non-conformance Notices (NCN) to BR for corrective action. The Site Observation and Non-conformance notices and the signed close-out reports on actions taken are all saved onto the document control system.

Forty-four environmental incidents were recorded during the 12 month reporting period and all have been successfully closed out. This total is 14 incidents fewer than the previous year, which is encouraging and reflects positively on the efforts made by the environmental team to manage the

most common incidents – spills and waste management. The incidents are rated on a scale of 1-5 (Table 3).

Table 3: Incident rating scale

Loss type	0 No risk	1 Insignificant	2 Minor	3 Moderate	4 Major	5 Catastrophic
Harm to people (safety & health)	No risk to health and safety	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
Environ-mental impact	No environ-mental 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	No risk	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 4 and 5 below.

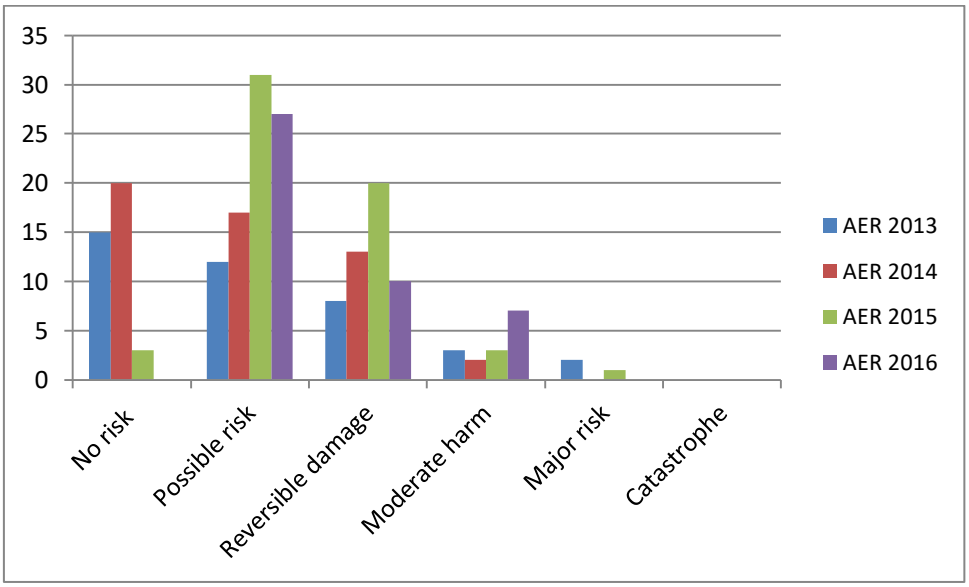


Figure 4: Number of incidents by level of severity

Of the 44 recorded incidents, it can be seen that the majority (86%) involved no damage or low to minor, reversible harm to the environment. However, project activities caused seven incidents which had a moderate impact on the environment, heritage and/or the health and safety of local communities over the past 12 months (Figure 4 and Plates 5-7). One of these incidents resulted in a

Non-conformance Notice being issued by PMU when a tracked vehicle travelled off road from the Southern Plateau of Prosperous Bay Plain near Tank 6 to Bradley's Workshop to avoid the newly laid Cape Seal road surface without permission. The vehicle travelled off road along the Southern Plateau through the rehabilitation plot on Tungi Flats, down the slope along the above-ground power line into Fisher's Valley, across the airport access road and over another rehabilitation plot in Fisher's Valley watercourse (Plate 8), and then up the slope to Bradley's Workshop.

Plate 5: Scattered human bones were found during removal of the temporary reservoir in Rupert's Valley. Work stopped immediately as per CEMP

Plate 6: An excavator fell into the sea at the permanent wharf. Oil spill protection was deployed immediately as per CEMP

Plate 7: Effluent from the first fire training exercise ran off into the surrounding environment

Plate 8: Tracks of the excavator driving illegally through a rehabilitation plot in Fisher's Valley

Figure 5 shows the number of incidents by type. Incidents involving waste management and hydrocarbon spills and leaks were the main contributors to the total (48%), with several occurrences relating to very poor bitumen management. All contaminated soil was taken to the bioremediation pad at Bradley's workshop and all polluted sites were remediated. Although few in number, incidents relating to invasive vegetation, land take, and spills of other products were higher than in the previous year, but no incidents relating to roads and traffic, biosecurity, health, pests and predators or community liaison issues were recorded this year (Figure 5).

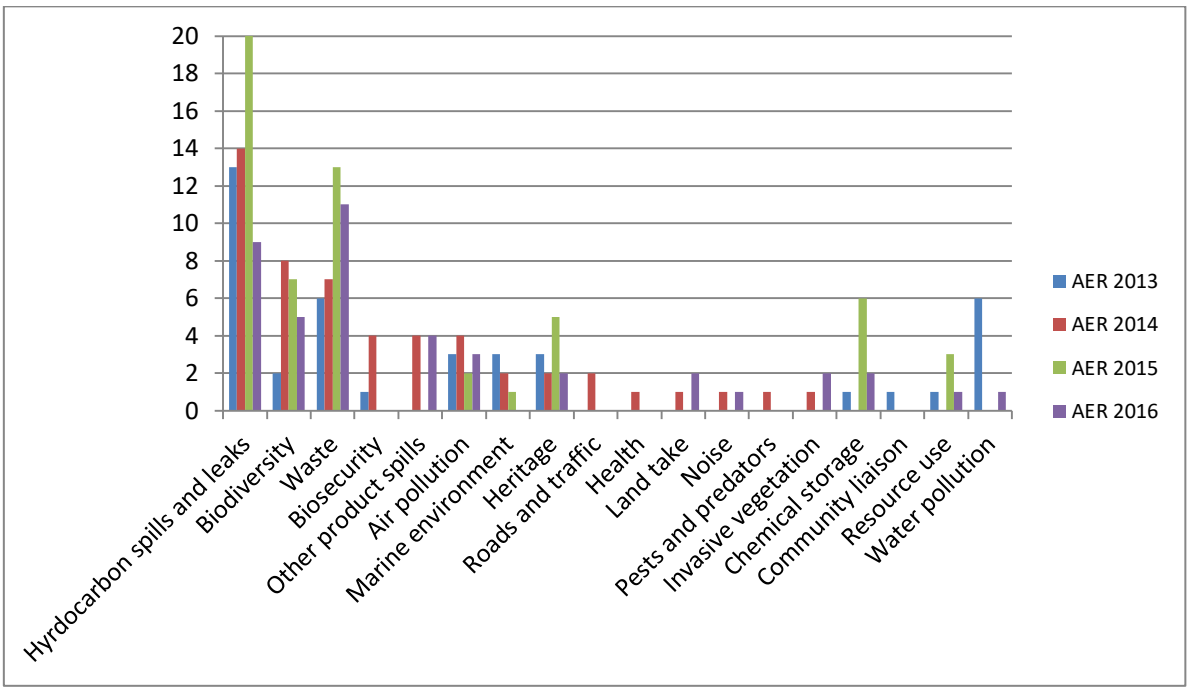


Figure 5: Number of incidents by type

Thirteen incidents occurred in lower Rupert's Valley where there was a considerable amount of truck activity associated with wharf construction and off-loading/loading of containers in close proximity to a residential area. An equal number of incidents was associated with the Contractor's compound area near the airport (due partly to the many bitumen issues noted above), followed by Upper Rupert's Valley (where the BFI is under construction) (Figure 6).

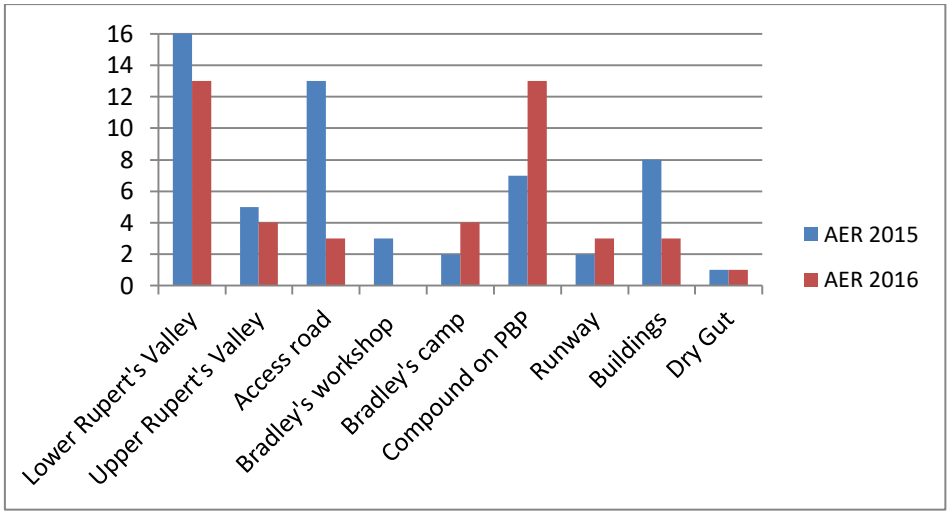


Figure 6: Number of incidents by area

Basil Read audits

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 2015 and again in February 2016. Construction audits will continue until all construction works have been completed.

Disappointingly there was a significant increase in the number of major findings observed during the February 2016 audit – from 5 in the September 2015 audit to 18, reversing the improving trend since September 2013 (Figure 7). Eight of the major findings concerned bitumen management and related waste disposal by sub-contractors, underlying the need for greater environmental management oversight of all sub-contractors working on the project (Plate 9).

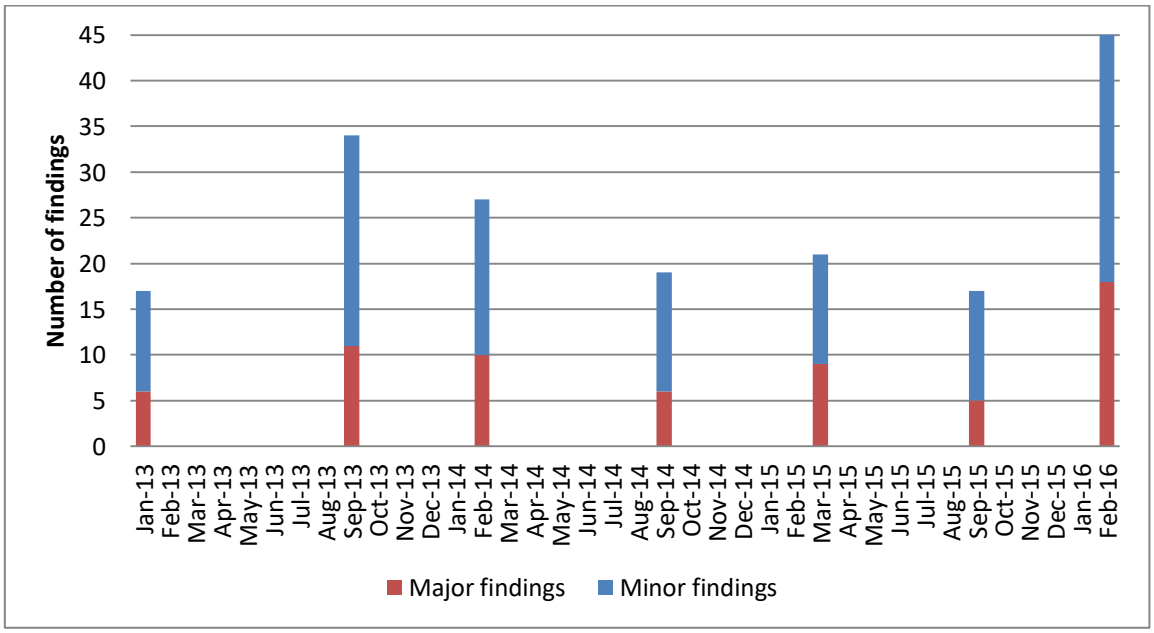


Figure 7: Audit findings

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). Dust and noise levels continue to be higher than the limit specified in the EMP and weeds, litter and waste management are an ongoing challenge.

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
Sept 15	5	2	0	3	12	7	1	4
Feb 16	18	15	1	2	27	18	2	7

After the February 2016 audit, the auditor was pleased at the progress being made in site decommissioning, re-profiling and topsoiling, ready for re-planting by the Landscape and Ecological Mitigation Programme (LEMP) team. Another pleasing development noted during the audit was the completion of the two engineered hazardous waste cells at Horse Point landfill – one for the sole use by SHG, the other being for disposal of hazardous construction wastes (Plate 10). For the fifth audit in a row, no biosecurity incidents were noted, indicating that the control measures in Walvis Bay and at Rupert's are working (see section 6.2.11).

Plate 9: Poor bitumen management was observed in several places during the February 2016 audit

Plate 10: Operational hazardous waste cell at Horse Point landfill site

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);
- Bi-weekly communications (on-island);
- Monthly Client meetings (on island);
- Bi-weekly production meetings (on island);
- Weekly SHEQ meeting (on island) (separate meetings ceased in January 2016);

- Ad hoc 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 (until end November 2015 and thereafter quarterly, as agreed with PMU);
- Six-monthly audit report;
- AER.

All these reports are submitted to the PMU for acceptance and then distributed to island and off-island BR management personnel, SHG and DfID. All of the monthly/quarterly reports were submitted and all but six[4] of the weekly reports were completed during the 12 month period, which is a significant improvement on the previous year.

The 2014-15 AER was presented to the public on the island by the Access Office at one of the Stakeholder Engagement Forum (SEF) meetings and it is available on the Access Office website (www.sainthelenaaccess.com).

4 BUILDING RELATIONSHIPS WITH STAKEHOLDERS

4.1 Employment and Employee Development

Basil Read is the largest private employer on the Island. As at the end of June 2016, a total of 375 people were employed directly or as sub-contractors on the project of which 226 (60%) were Saints and 149 were expatriates employed by BR, of whom 78 were contracted Thai workers (Figure 8). Included in this total were 52 Saints who have returned from abroad to work on the project, and 37 people employed by Saint sub-contractors. The proportion of Saints working on the project is up from 53% a year ago. From Figure 9 it can be seen that the number of Saints employed as sub-contractors remained consistent for most of the year, but the total number of Saints employed slowly declined as the year progressed, as project construction activities wound down.

[4] Four weekly reports were not completed during CECO annual leave.

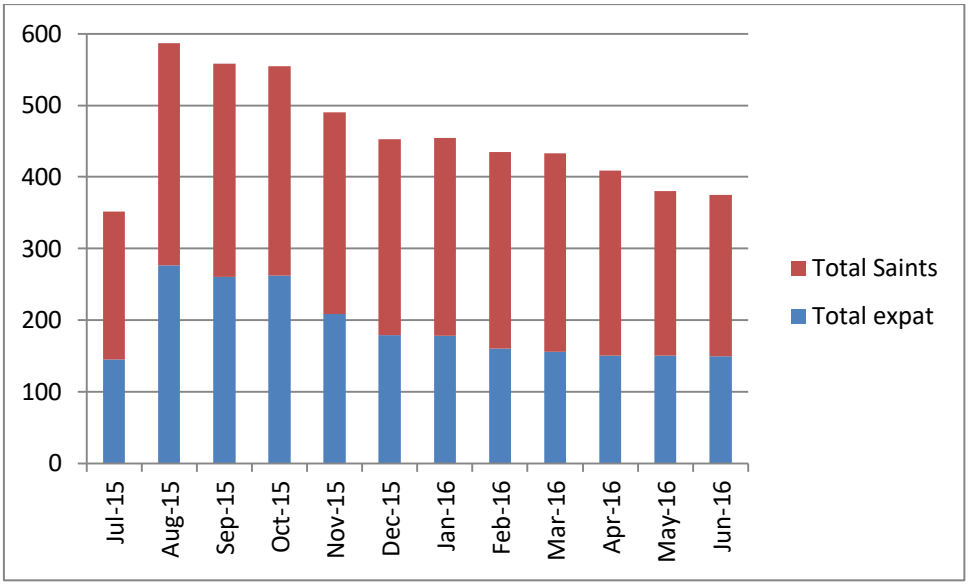


Figure 8: Ratio of Saint and expatriate staff (including sub-contractors)

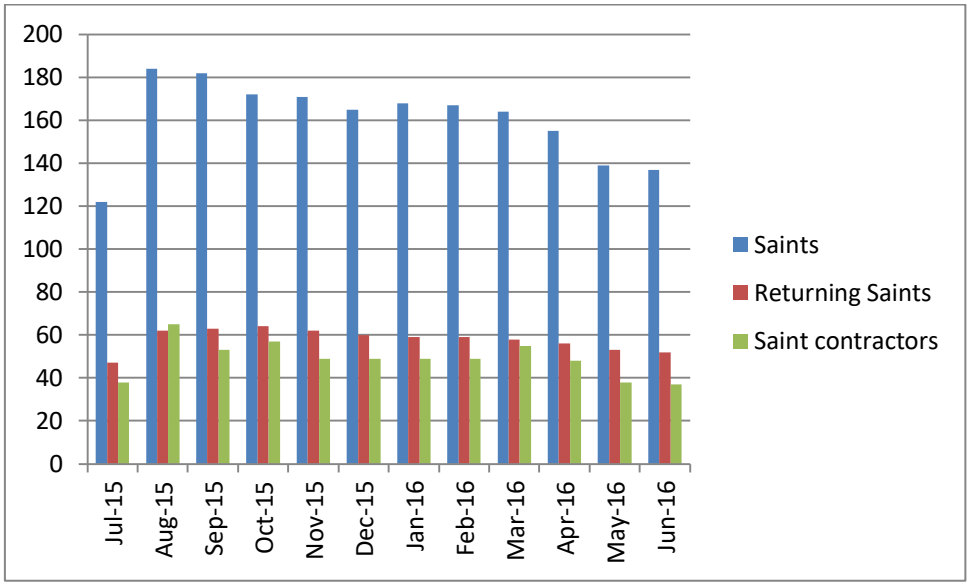


Figure 9: Employment breakdown of Saints

Employment opportunities impacted on all age and gender groups which was made possible by our commitment to provide certified training and imparting of skills to Saints wherever possible, as opposed to sourcing skills elsewhere. Five Saints under the age of 21, 44 Saints over 60 years of age and 33 female Saints were employed as at the end of June 2016.

Since inception, the project has contributed £2.07 million in taxes and paid £13.58 million in wages and salaries to staff. Local businesses have been extensively utilised for the provision of engineering, retail, cleaning, construction and other services to the project, amounting to a cumulative total of £5.60 million. As the number of expatriate staff declines as the project winds down, the number of house rentals is also dropping – at the end of June 2016, only 25 houses were being leased compared to 54 in the previous year. House rental income plus other leases from SHG (e.g.

Bradley's Garage, Longwood offices) have yielded an accumulative amount of £1.21 million in rent. The ongoing employment of Saints on the airport project together with over a hundred expatriates still resident on the Island has resulted in increased spending in the local economy, however the lack of certainty about the future of commercial flights to the airport is causing some economic hardship and less optimism than in previous years.

There is a comprehensive programme of skills training in place; all new permanent staff, visitors and sub-contractors are required to undertake the basic Induction and HIV Awareness training, and all permanent staff have received training on disaster management and health and safety issues, as well as a range of job-relevant courses and various specialised environmental subjects. The amount of training conducted over the reporting period was less than in previous years reflecting the decrease in the number of employees and the end-stage of construction. Nevertheless, training was given on the following topics:

- Fire safety training;
- Chainsaw operations;
- Refresher First Aid training;
- Sea Rescue – emergency exercise;
- Emergency evacuation - all sites;
- Pesticide application.

The SHEQ Manager, CECO and technical assistants give weekly toolbox talks to all construction teams to raise awareness on specific safety, health and environmental issues – the latter usually held after an environmental incident e.g. disposal of waste concrete, off-road driving, etc. Health awareness campaigns have included toolbox talks and the production of leaflets and posters on communicable diseases, health and other social issues, such as:

- Common cold and flu;
- World HIV/AIDS Day and HIV testing;
- Cancer awareness;
- Sexually transmitted diseases and infections;
- Safe driving (use of cell phone, alcohol limits, passenger safety);
- Asbestos awareness;
- Waterborne diseases.

4.2 Corporate Social Responsibility

Cumulative direct sponsorships by BR over the entire construction period in the form of cash donations, prizes, material supply, clothing and building improvements have exceeded £57,000. The main beneficiaries include: schools, sports clubs, scouts and guides, churches, New Horizons, SHAPE, the SPCA and other island-wide charities (Plates 11-12). Gravel and tyres have been donated to several school playground projects.

Basil Read was involved with the Festival of Running 2015 by providing sponsorship in the form of medical standby assistance, voluntary assistants to manage the event, loan of Hi-Vis vests and other support (Plate 13).

Plate 11: CECO team collecting cardboard waste for recycling at SHAPE

Plate 12: Cancer Awareness Golf Day

Plate 13: Participants at the Festival of Running

4.3 Open Days and Milestones

Inevitably, as the construction Contract winds down, there were many notable milestones during the year. On 14th July 2015, the last concrete was poured on the 1,950 m long runway (Plate 14). The Island's media services were invited to witness this milestone. As the last section of concrete was drying Basil Read Island Director Deon de Jager said, *"It's something to be proud of, for any civil engineer to work on a project of this nature and achieve what we have achieved here on St Helena is absolutely amazing."*

A few days later, the naming, blessing and launching ceremony of the new sea rescue vessels took place at Shear's jetty; this event was attended by H.E. Governor Capes, Government officials, and Basil Read representatives (Plate 15). The boats were named following an Island-wide school competition, as Ocean Rider and Sea Lion. The sea rescue boats will support airport operations by being on standby during the arrival and departure of commercial aircraft, as well as providing a much improved 24/7 sea rescue capability for the Island.

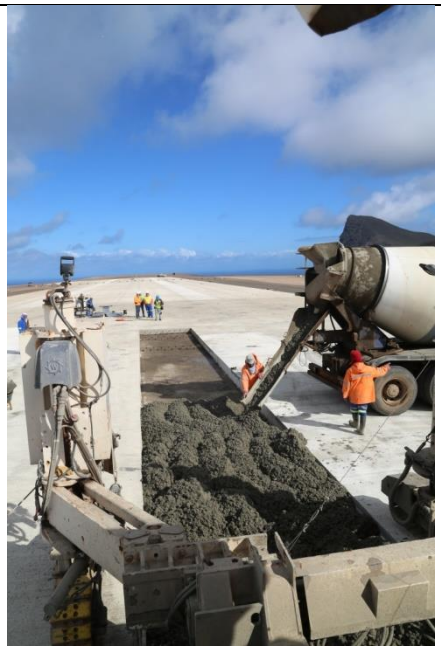


Plate 14: Pouring the last concrete on the airport runway

Plate 15: The official launch of the sea rescue boats on 17th July 2015

The runway lights were officially turned on by H.E. Governor Capes on 29th July 2015 (Plate 16). A large crowd of people came to see the lights from designated viewing spots outside the airport security area. In addition to the runway lights, all 12 remote obstacle lights (ROLs) were also completed during July. The ROLs are part of a suite of navigational aids used to identify areas of high ground for arriving and departing aircraft. Many of the ROLs are in remote positions e.g. 3 are on top of The Barn (Plate 17) and in order to prevent environmental impacts in these sensitive areas, all equipment and parts were carried in and installed by hand. Each ROL is fitted with a solar panel and a small wind turbine to ensure that they are functional day and night.

Plate 16: The airport lights lit up the sky on 29th July

Plate 17: One of the remote obstacle lights on top of The Barn. Note solar panel on the right.

The next major milestone occurred on 15th September 2015, when the first ever aircraft landed on the Island. Most of the population turned out to watch the Beechcraft King Air 200 land at 13h50 (Plates 18-19). Over the next 10 days the King Air conducted calibration trials to test the navigational equipment and other aeronautical requirements and Islanders had to get used to the new sensation of

hearing an aircraft flying overhead! One of the main recommendations arising from the calibration flight trials was that the DVOR and localiser needed to be moved. The former was moved from Bradley's camp to a point just north of the terminal building near the runway, and the latter was relocated to a position closer to the runway at the north-west end of the airfield. A second calibration flight arrived on 13th December to check the efficacy of the new DVOR and localiser positions and found them to be much improved.

Plate 18: The landing of the first aircraft on St Helena

Plate 19: Most of the Island's population came out to witness the historic event

On the other side of the Island, a maritime story was coming to an end; the NP Glory 4, otherwise known as 'The Basil Read Ship' docked at the temporary jetty in Rupert's Bay for the last time on 24th October (Plate 20). The ship was chartered by BR to bring all the large equipment, vehicles and materials needed for construction from the Port of Walvis Bay in Namibia to the island. She undertook 48 voyages over 3 years (having first docked on 11th July 2012) and even assisted in medical evacuations from time to time.

Plate 20: NP Glory 4 arriving in Rupert's Bay

Plate 21: Airport personnel readiness training

Meanwhile, the airport staff were gearing up for the first airport certification audit conducted by Air Safety and Support International (ASSI) which took place during the first week of November. This comprised a desktop audit, following a review of all the airport operational manuals (including the Environmental Management System and Wildlife Hazard Management Plan (see s. 5.5)) and an on-site audit of the Rescue and Fire Fighting Services (RFFS) readiness. The aim of the Certification Audit was to demonstrate compliance with the standards contained in the Overseas Territories Aviation Requirements. A second and third round of desk top audits took place in January and March

2016 respectively, culminating in a full on-site ASSI audit in April. All airport security and safety personnel, HM Customs and Excise, Immigration Officials, air traffic control staff, RFFS and all ground staff attended training courses on the equipment and procedures in readiness for the full audit (Plate 21). The Aerodrome Certificate was issued by ASSI on 10 May 2016 thus paving the way for the airport to receive commercial flights.

The achievement of this major milestone was rather over-shadowed by the disappointment caused by the announcement two weeks earlier (on 26th April) that commercial flights would not be taking place as planned due to safety concerns associated with wind shear on the northern runway approach and that the official opening of the airport was being delayed indefinitely. This decision was made following the implementation flight by a BA Comair 737-800 aircraft, which arrived at noon on 18th April 2016 amid much fanfare. After a 'wheels-up' fly past along the length of the runway, showing off this new, customised aircraft to good effect, the plane had to abort the first landing due to significant wind shear issues. Although she landed without incident on the second attempt, the concerns about safety were such that the scheduled flights from May were cancelled until further notice (Plates 22-23). By the end of the reporting period for this report, no decisions about the future of the airport had been taken.

Plate 22: Wheels-up fly past by BA Comair. Photo courtesy of www.whatthesaintsdidnext.com

Plate 23: BA Comair verification flight landing. Photo courtesy of www.whatthesaintsdidnext.com

In order to prepare for the arrival of the implementation flight, the airport conducted three operational readiness trials in which the public were invited to take on the roles of arriving and departing 'passengers' complete with 'meeters and greeters' to test all the airport systems and procedures (Plates 24-25).

Plate 24: Volunteer 'passengers' checking in as part of airport readiness training

Plate 25: 'Passengers' and 'meeters and greeters' enjoying lunch at the airport restaurant during one of the airport readiness trials

Following the third readiness trial on 13th May 2016, the airport held an open day when visitors could visit the combined building, check out the fire trucks and go on a tour of the runway.

Although the airport is not receiving scheduled flights, it is open for charter planes and by the end of June, had catered for two medevac flights and BR had commenced a monthly flight from Lanseria using an ExecuJet 8-seater plane to bring in and out senior staff and short-term consultants.

Up until the airport became a formal Security Restricted Area on 17th August 2015, the general public, RMS visitors and school groups continued to show an interest in the airport site, with 80 people visiting in July and 132 in August.

4.4 Stakeholder Engagement Forum

Four Stakeholder Engagement Forum meetings were held during the year as follows:

Date	Location	Topics
2 Sept 2015	Museum	Airport progress and next steps; management of hazardous waste, preparation for the calibration flights
20 Jan 2016	Museum	General project progress update; presentation of 2014-15 Annual Environmental Report (AER)
11 May 2016	St. Michael's Church Rupert's Valley	Works in Lower Rupert's Valley: concrete road, Bayside BFI, relocation of services
18 June 2016	Permanent Wharf	Rupert's residents' tour of the wharf

The aim of the meetings is to provide information to affected communities and to listen to issues and concerns raised by the public. The meetings are arranged and chaired by the PMU.

Plate 26: Andreas Huber of the PMU presenting a progress update to a stakeholder meeting at the Museum in September.

Plate 27: Snacks being served at the function for Rupert's residents on the permanent wharf

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 is available 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 2016, a total of 17 complaints were received, 9 fewer than last year. Most (82%) percent of the complaints were classed as minor, four were rated as report only and no major complaints were received (Figure 10). As in previous years, the majority of the complaints related to dust, particularly in the Deadwood area due to the amount of construction traffic travelling along the unsurfaced haul road, as well as from the final layerworks being undertaken in the latter half of the reporting period (Figure 11). There were also many more complaints (7) about road conditions and access to properties, compared to the previous year.

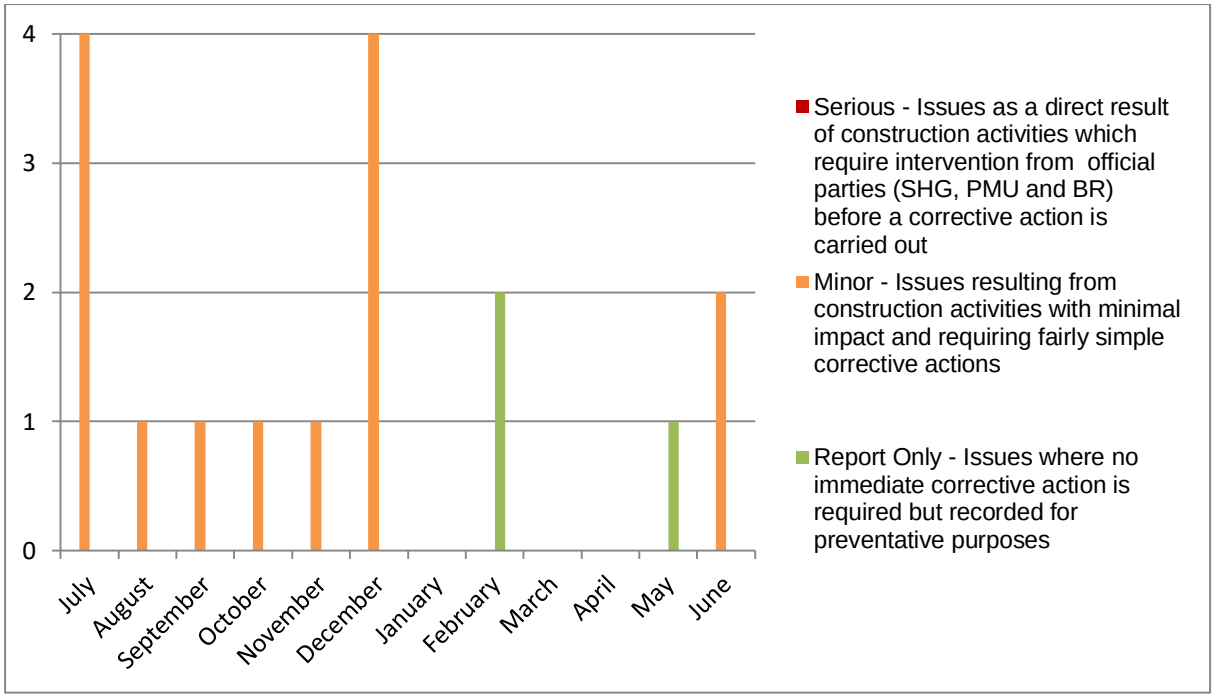


Figure 10: Number and rating of complaints received July 2015 to June 2016

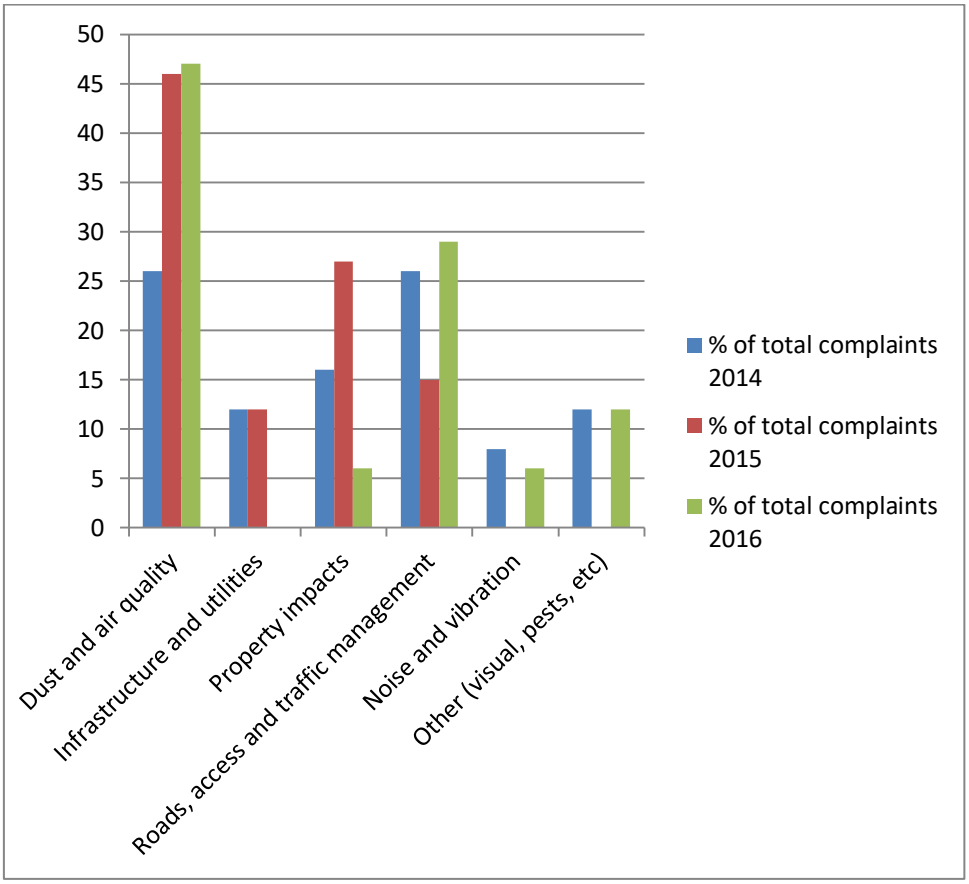


Figure 11: Nature of complaints

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 walkovers 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 5 below.

Table 5: 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	• Wharf access road through Rupert's Lines • Bayside bulk fuel installation (BFI) • Rupert's Lines breach • Fuel gantry at Rupert's beach
B – Access/haul road	• Intersections at Foxy's garage, Deadwood residential access, Meteorological station, Coltsheds • Drainage/ culverts e.g. BFI intersection, Rupert's Hill, Mulberry Gut
C – Upper Rupert's Valley	• BFI feeder line route to Power Station • Rehabilitation of Upper Rupert's Valley and shaping of valley water course • Decommissioning of Rupert's Dam and rehabilitation thereof • Decommissioning of Rupert's Quarry and rehabilitation thereof
D – Contractor's camp at Bradley's	• Security fencing around Navigational Aids at Bradleys
E – Prosperous Bay Plain and Dry Gut	• New location of DVOR and localiser • Temporary refuse storage areas • Sewage treatment plant (STP) discharge into Dry Gut • Perimeter security fencing
X – Site compound and explosives magazine	• Permanent water pipeline from Borehole 5 • Decommissioning and landscaping the Contractor's compound, crusher site, explosives magazine and borrow pit • FTR effluent discharge into Dry Gut
I – Remote navigational and communication aids	• General security fencing around ROLs

5.2 Studies Commissioned

Two studies were commissioned during the year under review, as described below.

5.2.1 DVOR fence line invertebrate survey

When the security fence was erected around the new position of the DVOR (on the west side of the runway, just north of the terminal buildings (Figure 2)), it caused feedback to the navigation signals, especially when the fence was wet. This necessitated the fence to be moved to avoid signal interference. Unfortunately, the only suitable location for the fence was outside the ADA and in the Central Basin, which is protected as part of the Prosperous Bay Plain Nature Reserve. During the site walkover, it was noted that there was a high potential for endemic invertebrates to be present in this area and so David Pryce of the St Helena National Trust (SHNT) was commissioned to undertake a survey.

The invertebrate survey was conducted over a two week period in late March/early April 2016. A total of 133 specimens from 34 species or morphotypes was collected during this time, 25 of which were identified to species level. Fourteen of the identified taxa were endemic species and eight belonged to endemic genera. Additional endemic species may well be present, but these required specialist skills and knowledge to positively identify them, which was beyond the scope of the study (Pryce, 2016a). The most important species identified included:

Prosperous Bay mole spider (*Lycosidae* spp). This important undescribed genus and species was found to be present in low densities across part of the proposed fence line. A careful examination of the entire area failed to identify a new route that would avoid the spider mounds.

Homoeodera spp. Two specimens of a bark beetle-like fungus weevil were found. The last time that this species or similar was recorded was in 1972 at a site 29 m above where the airport building now stands. While the specimens were found to strongly resemble the previously identified *Homoeodera scolytoides* in a number of respects, there were enough differentiating features to suggest that these may be hitherto undescribed species (Plate 28).

Acanthinomerus monilicornis is a type of beetle that was originally found in 1875 and again in 1877 when it was observed in large numbers on the island (Plate 29). In spite of several detailed surveys since the 1960s, this species has not been encountered for well over a century.

The other important endemic species found included Decelle's darkling beetle (*Tarphiophasis decellei*), the scarce Daisy click beetle (*Anchastus compositarum*), the Fragile ant-like beetle (*Anthicodes fragilis*) and Benoit's darkling beetle (*Pseudoleichenum benoiti*) (Pryce, 2016a).

Plate 28: The potentially new species of *Homoeodera* with the second segments of their antennae indicated (Photo: D Pryce)

Plate 29: Specimen of *Acanthinomerus monilicornis* collected during the survey (Photo: D Pryce)

In order to minimise the impact of the construction of the new fence on these species, Dr Pryce recommended a slight realignment of the fence to avoid the most sensitive habitats, a restriction on the construction footprint to 2 m wide, manual construction and the careful removal and replacement of topsoil and lichen-covered rocks. These mitigation measures were accepted by BR and the new fence line measured 341.5 m (about 5 m longer than the original alignment) and took up an area of 9,545 m^2 from outside the ADA. The site will be subject to ongoing mole spider monitoring.

5.2.2 Bayside BFI land contamination survey

As part of the works being undertaken to upgrade the fuel transfer and storage on the island, the old bulk fuel installation (BFI) in Rupert's Bay had to be demolished to make way for a new facility. Although the authors of the 2008 Environmental Statement reported that no contaminated land had been found at the Bayside bulk fuel facility being operated by Solomons (Plate 30), it was acknowledged that localised areas of contamination may have occurred in the intervening period. Even though a site walkover with PMU found no evidence of spillages on the ground or within the bunded area, a contaminated land survey was undertaken during the demolition of the bund walls and tank platform (Plate 31). Excavated earth was regularly monitored for the presence of hydrocarbons using a Photo-ionising Detector. A method statement was drawn up describing the procedures to be followed in the event of any contaminated soil being found, but fortunately, no contamination was encountered at this site.

Plate 30: Aerial view of the Bayside BFI prior to demolition

Plate 31: Excavators at work removing the tank platform to make way for the new BFI

5.3 Feedback on Earlier Studies

5.3.1 Lichen translocation

A survey prior to the construction of the Dry Gut open channel in 2013 identified that the scarce endemic lichen *Dimelaena triseptata* was common across the site (Pryce, 2013a). To mitigate against the loss of these colonies from the construction footprint a plan was devised to remove as many samples of this species as possible into a secure storage area for use in remediation at a later date (Pryce, 2013b). While moving the material into storage a quantity of small lichen flakes and tiny chips of rock with colonies of the species were created during transport to the storage site. This material was placed under a net to stop it being blown away in the hope that it might survive and could later be used experimentally to see if the species could be propagated in an alternative manner by mixing up a lichen powder solution and painting it onto suitable rocks (Pryce, 2013b).

In January 2016 the storage site was checked and, although the net had largely disintegrated, there was still a viable population of *Dimelaena triseptata* growing where it had been placed and it was decided to attempt an experiment in early February 2016: a mixture of lichen dust and growth ingredients was painted onto eight suitable-looking spots of bare rock along one of the temporary access tracks used during the construction of the open channel. The areas were temporarily marked by chalk and photographed for reference (Pryce, 2016b).

The site was revisited eight weeks later and there were initial indications that the lichen had survived and was beginning to grow (Pryce, 2016b). This is a ground-breaking experiment which could have significant global implications if it is effective.

5.3.2 Marine surveys in Rupert's Bay

One of the recommendations from the Environmental Impact Assessment for the permanent wharf, was that 6-monthly marine surveys should be conducted in Rupert's Bay to monitor changes in marine habitat, species composition, diversity and populations. The Marine section of the Environmental Management Division (EMD) has conducted six marine ecology surveys of Rupert's Bay in areas outside of the footprints of the wharf and slipway. The first survey was conducted before wharf construction commenced in May 2014 and five subsequent surveys have been conducted during the construction phase (in 2014, 2015, with last taking place in May 2016) (Clingham, 2016).

As anticipated, the habitat and biodiversity has been subjected to change as a result of construction and other associated works and activities in Rupert's Bay. The surveys have shown that there has been little change in the low fish and invertebrate diversity in the area. However, there has been a gradual change in habitat from a boulder/rocky reef dominated substrate prior to construction to a largely sandy seabed, which will, in time, affect species assemblages; in two years, the average depth on the protected side of the wharf has reduced by almost 3 m (Clingham, 2016). Increased sedimentation up to 2 m in the survey area was predicted by the engineering consultants PRDW in the EIA Addendum for the permanent wharf (Walmsley, 2013), which now appears to be an under-estimate judging by the last marine survey results.

The 2016 marine survey report concludes with the recommendations that the bi-annual surveys should continue and that the survey area be expanded to include the inside wharf wall to monitor biodiversity colonisation - which undoubtedly has created new habitats for species and needs to be quantified. In addition, it was further recommended that a dedicated monthly monitoring system be put in place to measure sediment depth changes within the bay so that the rate of growth can be quantified taking into account seasonal factors. This will determine the need for any mitigation measures that *might* be required if sediment growth continues (Clingham, 2016). Future results and management response will be reported on in the next AER.

The EIA Addendum for the wharf also stipulated that the seawater near the bathing beach should be regularly sampled to check for microbiological pollution from the sewage outfall located immediately west of the beach. The Environmental Health Department conducts 6-monthly water quality monitoring at several places within Rupert's Bay. The results to date indicate that although some indicators have increased since the wharf was built (as predicted in the EIA Addendum), the results all fall within the EU limits for bathing water.

5.4 Landscape and Ecological Mitigation Plan

The Landscape and Ecology Mitigation Programme (LEMP), an important component of the airport project, includes a long-term plant propagation and planting 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.

On 29th September 2015, a Variation Order (VO) was signed by BR and the PMU regarding the responsibilities for various aspects of work under the LEMP programme and specified in the Construction Contract. The VO shifted responsibility for all planting and plant maintenance (except in the airport precinct) from BR to SHG, while leaving all site preparation works for BR to execute. In addition, it was agreed that in lieu of planting and maintenance, BR would supply 2 LDVs, one water bowser truck, rabbit fencing materials (9,700 m), water storage tanks, 10 km of irrigation piping, hoses and landscaping tools. It was also agreed that BR would design, construct and install a new footbridge to cross the Run in Rupert's residential area.

5.4.1 Site preparation work

Thirteen specifications were issued to BR by the LEMP team for ground preparation works, as shown in Table 6 below.

Table 6: Summary of BR LEMP activities for the year

Date	Specification No	Zone and location	BR work required	Status as at end June 2016
03/08/15	Spec 018	Zone 9: Access road between Reggie's and Millennium Forest intersections	Ripping and removal of introduced material; application of 250 mm of topsoil	Completed
24/07/15	Spec 020	Zone 12: Tungi Flats	Permanent electricity supply ground preparation including: gentle ripping of track; removal of invasive vegetation within the construction footprint	Completed
24/07/15	Spec 022	Zone 14: Airfield Location A (near trail to King and Queen Rocks); Location B (Middle Fill and Level +240 rock triangle east of Dry Gut)	Lichen Application: relocation of *Dimelaena triseptata* /ichen covered rocks and soil crust from the open channel lichen rock stockpile site	Completed
17/08/15	Spec 023	Zones 6 and 7: Access road from Foxy's to Reggie's intersections	Clearance of weeds; mat grass runners planted and maintained on Bilberry Field access road berm	Completed, handed over to LEMP
21/09/15	Spec 025	Zone 3: Pipe Ridge	Gentle ripping of old track and sweeping of track scars	Completed
18/09/15	Spec 027	Zone 12.1-12.9: Cook's Bridge to Tungi Flats	Ground preparation, introduced material removed, ripping of haul road track in relevant sections	Completed
25/11/15	Spec 029	Zone 5: Deadwood Berm	Spraying of Kikuyu grass, removal of invasives, application of topsoil to sections of berm that require filling in or topping up for safety barrier	Completed
01/10/15	Spec 030	Zone 11: Cook's Bridge	Topsoil applied to the area and levelled off with grader	Completed
09/10/15	Spec 032	Zone 6: Mulberry Gut to Coltsheds	Invasive vegetation sprayed and/or removed; all introduced material removed	Completed
09/10/15	Spec 033	Zone 7: Coltsheds to Reggie's intersection	Ground preparation	Partially complete (completed in October 2016)
24/11/15	Spec 034	Zone 17: Dry Gut	Track to Dry Gut reservoirs and	Completed

Date	Specifi-cation No	Zone and location	BR work required	Status as at end June 2016
			temporary water supply pipe alignment: introduced material removed and ripping of surface material on access track; excavated material from pipeline route and replaced with soil and levelled off	
17/11/15	Spec 038	Zone 14: Airport Precinct	Subsoil and topsoil applied according to specification; landscaping boulders positioned according to specification	Completed
22/12/15	Spec 039	Zone 12: Tungi Flats, Contractor's compound and crusher area	All introduced material sensitively removed; Topsoil imported to site and evenly distributed across site and levelled off with dozer as per specification; Entire compound rolled with static roller to level off to achieve Wirebird habitat	Completed

A total of 46,878 m^3 of suitable topsoil was stripped off targeted sites prior to construction and stockpiled separately for future site rehabilitation. All of this topsoil was subsequently replaced over an area of 350,390 m^2 (35 ha) as per the various LEMP specifications issued to BR. Some of these areas were subsequently planted by the LEMP team (Plates 32-33).

Plate 32: Mass planting of gumwoods, St Helena ebony and hair grass along the access road between Reggie's and the Millennium Forest

Plate 33: St Helena ebony and hair grass in the airport precinct beds with boulder landscaping

5.4.2 Species rescue, translocation and revegetation

Since the signing of the VO, BR no longer has responsibility for revegetation and planting and no sites were developed where there was a need to carry out plant rescue and translocation.

5.5 Operations Environmental Management System and Wildlife Hazard Management Plan

During the reporting period, work continued on the development of an Environmental Management System (EMS) for the operation of St Helena Airport, as well as the Wildlife Hazard Management Plan. Both documents are supported by Standard Operating Procedures that detail the day-to-day management of various activities during airport operations, such as: hydrocarbon, hazardous chemicals and waste management, pest and predator control, water and effluent management, maintenance of the planted areas, environmental monitoring and reporting, airport precinct traffic management and Postbox Walk access as well as the monitoring, recording and reporting of bird strikes.

Both documents form part of a suite of Manuals that had to be approved by the airport certifying body, Air Safety Support International (ASSI), before the Aerodrome Licence could be issued. Both of the environmental documents were approved by ASSI during the first desktop audit in November 2015.

The entire RFFS team and the Airport Manager attended an introductory training session presented by the CEMPC on the aims, objectives and principles of the EMS at the Lanseria training centre outside Johannesburg in August 2015 (Plates 34 and 35). The introductory session was followed by detailed training on the EMS standard operating procedures over a period of two days for the Environmental Officer, the two Assistant Environmental Officers and the Airport Manager. A third day was spent on the Wildlife Hazard Management Plan, with inputs from specialists based at Lanseria airport as well as from the CEMPC.

Plate 34: CEMPC, Bryony Walmsley, Airport Manager, Nigel Spackman and the RFFS team at EMS training at Lanseria Airport

Plate 35: Environmental Officer Dennis Stroud, Assistant EOs Ryan Moyce and Mario George and Kenny Wasmuth of Lanseria Airport

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;
- 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.

Table 7: Monitoring frequency

Environmental aspect	Monitoring frequency					Comment
	Daily	Weekly	Monthly	Quarterly	Ad hoc	
Air quality -TSP			X			
Air quality – PM10	X					Continuous monitoring captured on monthly basis
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, or when complaints generated
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

Environmental aspect	Monitoring frequency					Comment
	Daily	Weekly	Monthly	Quarterly	Ad hoc	
						NP Glory arrives
Marine water quality (turbidity)	X					
Marine species	X		X			Daily observations of cetaceans; monthly snorkel survey; biannual dive
Visual			X			
Climate	X					
Heritage					X	Ad hoc, depending on nature of construction work in sensitive areas

6.2 Monitoring Results

6.2.1 Air quality

The main air quality issue on this construction site is dust. The two aspects that we monitor 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.

We have two PM10 monitors which are moved around the site to respond to particular requests or work activities. Monitoring took place in the following locations during the year:

Table 8: Respirable dust monitoring locations

Location of PM10 monitor	Period	Reason
Central Basin	30/06/15 – 18/08/15	Grooving of runway surface
Met Station	19/08/15 – 23/09/15	To monitor incinerator emissions
Tank 6	28/09/15 – 04/11/15	Dust from crusher plant affecting construction workers at Tank 6
Horse Point Landfill	09/11/15 – 29/06/16+	Dust and incinerator emissions (when operational)
Rupert's Valley	13/10/15 – 29/06/16+	Dust in residential area

The PM10 results from these locations are shown in Figures 12-15 together with the European Commission (EC) Directive and WHO guideline limits for daily average PM10 over a year.

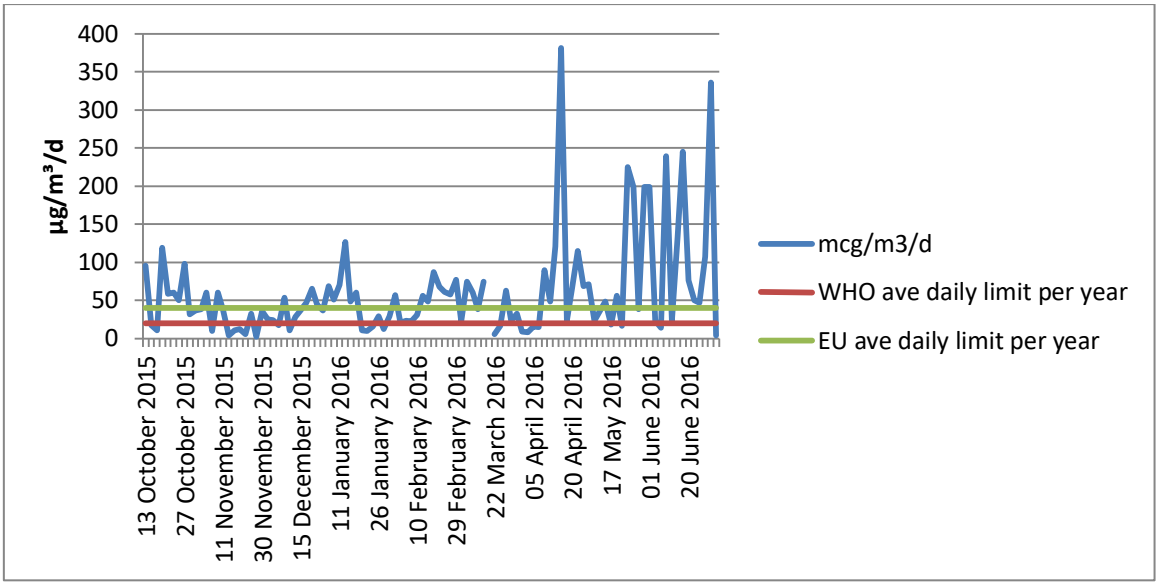


Figure 12: PM10 readings from Rupert's Valley

From Figure 12 it can be seen that respirable dust levels in Rupert's Valley have been consistently over both guideline limits during the past year. The high level of dust was raised as a major finding in both the September 2015 and February 2016 audits and increased efforts were made to reduce dust concentrations on the public road through the valley (e.g. speed reduction, increased use of water bowsers, road repairs, etc.), but high construction traffic volumes, drought conditions and other construction works in close proximity to the residential area, have continued to cause high respirable dust levels.

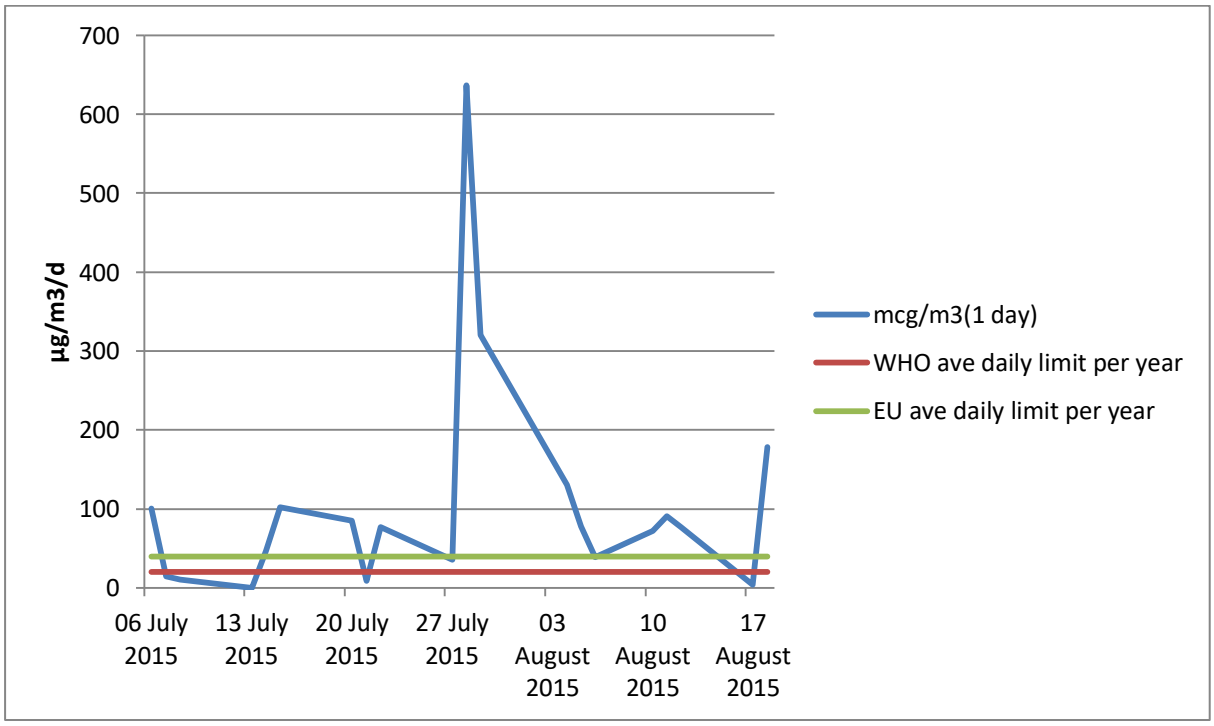


Figure 13: PM10 in Central Basin during runway grooving

Figure 13 shows that significant amounts of fine dust were generated during the runway grooving exercise, but there are no human receptors in Central Basin for there to have been any adverse health effects. Fortunately, the grooving operations only lasted for 6 weeks and the impact on fauna and flora was minimal (pers. comm. SHNT).

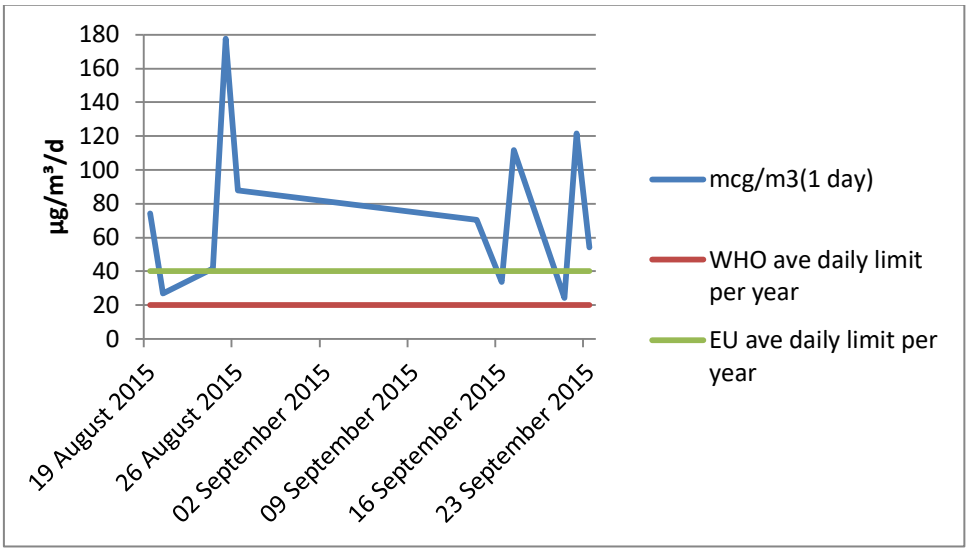


Figure 14: PM10 dust levels at the Met Station during incinerator commissioning

The incinerator at Horse Point landfill was commissioned during the period 11th August to 5th September with intermittent burning throughout this period and going forward. No correlation between incinerator operation and PM10 levels at the Met station could be drawn - the August spike in PM10, shown in Figure 14 above, occurred prior to the first burn and the first September spike occurred on a day when the incinerator was not operating, while the second spike does coincide with operations (Figure 14). However there are other days when it was burning and PM10 levels were less than 40 µg/m^3/d. The dust is more likely to be from crushing operations at Horse Point quarry than the incinerator.

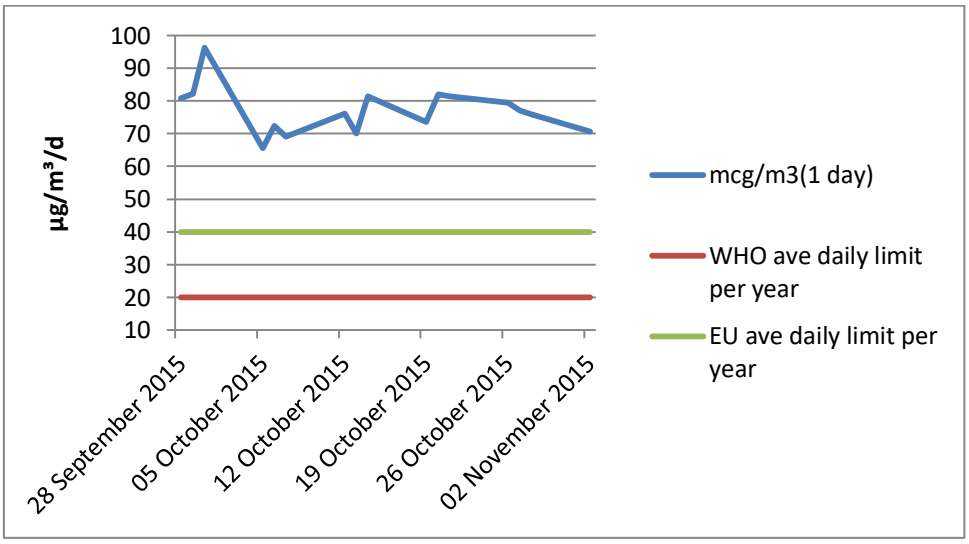
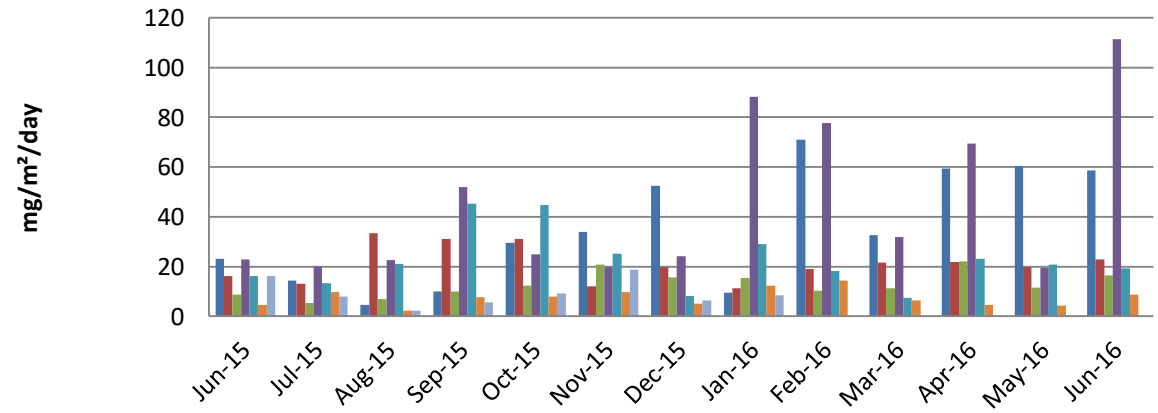


Figure 15: PM10 emissions from the crusher plant at Tank 6

Dust from the crushing plant near the Contractor's compound on Prosperous Bay Plain had been recognised as a problem for some time, but no one was living or working within the dust plume during the early years. However, when construction works started at the FTR and in the Tank 6 area, it was decided to monitor respirable dust at this site. Figure 15 shows that PM10 levels were consistently above the average daily limits set by the EU and WHO and workers in these areas were given dust masks. The crusher plant was decommissioned in early November when it was no longer needed.

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 16 below. The various locations experienced dust peaks at different times reflecting areas where construction activities were occurring e.g. in Mulberry Gut. The high PM10 readings in Rupert's Valley in the first 6 months of 2016 are also reflected in the peak TSP recorded for that period at Argos.



	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16
Argos	23	14	5	10	29	34	52.37	9.46	70.82	32.70	59.48	60.35	58.51
Rupert's	16	13	33	31	31	12	19.83	11.33	18.95	21.61	21.83	19.84	22.75
Deadwood	9	5	7	10	12	21	15.65	15.47	10.30	11.40	21.96	11.66	16.51
Mulberry Gut	23	20	23	52	25	20	24.05	88.24	77.73	31.90	69.48	19.63	111.22
Bottom Woods	16	13	21	45	45	25	8.09	29.14	18.24	7.51	22.98	20.68	19.27
Bradley's	5	10	2	8	8	10	5.08	12.31	14.38	6.48	4.63	4.44	8.70
Central Basin 1	16	8	2	6	9	19	6.50	8.53	0	0	0	0	0

Figure 16: Total suspended particulates

6.2.2 Water quality

Surface water is monitored weekly when water is present at: the confluence of the open channel with Little Dry Gut, Champagne Pools (below the Dry Gut fill) and in Rupert's Run. Most of the time, there is no water flowing through Little Dry Gut or Rupert's Run. Monitoring at Cook's Bridge ceased once construction activity was completed in this area. Groundwater used to be monitored at several

boreholes but all except Borehole 5 in Dry Gut have been decommissioned, as the water quality was unsuitable for most purposes.

The weekly monitoring is undertaken using a hand held meter to measure pH and three different indicators of salinity: salinity, electrical conductivity and total dissolved solids.

Every six months, a set of samples is collected for full analysis at an accredited laboratory in South Africa. The results are analysed in the context of the suitability of the water for various uses. The long-term trends for Borehole 5 are shown below in Figures 17 and 18. It should be noted that the results received from the laboratory for the February 2016 sample appear to be anomalous and should be discounted. The results from September 2016 have been included to confirm this, as the latter results fall well within the normal range. Figure 17 shows the trends for the major cations and anions (excluding sodium and chloride). While all these parameters are comfortably within the guideline limits for potable use, irrigation and for industrial purposes,[5] there does appear to be a gentle upward trend.

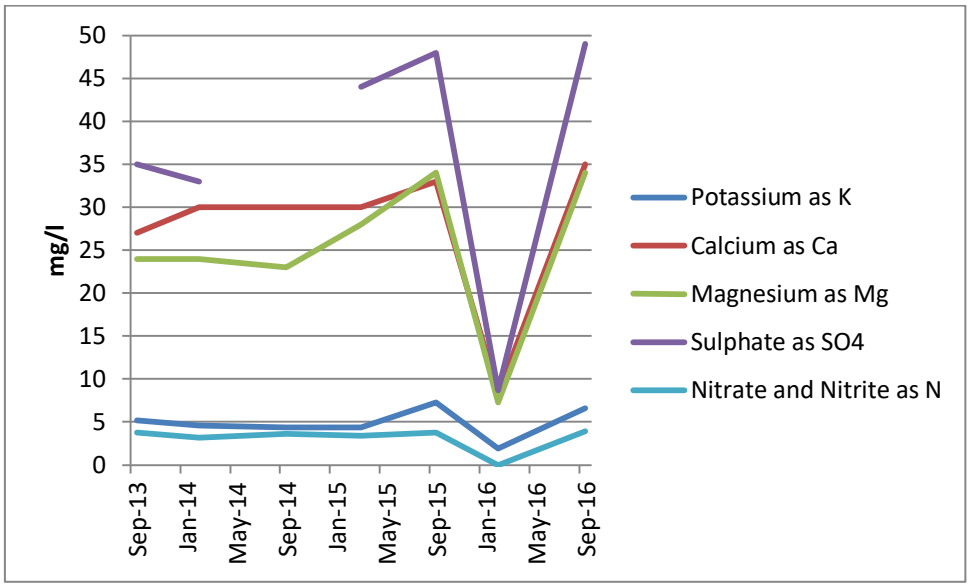


Figure 17: Main cations and anions, Borehole 5

Figure 18 shows the main indicators of salinity on the island: sodium, chloride, total dissolved solids (TDS) and electrical conductivity (eC). Aside from the February 2016 anomaly, the salinity levels in September are slightly lower than those recorded in the previous year, and still well within the guideline limits for potable water, irrigation and industrial use.

[5] The guideline limits used for this project include those from: the World Health Organisation 2011, UK DEFRA Drinking Water Inspectorate 2010 and the South African Government Target Water Quality Objectives (TWQO) for Domestic Use (no adverse health effects) 1996, Industrial Use 1996 and Agricultural Use 1993.

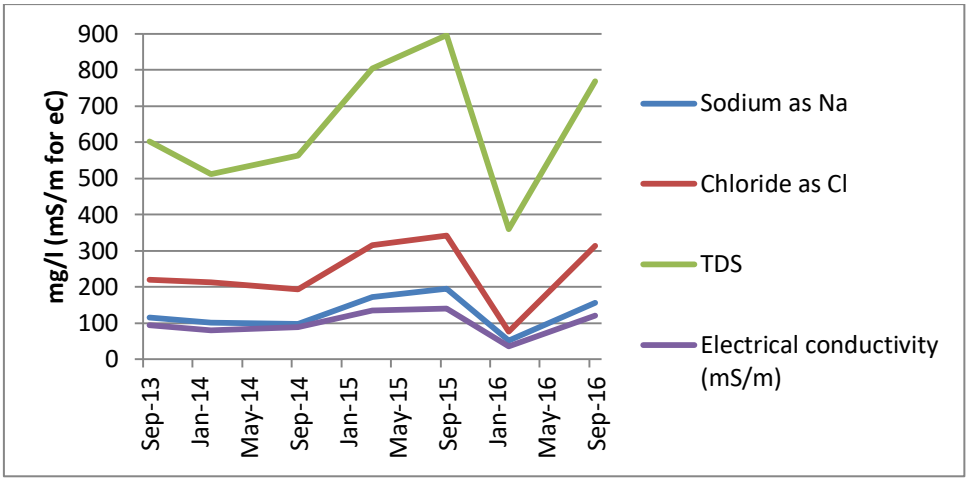


Figure 18: Salinity indicators, Borehole 5

The main water quality issue is its corrosivity, caused by the high chloride to sulphate ratio and low alkalinity. This does not affect the potability of the water, but if left untreated, can cause corrosion in steel pipes, tanks, pumps and fittings if used over a long period of time. There are a number of simple treatment options which are being considered by BR.

No significant changes were noted in the sample taken from Champagne Pools; the water continues to be highly saline and all parameters were within the range measured over the past 3 years (Figure 19). Nitrate levels are still high which may reflect the presence of blasting residues on the surfaces of rocks used for the Dry Gut fill.

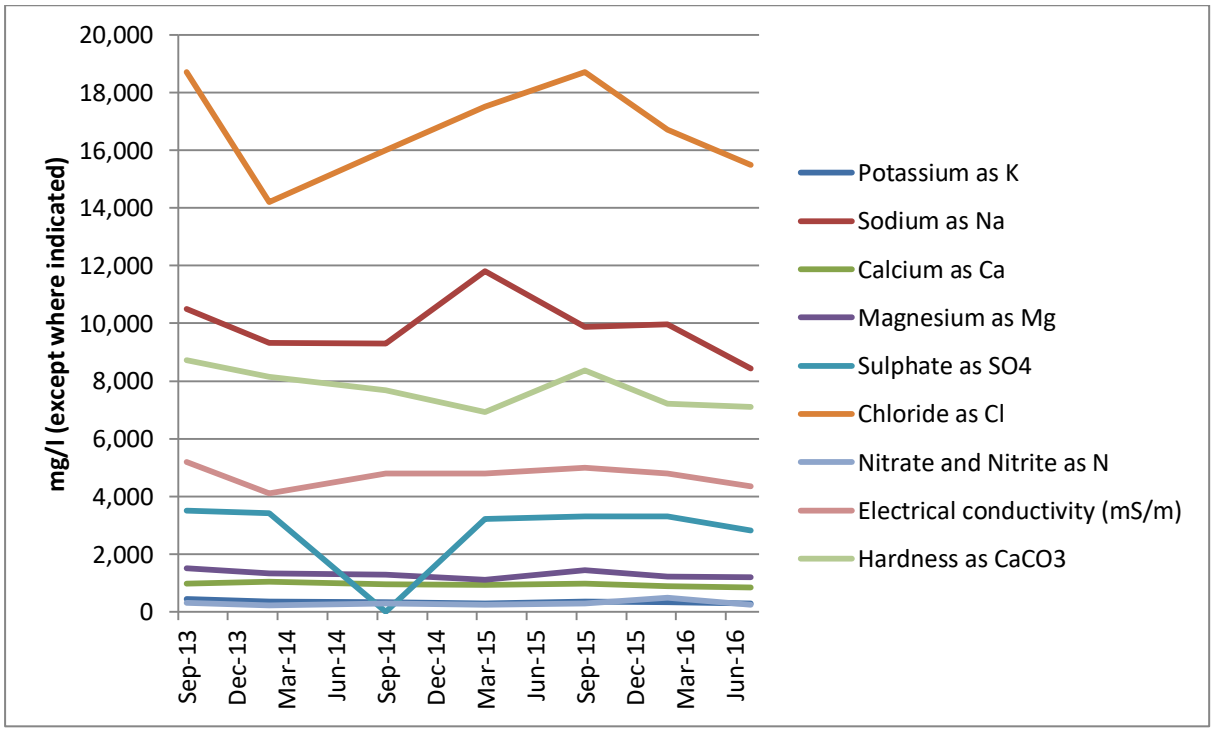


Figure 19: Water quality trends at Champagne Pools

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.

Weekly measurements are taken in the following residential areas: Bradley's, Bottom Woods, Deadwood, Mulberry Gut/Coltsheds and Rupert's Valley.

The average noise limit established for this project is 70 decibels (dB(A)). The average monthly decibel readings at various residential areas affected by construction are shown in Figure 20. Noise levels are affected by many factors including wind, talking, background traffic noise, birds, etc., as well as construction noise. The noise levels at Bradley's residential area were high in June and July 2015, but thereafter dropped to being more consistently below the 70 dB(A) limit. Bottom Woods, Deadwood and Mulberry Gut experienced fluctuating noise levels due to road construction activity and the movement of construction vehicles. Noise levels in Rupert's residential area have been consistently high and over the 70 dB(A) limit since the beginning of 2016 due to the concentration of construction activity in this area such as the permanent wharf, sea rescue building, road works, pipeline construction and the Bayside BFI. The noise reduction measures which were implemented included enforcement of speed limits, road corrugation repairs, restrictions on working hours and regular maintenance of vehicles. The Rupert's residents have been remarkably tolerant and no complaints about noise were received.

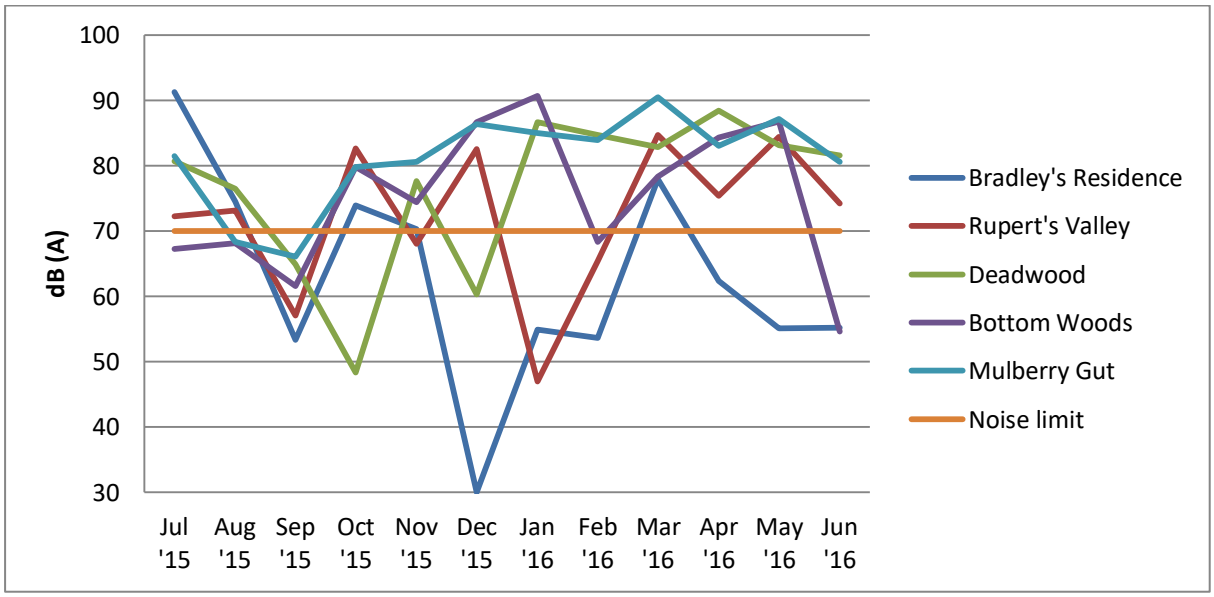


Figure 20: Average monthly noise levels in residential areas

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

6.2.4 Vibration and building condition monitoring

No blasting or heavy rolling activities took place during the reporting period. The only construction activity where vibration was a concern was at the Bayside BFI, where heavy equipment had to pass by and work near the old Boer desalination plant chimney – a structure with a recommended

Category A listing (Scheduled Ancient Monument). Prior to work commencing, a building condition survey was carried out on 25th April for this structure as well as all other buildings on the BFI site that would not be demolished. Following the survey which revealed several large cracks in the chimney, it was recommended that the structure should be braced and protected with concrete barriers (Plates 36-38). Works to date have proceeded without incident and a follow-up building condition survey is planned at completion of all construction works in this area.

Plate 36: Installation of the protective braces on the chimney

Plate 37: Placing the concrete barriers around the base of the chimney under the supervision of Gideon Niemand and Annina van Neel

Plate 38: Desalination chimney with bracing in place

In addition to the inspections and protection works on the chimney, vibration readings were taken over a 15 minute period at the base of the chimney on six days when trucks were removing the old tanks (on 3 days) and during demolition of the bund walls and tank platform in the area closest to the chimney (on 3 days). Peak particle velocity (PPV) readings of more than zero were recorded on only two occasions at 0.635 mm/s and 0.254 mm/s which are both well within the most conservative limit for transient vibration for light structures of 10 mm/s.

Pre-construction building condition surveys were carried out in the residential areas in close proximity to construction work, mostly in 2013 and early 2014. Follow-up surveys will take place once construction activity has ceased in these areas and will be reported in the next AER.

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. Incidents are reported by PMU as Site Observations and BR is required to take immediate action.

After the disaster in February 2015 when the MacroBurn incinerator, selected by SHG, burnt out during commissioning, it was successfully installed at the end of August 2015 and started operating in September 2015. Three tonnes (180 m³) of waste[6] such as oily rags, plastic jerry cans, empty cement bags and waste wood and cardboard were burnt up to the end of November 2015. BR had earlier agreed with EMD that we would use EMD's air quality monitoring equipment to monitor emissions from the incinerator, in addition to the in-stack monitor. Unfortunately, EMD's monitoring equipment was found to be not fit for purpose and in the absence of any ambient monitoring, the PMU's Environmental Monitor ordered operations to cease at the end of November 2015. Following a meeting in February 2016, it was agreed by all parties that incineration could recommence, but only after hours to ensure that personnel working at the landfill and nearby Met Station would not be subjected to any potential adverse health conditions, and on the assurance that BR had ordered suitable monitoring equipment. Operations on this basis thus re-commenced in early May 2016.

Unfortunately, the incinerator experienced several technical problems during commissioning, in the two months following start-up and after just 2 months of after-hours operation, forcing the incinerator to be stopped again. This has caused another backlog of hazardous wastes at Bradley's workshop.

Two engineered hazardous waste cells were constructed at Horse Point Landfill and became available for use in late 2015. One cell is for the exclusive use of EMD for the disposal of Island hazardous waste, while the other is for BR's use. It is intended to dispose of all wastes that are not suitable for incineration in this cell, such as liquid waste, incinerator ash, vehicle batteries, fluorescent tubes, electronic waste, etc. (Plate 10).

BR has pursued an active programme of donating as much non-hazardous waste material as possible to charities on the island, SHG and the general public, through frequent media notices. However, in spite of about 40 tonnes of material being taken, a large quantity of non-hazardous, bulky waste such as waste wood, chip board, damaged cable and piping, etc., remained. In the meantime, the existing bulky waste cell at Horse Point Landfill was almost full and so BR assisted EMD by creating a new large bulky waste cell at Horse Point Landfill for the joint use by EMD and BR (Plate 39).

[6] The volume of waste is much higher than the tonnage because a large volume of lightweight cement bags were incinerated during this period.

Plate 39: The new bulky waste cell at Horse Point landfill site constructed by BR for joint use by BR and EMD. (Note that the tanks were being stored here on a temporary basis)

The total amount of waste generated in the 2015-2016 year was almost 48,000 tonnes, of which 54.6% comprised liquid hazardous waste (sewage and waste oil), 45.3% was non-hazardous waste and 0.1% comprised solid hazardous waste (Figure 21). The amount of waste generated during the past year is three times more than in the 2014-15 year. The main increase has been in the amount of non-hazardous solid waste – primarily tyres (85%), canteen waste (12.5%) and scrap metal plus building rubble (about 2%) (Figure 22).

The quantity of hazardous solid waste reduced significantly from 567 tonnes in 2014-15 to just over 42 tonnes this year. This may be attributed to the much lower volumes of workshop waste as the project winds down. Most of the hazardous waste comprises fat from the grease trap at the Bradley's camp canteen (37%), empty cement bags (23%), empty plastic jerry cans (13%) and vehicle batteries (9%) (see Figure 23).

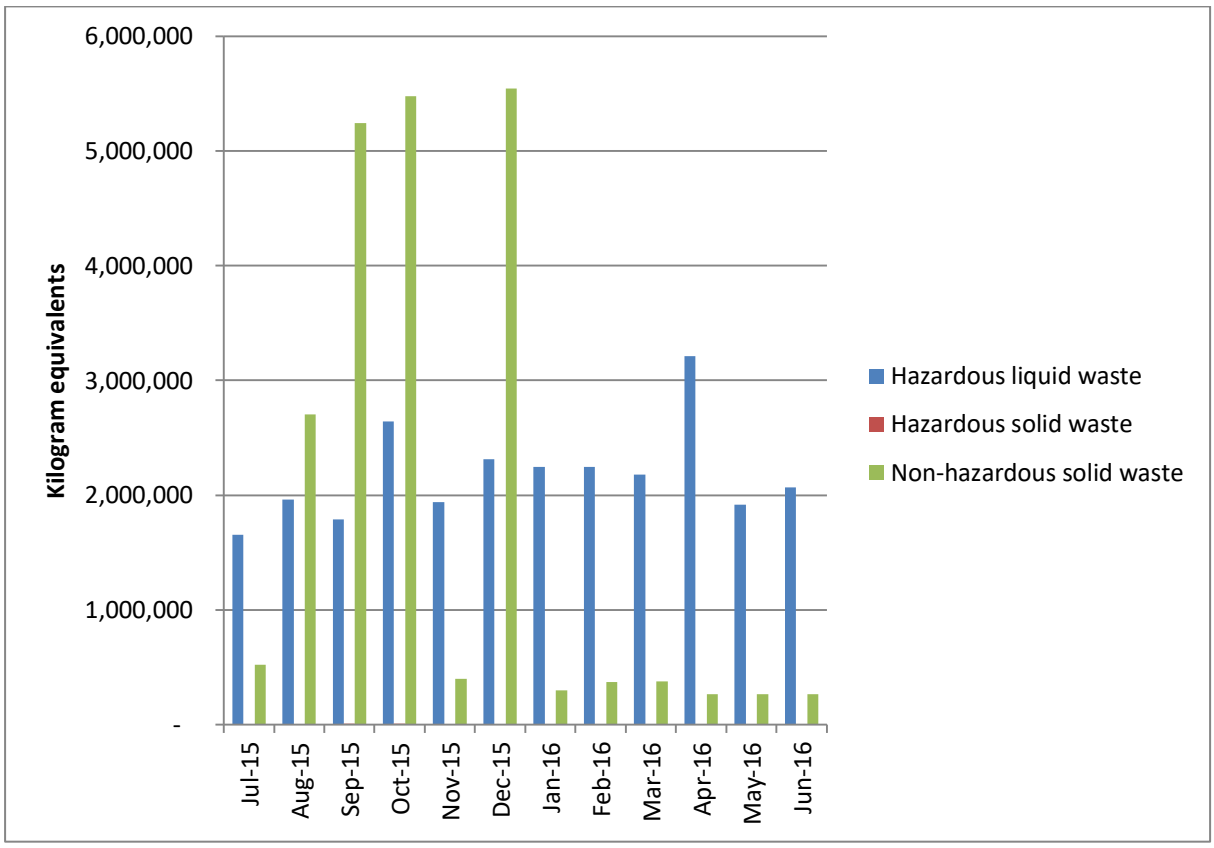


Figure 21: Monthly waste quantities

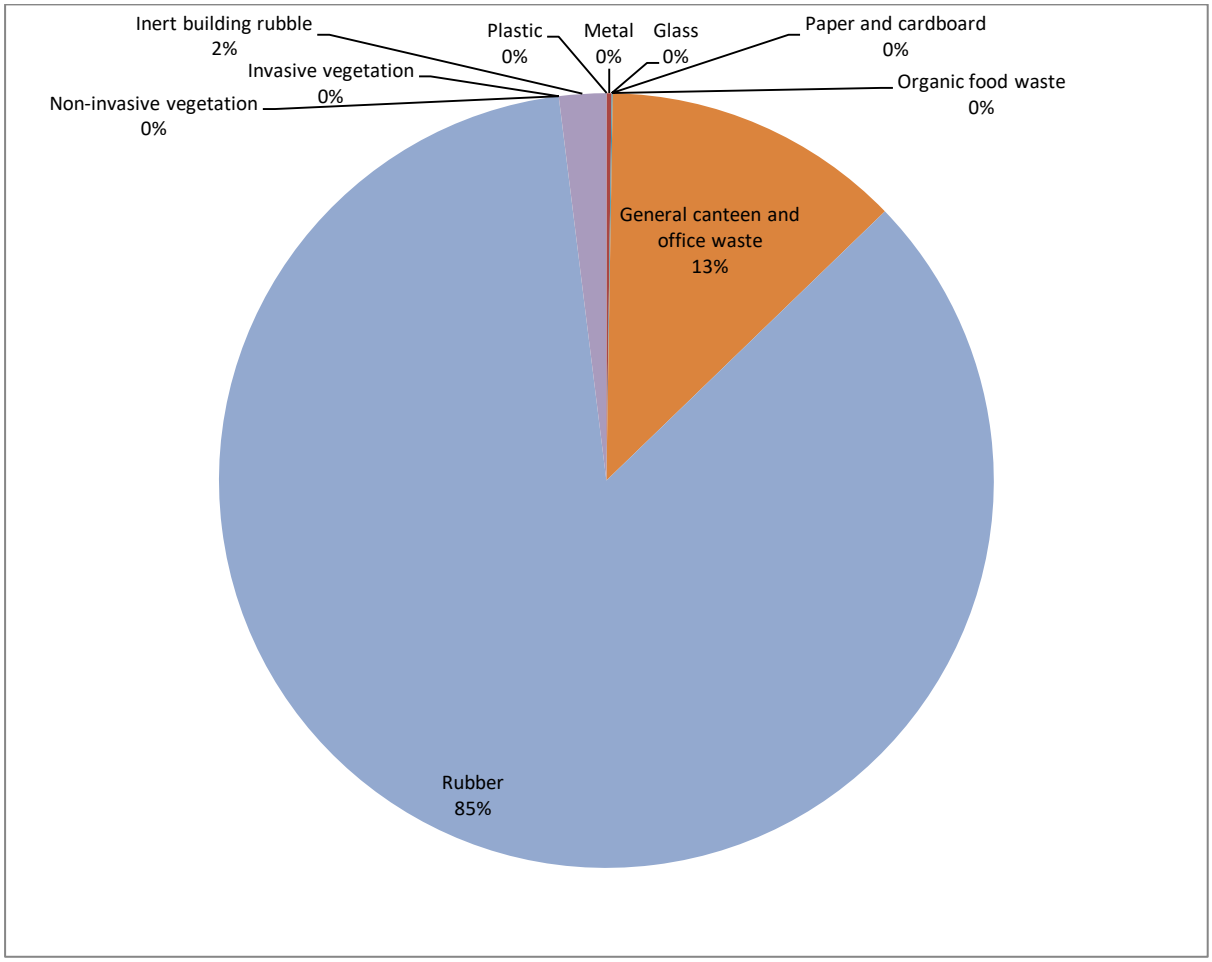


Figure 22: Total non-hazardous waste production, July 2015 to June 2016

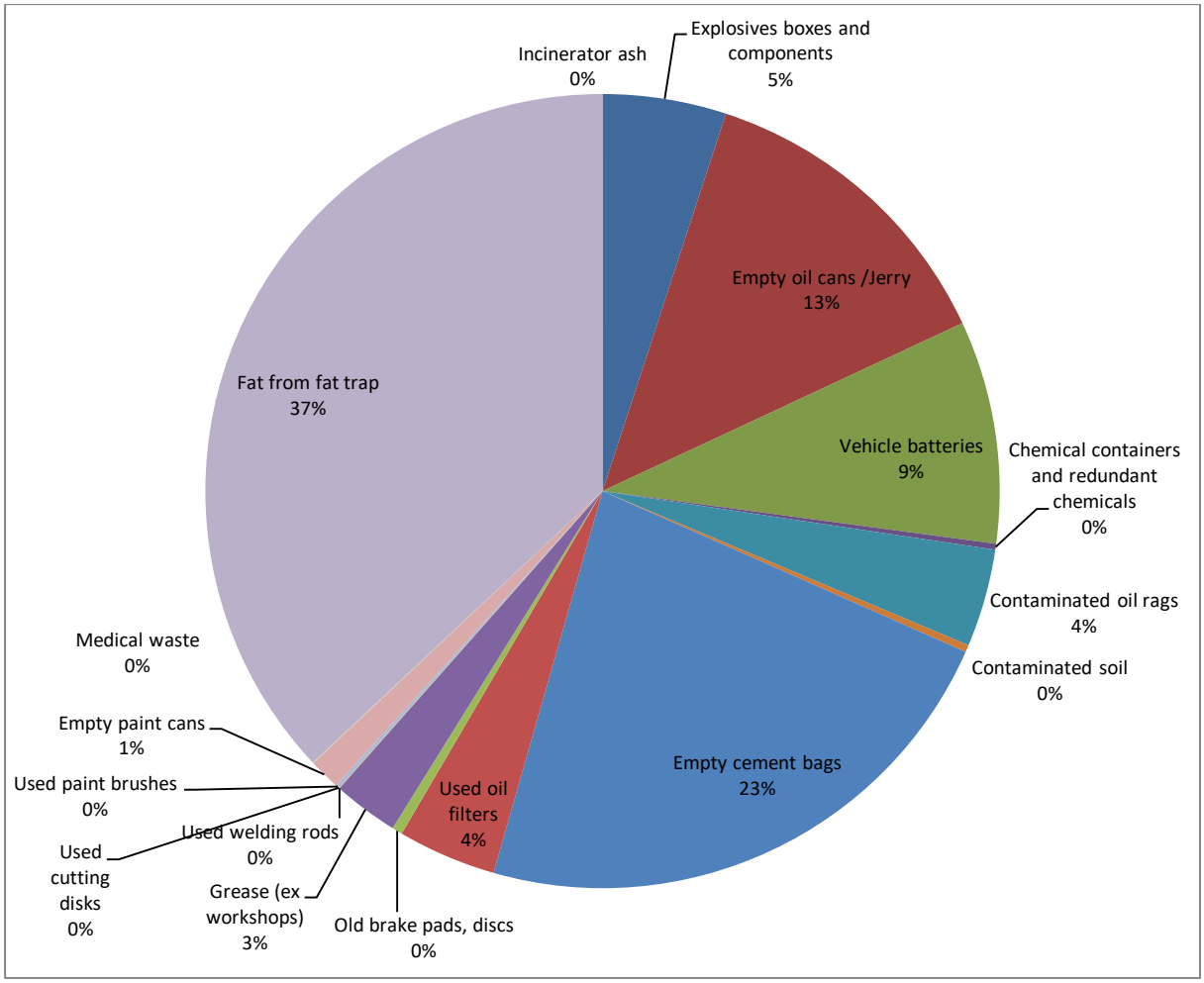


Figure 23: Total solid hazardous waste production, July 2015 to June 2016

6.2.6 Resource Use

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

- Groundwater pumped from Borehole 5;
- Municipal water;
- Electricity; and
- Diesel.

A total of 19,703 kilolitres of water was purchased from Connect, which is more than half the total used in the previous year (46,538 kilolitres). The reduction is due to the decrease in water demand from the concrete batch plants and the reduction in staff numbers. Water from Connect is still being used for concrete mixing at the Rupert's concrete batch plant, with a small amount being used for potable water in the offices, stores and workshops (Figure 24).

Over the year, 82,793 kilolitres of water were abstracted from Borehole 5 in Dry Gut Valley; this amount is only 41% of the amount used in the previous year. Demand dropped further from April 2015 when the access road layer works were completed and there was no longer need for dust suppression along the access road (Figure 24). Since the borehole was commissioned and pump

tested in early 2013, the water level has hardly varied from the initial static level of 12.9 m, irrespective of pumping rate (Figure 25). Monthly monitoring of the borehole ceased in August 2015 once it was no longer being used for construction purposes and concrete mixing. However, due to the current drought, Borehole 5 is being used by Connect to augment the Island's water supplies and water level monitoring recommenced in September 2016. Water from Borehole 5 is also being used by the airport for fire training and by LEMP for irrigation.

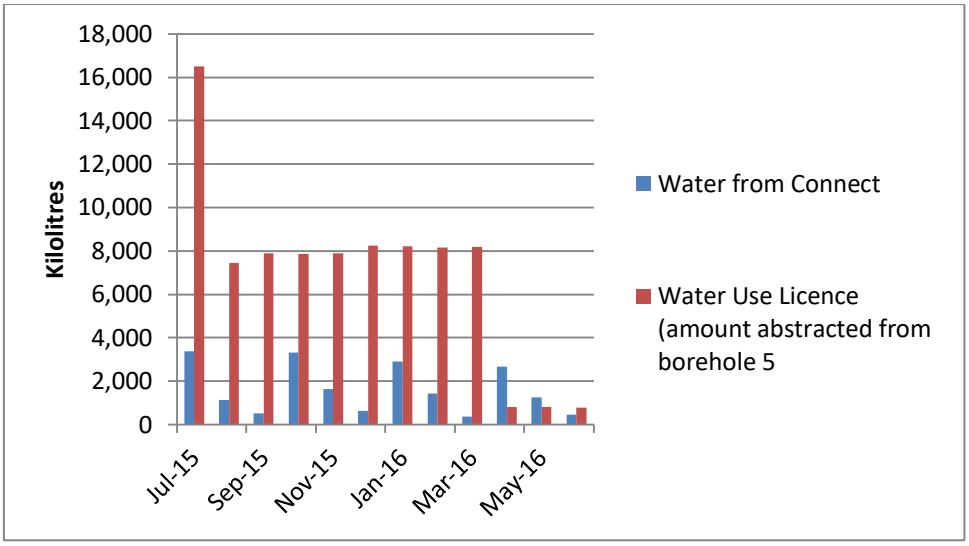


Figure 24: Monthly water consumption

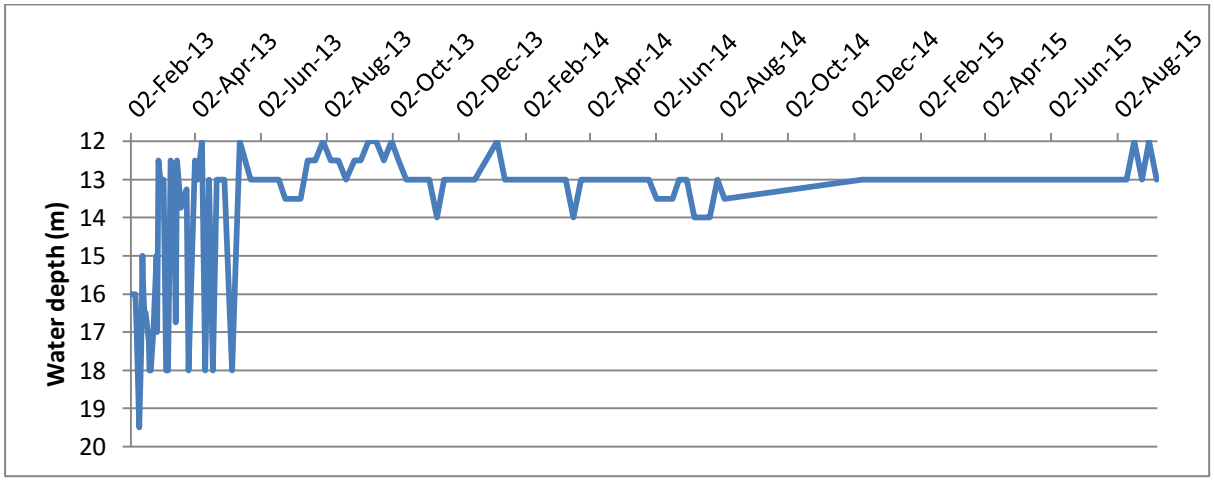


Figure 25: Water levels in Borehole 5, February 2013 to August 2015

Just over 1 million kilowatt hours (kWh) of electricity were consumed over the 12 month period at an average of over 83,000 kWh per month. The electricity consumption has gone up from the previous year (total 647,000 kWh) probably due to the power usage at the airport.

Just over 1.4 million litres of diesel were consumed during the reporting period which compares favourably with the 3.5 million litres used in the 2014-15 period and reflects the reduction in heavy equipment and vehicles on site (Figure 26). Petrol consumption in comparison was a relatively low amount of 13,401 litres over the same period.

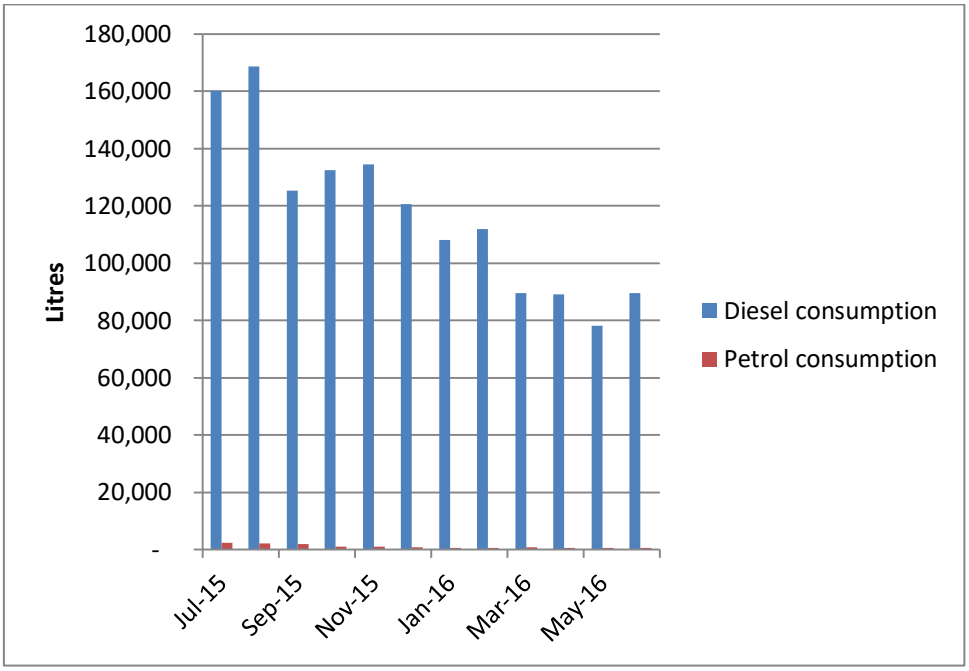


Figure 26: Monthly diesel and petrol consumption

6.2.7 Mole spiders

As mentioned in the last AER, we started monitoring mole spiders every month in the original vicinity of the DVOR at Bradley's camp due to the scientific importance of this species and the dearth of knowledge about it. On the basis of the first year of results with the number of new mounds decreasing significantly during the first half of 2015, we were not sure if mole spider activity was being affected by construction activity at the DVOR or whether the decline in mounds was a seasonal effect (Figure 27). However, ongoing monitoring (throughout the period that the DVOR was removed from Bradley's camp and since then) has shown the opposite – mole spider activity continued to increase in all colonies in the first half of 2016. The number of mounds seems to have stabilised in April/May 2016 at a far higher level than when monitoring commenced in September 2014 (Figure 27). The dip in numbers during the first half of 2015, could therefore be attributed to construction activity rather than a seasonal effect. The recovery in activity coincided with the completion of the DVOR at Bradley's and is very encouraging news for this enigmatic and fascinating species.

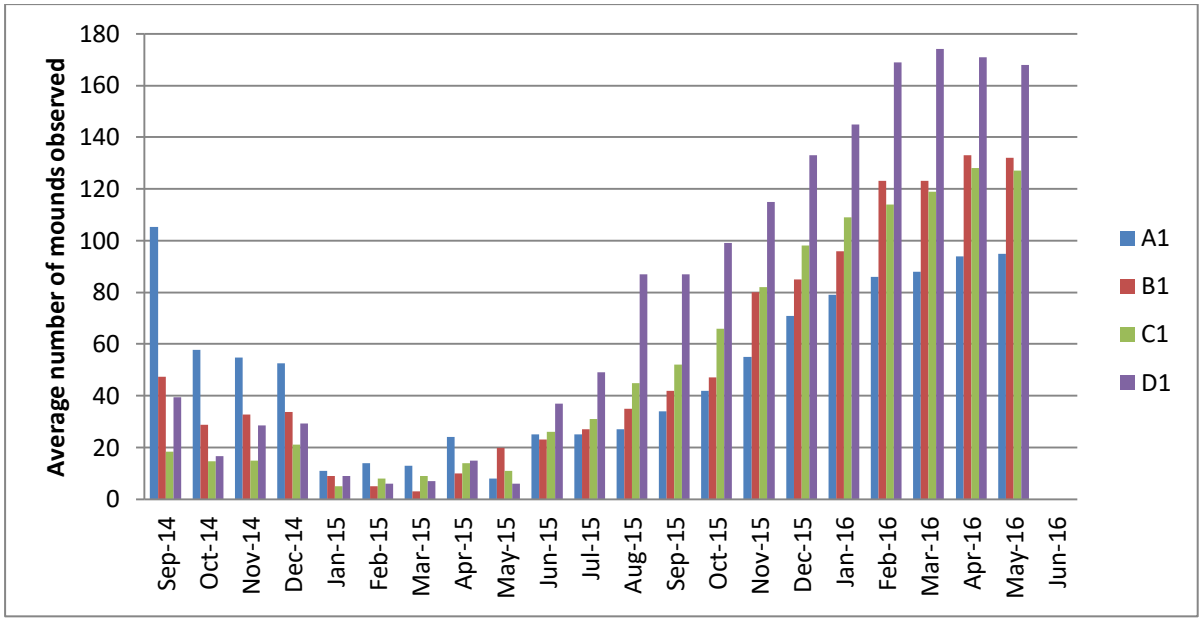


Figure 27: Mole spider monitoring at Bradley's Camp, September 2014 to June 2016[7]

6.2.8 Wirebirds

Each year the St Helena National Trust (SHNT) working with volunteers carries out an island wide count of the Wirebird population. The census which covers 31 locations around the island was first started in 1988/9 and has been carried out annually since 2005/6 during which the number of adults, juveniles, chicks and nests is recorded. The census is carried out in January each year, mid breeding season, so most birds are 'tied' to their nest territory and unlikely to move very far away. The following is an extract from the SHNT Media Release:

"The 2016 Wirebird census recorded an astounding 559 adult Wirebirds, the highest ever recorded adult count. At the same time, 86 juveniles, 52 chicks and 55 nests were also recorded.

Wirebird numbers in locations that have been under active predator control and pasture management have shown an increase in numbers. Deadwood Plain recorded the highest number of Wirebirds at 106 since 1988/9 when 126 were recorded. Rather surprisingly numbers of Wirebirds have continued to improve in Prosperous, despite the disruption from the airport project. Prosperous is divided up into 3 separate census areas: Prosperous Bay Plain (including the Central Basin), Upper Prosperous (including Tungi Flats) and Prosperous Bay North (including Bradley's). Numbers at Prosperous Bay and Upper Prosperous increased this year and the whole area supports a combined total of 144 birds." (SHNT Media Release).

[7] Monitoring blocks A1 to D1 were established in the area immediately east of the original DVOR site at Bradley's camp to reflect what appeared to be four different mole spider colonies (based on the presence of mounds). Block B was the closest to the DVOR site and Block D the most distant.

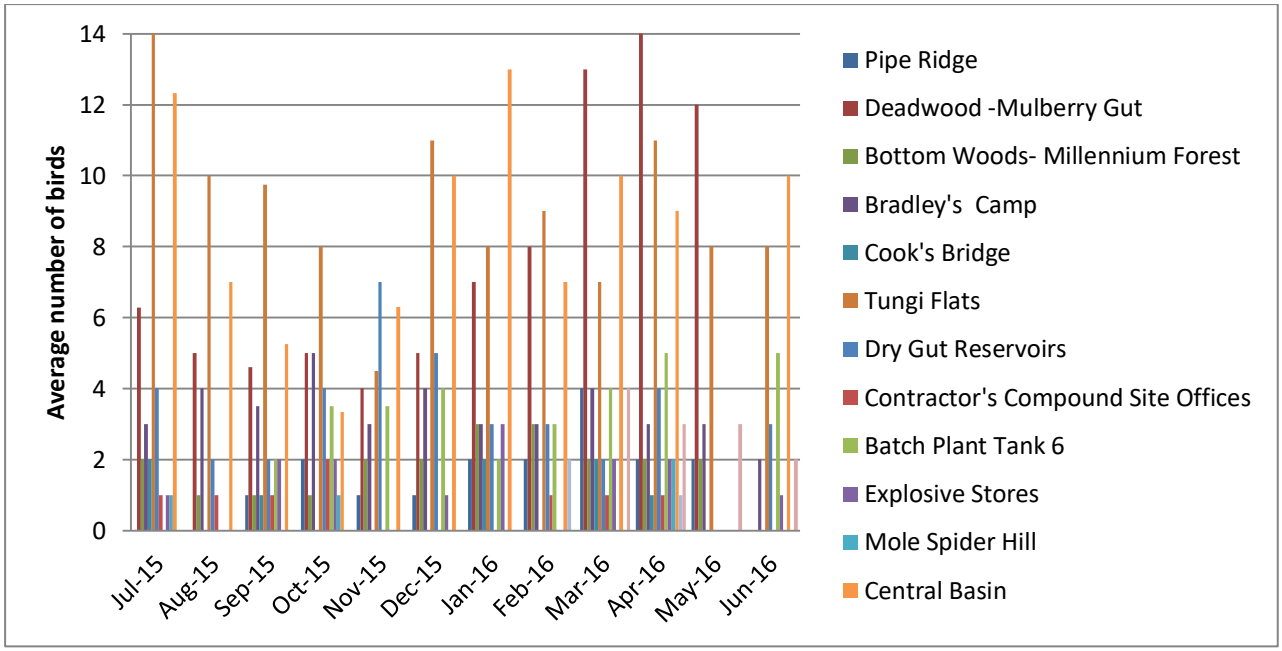


Figure 28: Average number of Wirebirds seen per day of monitoring

The Wirebird monitoring being carried out by BR using the same counting techniques as SHNT, supports the census findings, with the average number of Wirebirds seen per month being 2-4 birds higher than last year (Figure 28).

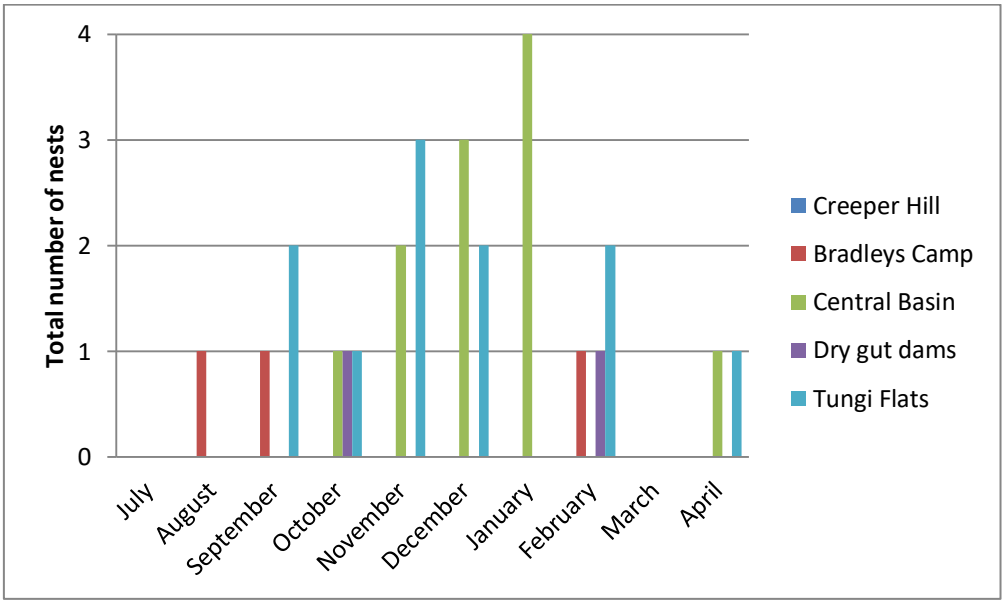


Figure 29: Total number of Wirebird nests per breeding territory

The breeding records show that nesting started in August in the area below Bradley's camp, but only peaked in the areas being monitored by BR during the 3 month period from November to January 2016, two months earlier than last year. Overall, a total of 27 nests were observed (Figure 29). Most

nesting activity was observed in Central Basin and on Tungi Flats. The non-breeding period lasts from May to July.

6.2.9 Birdstrike risk monitoring

The environmental team continued to monitor the airspace at the north and south ends of the runway in order to provide data for the assessment of birdstrike risk for the Wildlife Hazard Management Plan (WHMP). Monitoring by the construction team commenced in March 2014 and continued every month (except during the Christmas shut down) until end June 2016, when the airport Environmental Officer took over this responsibility. The northern end of the runway is monitored for 90 minutes in the late morning (to coincide with the likely arrival times of commercial aircraft) and the southern end is monitored for 90 minutes in the early afternoon, when commercial flights are most likely to leave (under the flight scenario envisaged at the time).

The birdlife in the northern airspace is dominated by fairy terns, occurring mostly in pairs or singly (Figure 30). Fairy terns nest extensively in Lower Fisher's Valley and the sightings in the northern airspace indicate the movement of these birds between their cliffside nests to the feeding grounds out at sea. Although these birds breed all year on St Helena, there appears to be a peak in activity in February, when over 300 birds were seen in a 90 minute period (Figure 30).

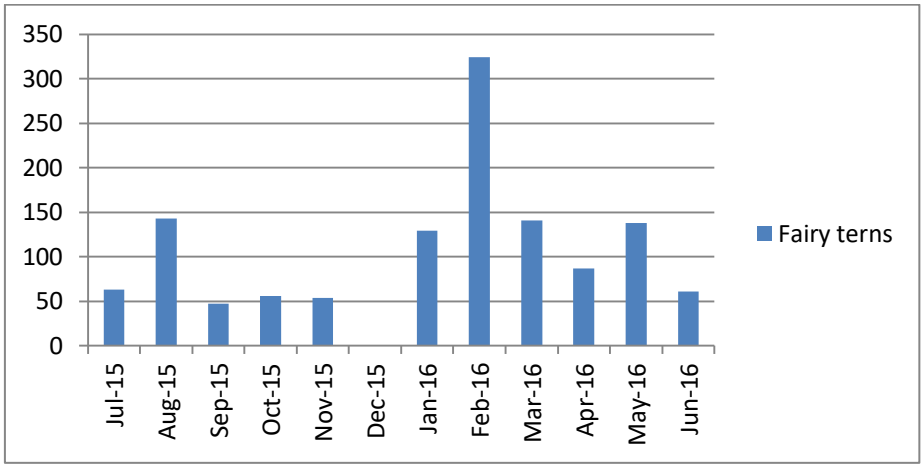


Figure 30: Seabird monitoring of northern runway airspace[8]

The southern end of the runway paints a very different picture, with masked boobies, fairy terns and red-billed tropic birds being frequently seen in the airspace (Figure 31). The Redbilled tropicbirds nest near the top of Great Stone Top and disperse from here out to sea which explains the high number of sightings of this species.

[8] No data are available for December 2015 due to site shut down for the Christmas holidays

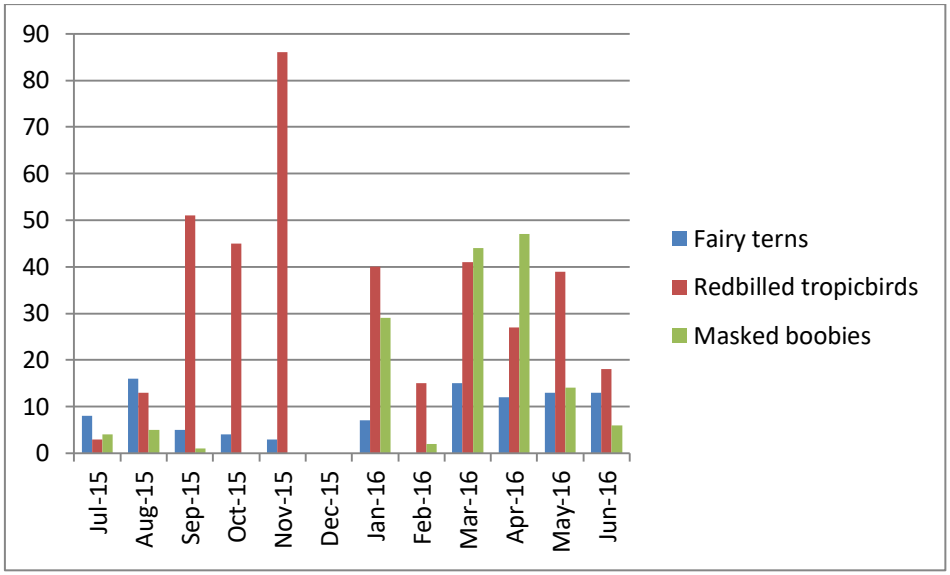


Figure 31: Seabird monitoring of southern runway airspace[9]

6.2.10 Pests and predators

As mentioned in previous reports, there are a number of pests and predators that need to be controlled on and around the construction sites. Mynah birds, rodents and cats all prey on Wirebirds and their eggs, while rabbits pose a serious threat to plants, especially new plantings.

These species are monitored at 45 locations across the entire construction site. Rodents are monitored using tracking tunnels and camera traps, cats are monitored with cameras and caught using cat traps and the presence of mynahs is monitored during the monthly Wirebird monitoring 'sweeps'. Rabbits are monitored by visual observation.

Rabbits and mynahs were observed again at the airport site from the end of 2015, after a decline in sightings during peak construction, with no sightings being made during the 3-month period from August to October 2015 (Figure 32). However, none of the monitored species were recorded after March 2016 due to controls being put in place.

The airport site has now been handed over to the airport operational team (in May 2016), who are continuing to monitor pests and predators. Mynahs need to be discouraged as they pose a birdstrike risk to aircraft if they start being present in large numbers. Careful waste management is required to reduce the attractiveness of the airport area for these birds as well as pigeons. Cat trapping by the SHNT has continued during the year and a total of 15 cats were caught in this time in and around the airport site.

[9] No data are available for December 2015 due to site shut down for Christmas holidays

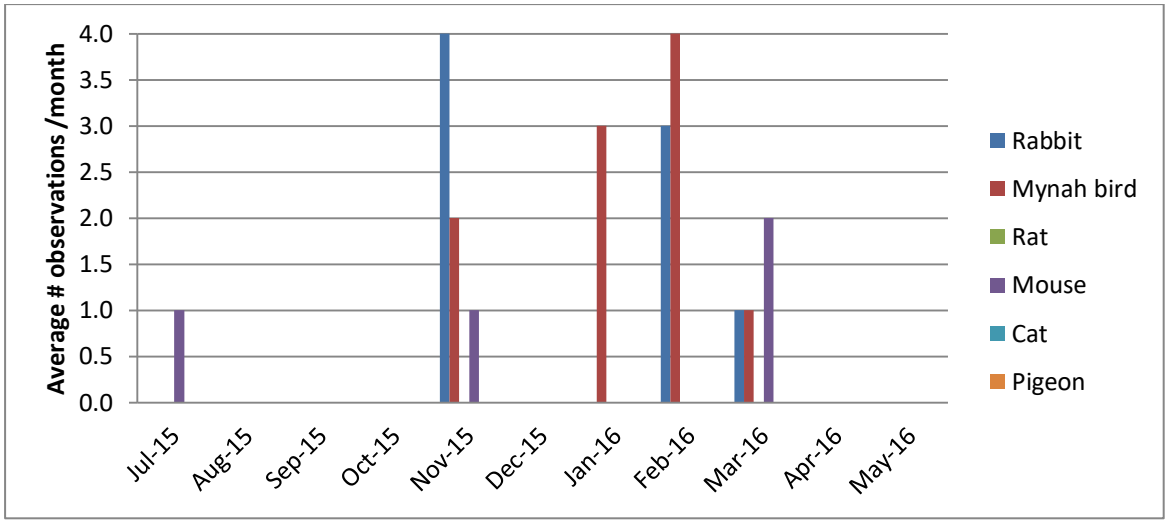


Figure 32: Pests and predators at the airport site[10]

Plate 40: Rabbit proof fencing has been erected around the landscape planting in the airport precinct to protect the plants

Pest observations increased significantly around the Contractor's camp, Tungi Flats and Upper Dry Gut during the latter half of 2015, but reduced considerably once the camp, crusher and other work areas were dismantled at the end of 2015 (Figure 33). Since then, the average number of sightings per month has dropped to less than 5 for most species of concern. Rabbits, however are still commonly encountered and they pose an ongoing threat to revegetation efforts, necessitating the use of rabbit fencing to protect all plantings (Plate 40).

[10] No data are available for December 2015 due to the site shut down for the Christmas holidays.

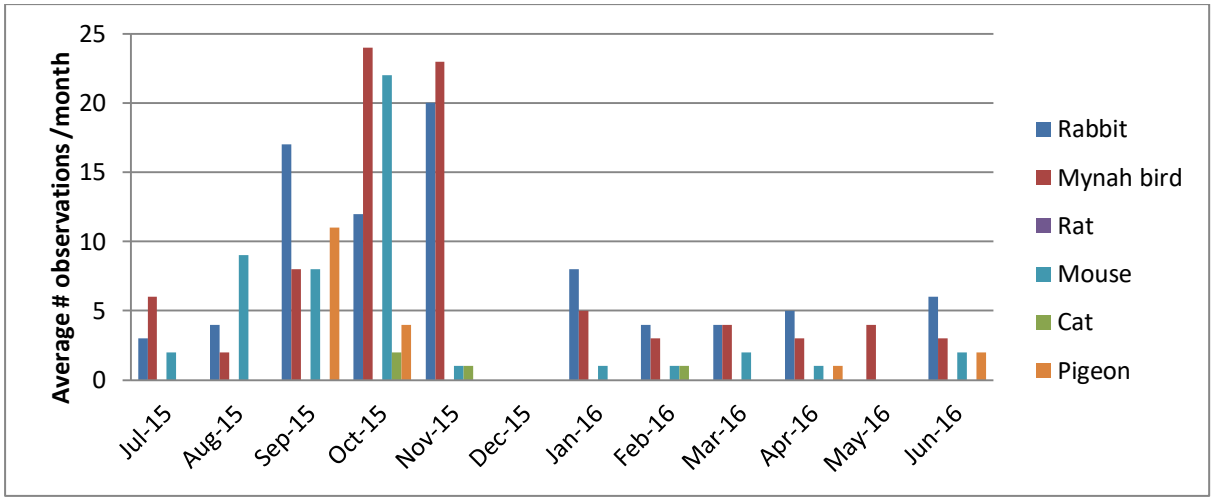


Figure 33: Pests and predators at Contractor's Compound, Tungi Flats and Upper Dry Gut[11]

Pigeons and mynahs are attracted to Bradley's camp which provides roosting and resting locations as well as a source of food, in spite of major efforts to control food waste by covering all receptacles and containers, regular disposal, notices to camp residents and toolbox talks (Figure 34).

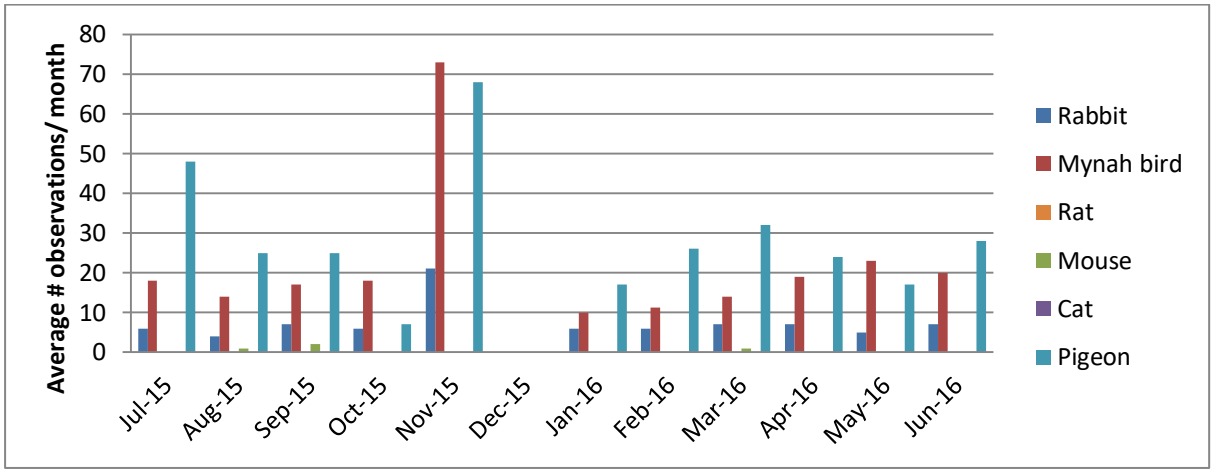


Figure 34: Pests and predators at Bradley's and Millennium Forest

The SHNT conducts monthly cat trapping at Bradley's camp, but only 3 cats were caught during the reporting period.

6.2.11 Biosecurity

As reported in the last AER, nine invertebrate monitoring sites were set up in August 2014 to monitor for the presence of alien invertebrates at every location where shipping containers are opened. Each site comprises an invertebrate refuge consisting of a standard hollow breeze block covered by a concrete slab; one of the compartments in the block holds a sticky board, the other compartment is

[11] No data are available for December 2015 due to site shut down for the Christmas holidays

loosely stuffed with newspaper. The monitoring sites are located at the Customs bonded yard in Rupert's Valley (2), the batch plant at the precast yard (1), Bradley's camp kitchen (1), Bradley's workshop (1), explosives magazine (1), Prosperous batch plant (1), BME containers (1) and the combined building site (1) and at the Jamestown wharf container offloading area (1). As sites closed down e.g. the Prosperous batch plant, explosives magazine, or moved e.g. Stores, the insect traps were removed or moved accordingly.

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. Species from 19 different families were identified (Figure 35), with the most common family being arachnids (Figure 36). Of these Adanson's jumping spider and daddy long legs were the most common, but there were several unidentified species of spider caught as well. Crickets, silverfish, woodlice and button worms were also frequently recorded (Figure 36). All species recorded are common on St Helena Island and have not been imported.

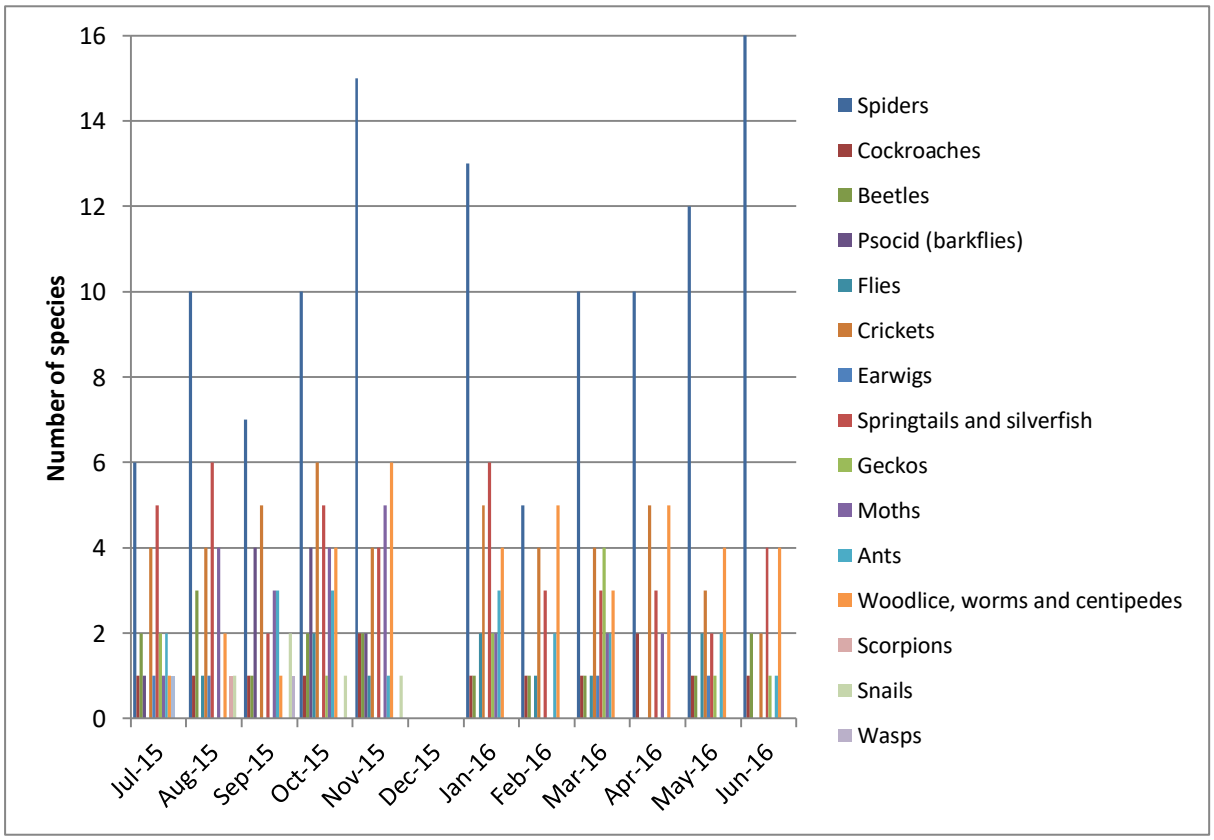


Figure 35: Biosecurity monitoring[12]

[12] No data are available for December 2015 due to site shut down for the Christmas holidays

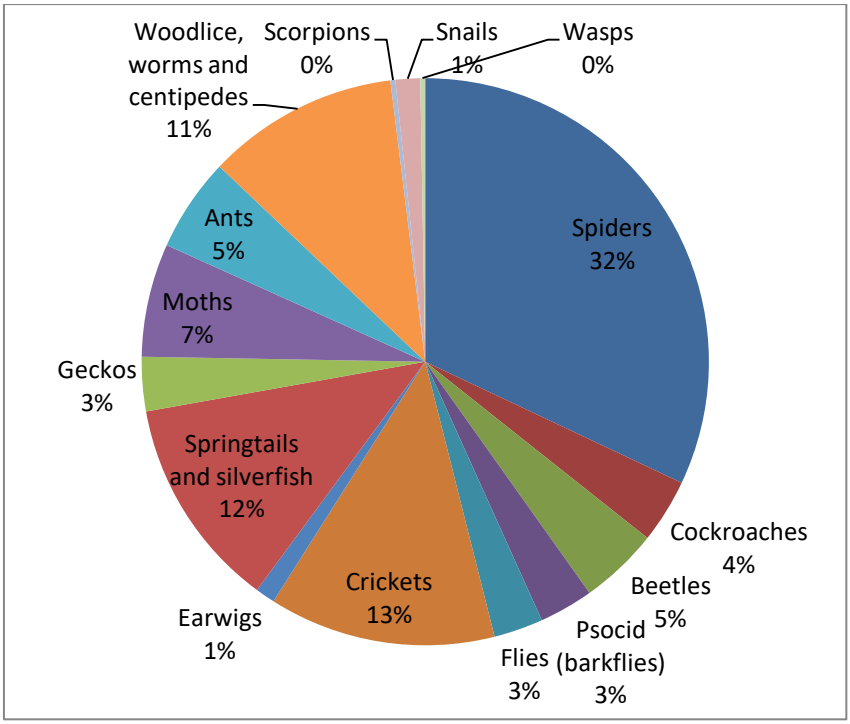


Figure 36: Composition of species caught

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 on the airport site, Rupert's Valley, BFI and Rupert's Bay (Plates 41-44).

Plate 41: Airport site from Great Stone Top in April 2014 (A) and in October 2015 (B).

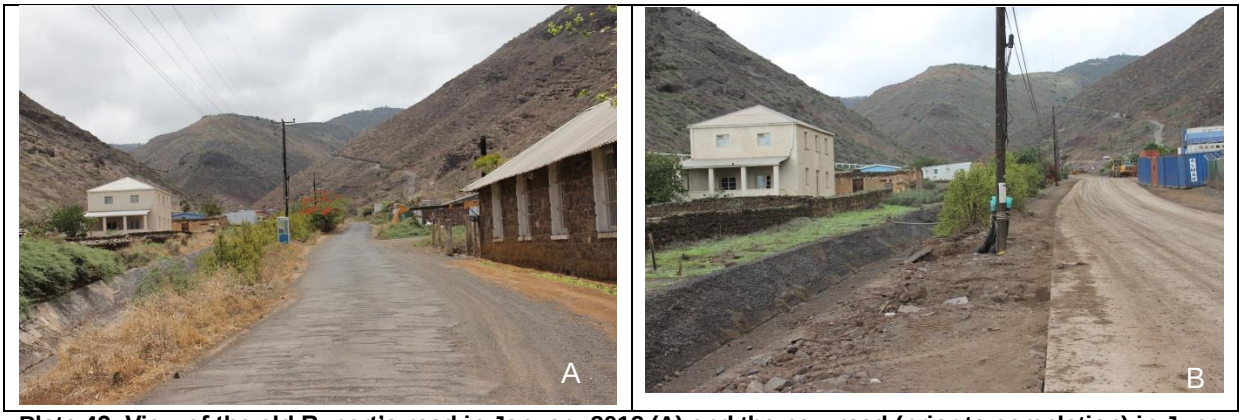


Plate 42: View of the old Rupert's road in January 2012 (A) and the new road (prior to completion) in June 2016 (B). Note also new white pipelines on left side of the valley

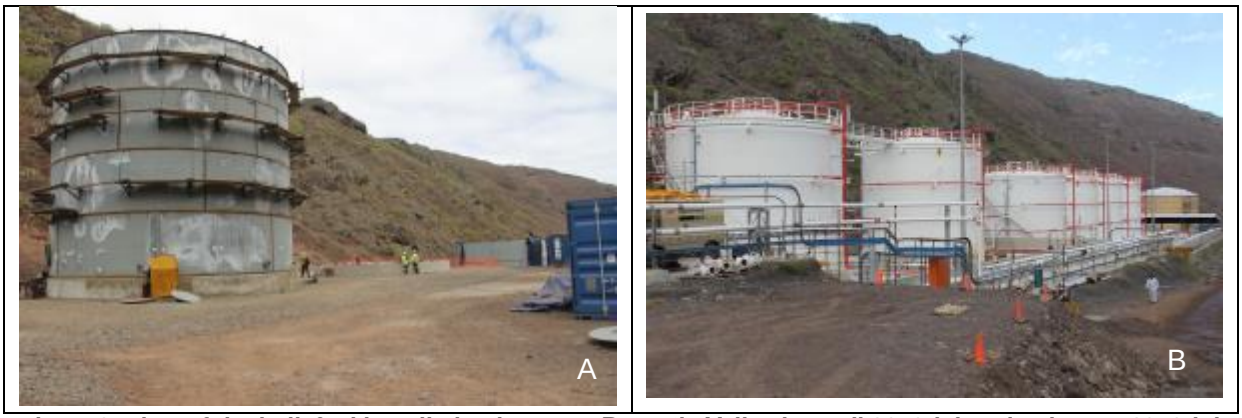


Plate 43: View of the bulk fuel installation in Upper Rupert's Valley in April 2013 (A) and February 2016 (B)

Plate 44: Rupert's Bay prior to the construction of the permanent wharf in April 2013 (A) and after completion in June 2016 (B)

6.2.13 Climate

The Meteorological Station at Bottom Woods records the following parameters: wind, temperature, relative humidity, air pressure, precipitation, cloud cover and visibility. Of particular interest to the airport is wind speed and rainfall. Figure 37 shows the monthly mean wind velocity, which indicates that wind speeds for the first 4 months of 2016 were higher than in 2015. The annual mean speed is 13 knots. The strongest gust in the reporting period was 41 knots, recorded in July 2015.

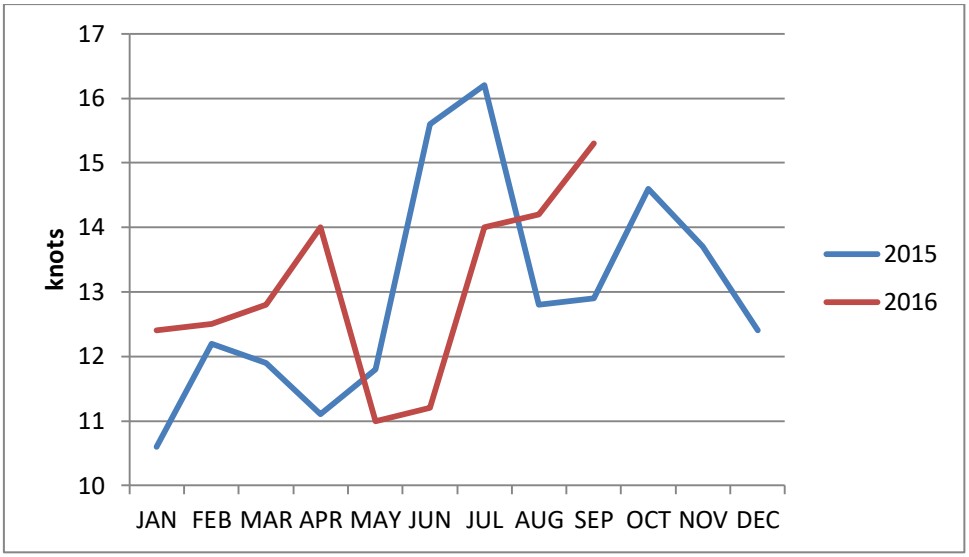


Figure 37: Mean wind speed at Bottom Woods Meteorological Station 2015-16

The fact that the Island has been experiencing a drought is demonstrated in Figure 38 which shows that the monthly totals in 2016 have been lower in 8 out of the 10 months where a comparison is available. The total rainfall in 2015 for the period January to June was 265.6 mm, which was 30% higher than the 189.4 mm total for the same period in 2016.

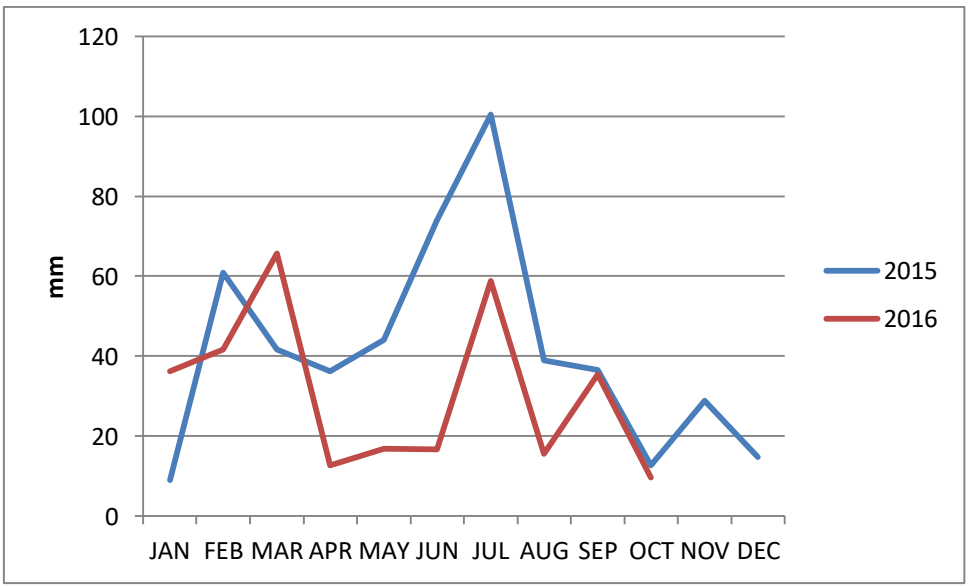


Figure 38: Monthly rainfall at Bottom Woods Meteorological Station 2015-16

6.2.14 Heritage

Archaeological watching briefs are established whenever work is being undertaken in areas of known heritage sensitivity. This involves members of the CECO team being present for the duration of all excavation works to check for the presence of artefacts or human remains. During the year under review, two watching briefs were put in place: one at the Bayside BFI and the other at the decommissioning of Rupert's temporary reservoir.

The watching brief at the Bayside BFI in Lower Rupert's Valley was divided into two: one during the widening of the entrance to the site next to Rupert's Lines to accommodate the crane and trucks removing the old fuel tanks (Plate 45A), and the second episode occurred prior to excavation of the tank platform. The rationale behind the watching brief was that the area prior to construction of the fuel storage facility had been used at various times to house the freed African slaves (Plate 45B) and the Boer Prisoners of War while they were constructing the desalination plant adjacent to this site. It was therefore expected that old cobble stones from the walkway along Rupert's Lines, as well as rubbish middens would be found.

During the widening of the entrance to the site, a total of 399 old and modern objects were found, and a further 130 artefacts were found in sample pits dug into the old tank platform. The majority of older objects comprised animal bone, metal and glass fragments, china and ceramics and some cobblestones (Plates 45C and D), thus providing strong indications that the site had been previously used as a rubbish midden.

Plate 45: A) Searching for artefacts during the widening of the access track; B) the freed African slaves encampment on the Bayside site; C) some of the glass bottle fragments found; D) cloth, wood, metal, glass and china fragments from the old BFI platform

The second archaeological watching brief was put in place after scattered human bones were found during the decommissioning of the temporary reservoir in Rupert's Valley. Work was stopped immediately and the remains were treated according to the Archaeological Protocol in the CEMP. The decommissioning methodology was then revised and carried out using introduced material for ground shaping works rather than in situ material.

7 CONCLUSIONS

The 2015-16 reporting year has been very eventful with a number of major milestones accomplished and some disappointments along the way. From an environmental point of view, performance was affected at times by the tight deadlines, the problems with the incinerator and a lack of sub-contractor oversight, but significant progress was made on site decommissioning and preparing land disturbed by construction for planting. The findings from the mole spider monitoring, the invertebrate survey of the new DVOR fenceline and the lichen experiments are all exciting from a scientific perspective and the news from the SHNT Wirebird census is very encouraging.

The airport received its licence to operate (Aerodrome Licence) from ASSI and is looking world-class; the sensitively aligned and graded access road offers views of spectacular scenery and the wharf will provide a much safer landing for passengers from visiting cruise ships and yachts. The new sea rescue building, slipway and rescue boats add much needed marine safety capability to the island. All these developments came about through team effort and great diligence by all parties – Basil Read, Access Office, PMU and the St Helena Government, as well as admirable forbearance by the affected residents of Rupert's Valley, Deadwood, Longwood and Bottom Woods.

In the coming year, it is expected that the access road will be completed and opened to the general public and the complex bulk fuel facility structures in Rupert's Valley will be well on their way to completion.

Targets for 2016-17

- 6-monthly audits in July 2016 and February 2017;
- CEMP update 9 in October 2016;
- Improved compliance with the CEMP and with the key performance indicators listed in the Executive Summary of this AER;
- Safe disposal of all hazardous and bulky wastes by incineration or into the engineered hazardous waste cell;
- Ongoing site completion works of disturbed areas as part of the LEMP programme;
- Efficient commissioning of the Rupert's BFI and the airport fuel facility including strict resource and waste management;
- Handover of incinerator, bioremediation pad and bulky waste cell to EMD;
- Follow up and close out with specialists on key survey areas, such as the marine environment around Rupert's wharf, open channel lichen relocation, mole spider surveys at the DVOR fenceline, ongoing Wirebird monitoring to check efficacy of pest and predator control programme and building condition close out surveys.

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APPENDIX A

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

BASIL READ'S HEALTH, SAFETY, ENVIRONMENTAL AND QUALITY POLICIES

Our business depends as much on the skill of our people as it does on our equipment, and we focus on maintaining a safe and healthy workplace. Our regard for safety, health, the environment and quality work is anchored in our working policy below.

It is the personal responsibility of all Basil Read employees to understand and diligently implement this policy. It is the personal responsibility of our contractors and stakeholders to assist in implementing the policy.

HEALTH AND SAFETY

Our mission is to deliver safe and profitable construction projects and services. We aspire for all our operations to be **zero harm** workplaces. By **zero harm**, we mean:

- *every employee, contractor and visitor returns to their homes unharmed daily*
- *no new cases of occupational illness result from our activities.*

To achieve **zero harm**, we commit to:

- *implementing a comprehensive health and wellness program*
- *implementing systematic processes of hazard identification, risk assessment and risk treatment. We will measure the assurance through operational, corporate, external and internal reporting processes.*
- *setting, measuring, reviewing and reporting on our health and safety objectives and targets, while continuously improving*
- *creating and maintaining a supportive culture with visible leadership, training, coaching and a high level of participation by everyone in the workplace*
- *implementing Basil Read's comprehensive standards, guidelines, systems and procedures to support our **zero harm** aspiration*
- *meeting and, where applicable, exceeding legal and other requirements.*

ENVIRONMENT

Our mission is to minimise harm to the environment by conducting our activities in an environmentally responsible manner.

In delivering on our duty of care towards future generations, it is our priority to encourage our stakeholders to practice good environmental behaviour and operate in a sustainable manner.

This requires that all should conserve and protect environmental resources through, amongst others, efficient use of energy and water, minimising waste and preventing pollution.

Basil Read management is committed to managing its operations in an environmentally responsible manner by:

- *complying with all applicable legal requirements*
- *preventing pollution*
- *recycling waste materials for reuse where possible*
- *setting objectives and targets to monitor our environmental performance and continually improving.*

QUALITY

Our responsibility is to consistently ensure the quality of management, resourcing, teamwork, commitment, documented planning and self-verification through an integrated company management system.

Our objective is to maintain ISO 9001 certification while ensuring the continual development and improvement of our quality management system.

We commit to maintaining quality in all areas in order to meet Basil Read's mission and vision by:

- *endeavoring to meet and exceed client expectations*
- *building sustainable relationships with our suppliers and subcontractors*
- *committing to the continual improvement of the company's overall performance and targets*
- *cultivating an effective working climate and culture to enhance levels of employee engagement, citizenship, behaviour, and performance*
- *empowering employees to deliver high quality products and services on time.*

The CEO's commitment to quality
Neville Nicolau

We will review these policies occasionally to ensure suitability and relevance to Basil Read Limited.

Website: www.basilread.co.za | Tel: +27 11 418 6300

BASIL READ