St. Helena

State of the Environment Report

April 2012 – March 2013

EMD

"Our Island. Our Environment. Our Responsibility."

Compiled by: Shayla Ellick (Environmental Management Division, St. Helena Government), May 2013.

Edited by: Glen Westmore and Tara Pelembe (Environmental Management Division, St. Helena Government)

Contributors: Martin Squibbs, Barry Hubbard, Callie Thomas (Connect St. Helena), Mike Durnford, Annalea Beard, Elizabeth Clingham, Leeann Henry, Lourens Malan, Vanessa Thomas, Marcos Henry, Isabel Peters, Ian Rummery, Dr Judith Brown, Dr David Higgins (Environmental Management Division, St Helena Government), Paula McLeod (Corporate Policy & Planning Unit, St. Helena Government), Lionel Joshua (HM Customs, St. Helena Government), Dr Chris Hillman (St. Helena National Trust), Georgina Young and Tracy Thomas (Environmental Health Section, St. Helena Government), Gerald Benjamin (Agricultural & Natural Resources Division, St. Helena Government), Mark Brumhill (Enterprise St. Helena)

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For more information see website: http://www.sainthelena.gov.sh/pages/environment.html

Or contact Shayla Ellick, Environmental Management Division, Environment and Natural Resources Directorate. Email: shayla-ellick@enrd.gov.sh

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EXECUTIVE SUMMARY

- The environment of St Helena is precious. Its ecosystems, biodiversity and heritage are vulnerable to the choices being made, and the actions being taken. At the same time, the growing population depends on them for our survival and wellbeing. As well as providing these services, a well-managed environment is vital to the island's economic viability; agriculture, fishing and tourism all rely on St. Helena having a healthy and prosperous environment.

- The major future drivers of change: climate change, permanent and transient population growth, economic development and associated consumption of natural resources, as well as the pressures that these drivers place on the environment, will need to be managed carefully if our society is to achieve a sustainable relationship with the island's environment.

- There are a number of areas where environmental data is being collected and a number of those are included here.

- There are a number of areas where data collection is not being collated and presented in a useful manner and many activities where no data collection is being undertaken other than subjective assessments.

- The ability to establish trends and make predictions will improve over time.

INTRODUCTION

St. Helena has a unique natural environment that provides the ecosystem goods and services upon which we all depend. Effective management of this environment is one of St. Helena's three National Goals in its Sustainable Development Plan. A National Environmental Management Plan (NEMP) provides the blueprint for how this goal is going to be implemented. Activities are of course balanced against budget restrictions and a government wide headcount reduction programme.

St. Helena is going through a period of rapid change with the construction of the island's first airport and the anticipated subsequent economic development. The St Helena resident population is growing. In financial year 2012/13 the quarterly average population has been consistently higher than the same period in any year since the 2008 Population Census. In addition, the development of the island looks to increase tourist visitors to the island as a key to economic development. The St Helena economy is growing. As much as a boost to the local economy, resulting from an increasing economically active population is welcomed, the environmental impacts must be carefully balanced. An increase in population means an increased demand for water, electricity, food, housing and other resources. An increase in sewage output and waste must be accommodated. An increasing number of people are making the most of our unique environment for recreation.

To find out how our environment is faring, St. Helena's first ever State of the Environment Report has been created. This report hopes to provide a snapshot of the environment of St. Helena over the 2012/13 financial year. It is not a report on a set of agreed, considered environmental indicators (the process for setting these will be developed over the coming years) but is rather a report on some areas of the environment that are already being measured and monitored on St. Helena. Collating and reporting on this, serves also to highlight gaps in information. This report will be produced on a regular basis and it is anticipated that, as the years pass, the production of this report will allow us to see trends in our environmental data and to fill information gaps, allowing us to more effectively target our efforts to manage our unique environment.

In April 2012 the St. Helena Government (SHG) created an Environmental Management Division (EMD), focussed on implementing the NEMP and providing a cohesive approach to environmental management within SHG and across the island as a whole. This report also provides a summary of the activities carried out by this body in its first year. EMD will be responsible for the collation and publication of the State of the Environment Report.

In addition to EMD there are a number of other individuals and bodies who work proactively to manage and protect St. Helena's environment. Most prominently the St. Helena National Trust (SHNT) carry out a number of biodiversity and restoration projects, and St. Helena Active Participation in Enterprise (SHAPE) have initiated a long term initiative to recycle paper and cardboard.

Environmental monitoring in this report details a small selection of the activities of the following bodies based on submitted data:

- The Environmental Management Division of SHG's Environmental and Natural Resources Directorate (ENRD)
- The St. Helena National Trust (SHNT)
- The former SHG Infrastructure and Utilities Directorate (I&U), some relevant activities of which were divested to the arms-length Utilities corporation "Connect St. Helena" on 1st April 2013
- The Environmental Health Section (EHS) of the SHG Health and Social Welfare Directorate (H&SW)

Datasets presented have been provided by the contributors listed. Data collection and monitoring occurs at a wide variety of levels and complexity and consistency varies. This report is based on submitted data.

1.0 AIR AND CLIMATE:

1.1 WEATHER SUMMARY

Plate 1.1.1 Sun ©Dr David Higgins, 2013

Although located in the tropics, St. Helena has a sub-tropical climate due to the cooling influence of the South-East trade winds and the Benguela Current (Ashmole & Ashmole, 2000). Although the island does not have the four distinct seasons one might find elsewhere, there is a sunny, hotter and drier summer period, which gradually gives way to a cooler, wetter winter. The data in this section represents weather conditions at Bottom Woods only, and should not be taken as an accurate representation of weather patterns across the island.

TEMPERATURE

The 2012/13 financial year was a relatively cool one for St Helena, with an overall average temperature of 17.5°C and an average maximum temperature of 20.2°C (Met Office, 2013). Fig 1.1.1 shows that it was typically cooler overall during the winter months (from July to November) with temperatures highest in February and March. Comparing these figures with the long term average data (2005-2013), shows that the winter months were slightly cooler last year than has usually been the case, both in terms of average temperature and of maximum daily temperature, but with more or less average summers either side.

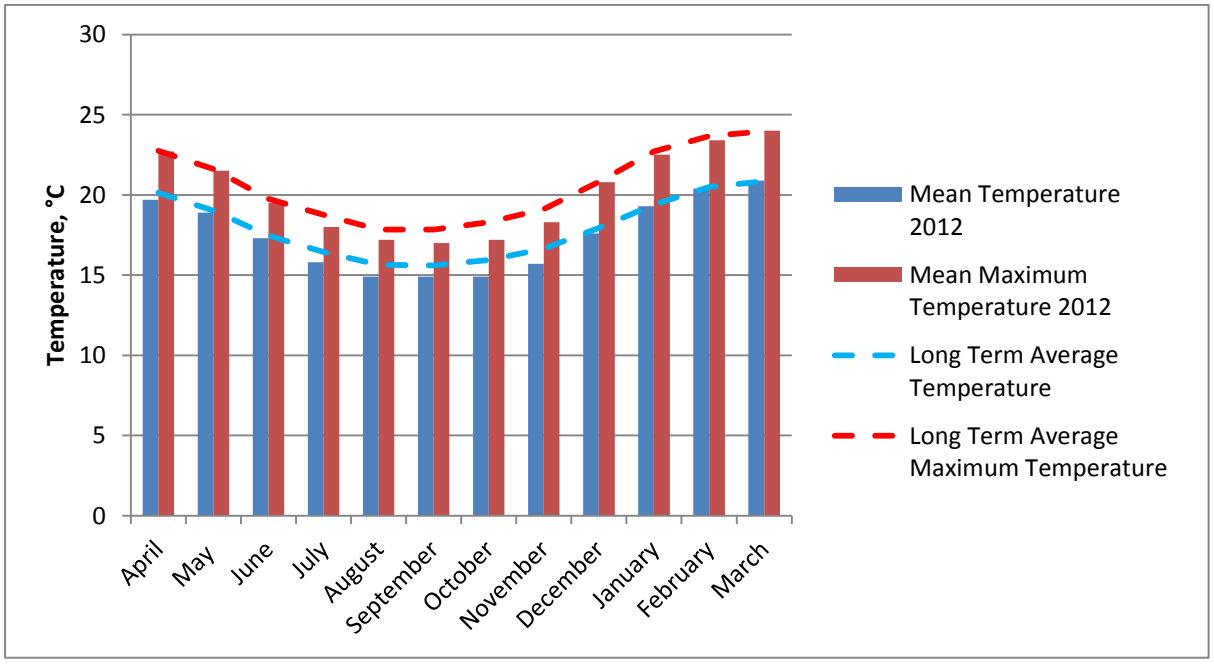

Fig. 1.1.1 Monthly average dry bulb and maximum temperatures. Source: Met Office, 2013.

RAINFALL

The island received a total of 485.1mm of rain over the last financial year, with the majority falling in the first half of the year (see Fig. 1.1.2); this is just over 10% lower than the long term average (2001 – 2013) of 542.1mm per year. The approach of summer however, saw the decline of the rain, falling to under an average of 10mm during the month of December and keeping low throughout the rest of the summer. The island received an average of 40.4mm of rain per month over the 2012/13 financial year (Met Office, 2013) which is, on average, 4.2mm less than the long term mean. In particular, the months of December through to March were much drier than average and the island in fact received less than half the expected rain for these four months in total.

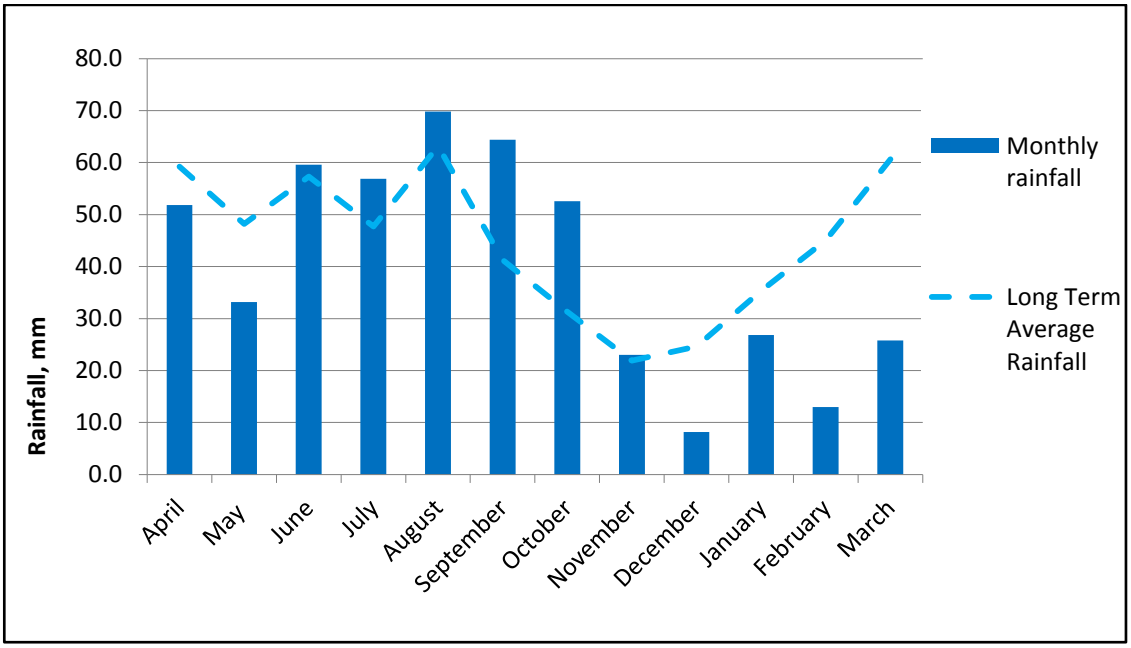

Fig. 1.1.2 Monthly rainfall 2012/13. Source: Met Office, 2013.

SUNLIGHT

Predictably, the island received the highest levels of sunshine in February and March (see Fig. 1.1.3) - the months that also claim the highest average temperatures and lowest average rainfall. Overall the island basked in a total of 1375.4 hours of sunshine during the 2012/13 year, averaging 114.6 hours of sunshine per month (Met Office, 2013), which is near the long term average (2001 - 2013), though the monthly sunshine totals from September to November were lower than would be expected.

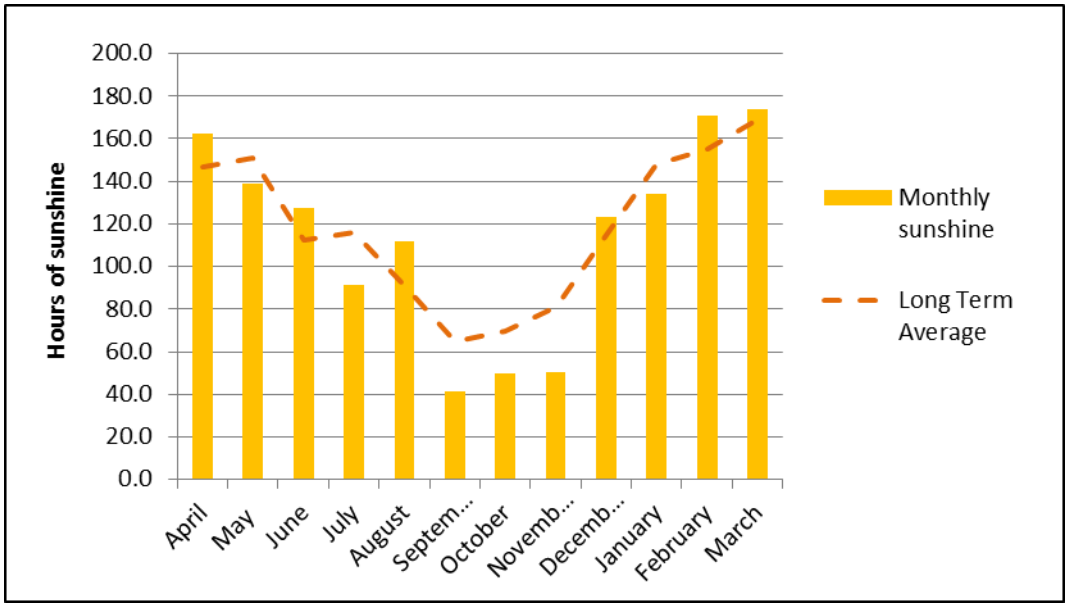

Fig. 1.1.3 Monthly sunshine totals. Source: Met Office, 2013.

WIND

Overall, the average wind speed over the year was 12.3 knots/month, with an average maximum gust of 33.25 knots/month (Met Office, 2013). Fig. 1.1.4 indicates that the speed and power of the wind increased slightly during the winter months, dropped off and then picked up again on the approach to summer. The winds over this year were similar to the accepted averages (note: long term average calculated from 2001 – 2013).

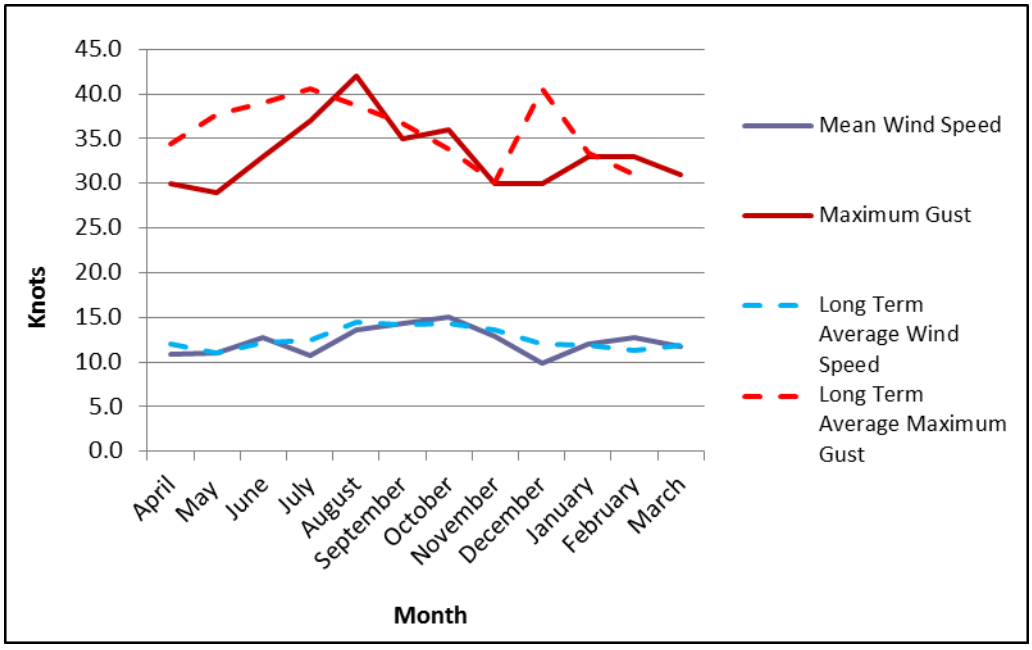

Fig. 1.1.4 Monthly averages of wind speed and maximum gust. Source: Met Office, 2013.

MEAN SEA LEVEL PRESSURE

The average monthly Mean Sea Level Pressure was 1018.0 hPa (Met Office, 2013). Fig. 1.1.5 shows an increase in pressure over the winter months, falling on the approach to summer and staying low during the summer months. Average worldwide sea-level pressure is 1013.25 hPa and so St Helena generally experiences higher pressures overall. The island's pressure levels are most influenced by the ocean state surrounding it and by the strength and direction of the trade winds.

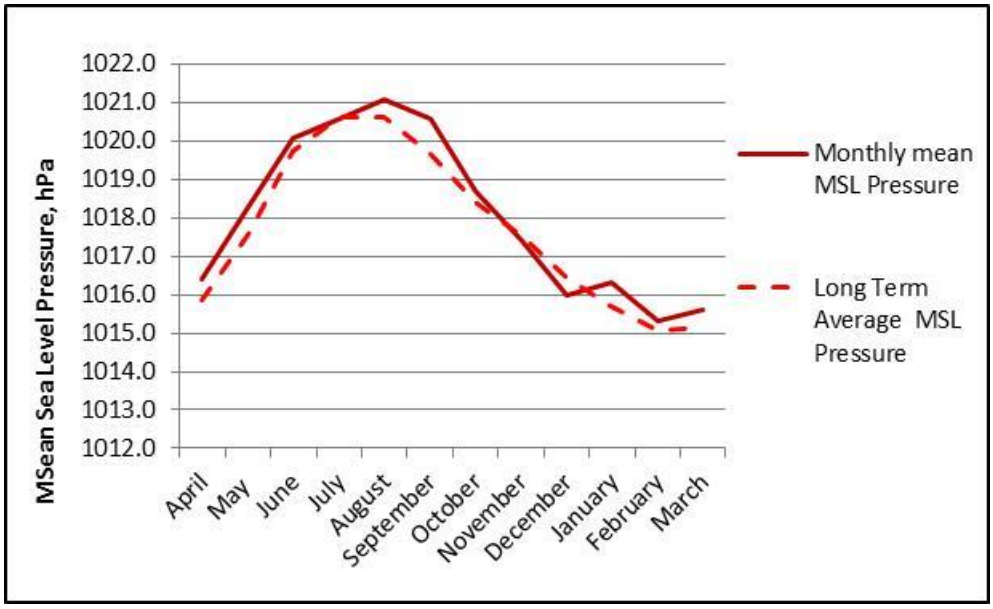

Fig. 1.1.5 Monthly Mean Sea Level Pressure. Source: Met Office, 2013.

REFERENCES:

Ashmole, P. & Ashmole, M. (2000). *St. Helena and Ascension Island: A Natural History*. Oswestry: Anthony Nelson.

Met Office. (2013). *St. Helena Weather Stats 2001 - 2013*. *Unpublished data.* St. Helena Government.

2.0 INLAND WATERS:

St. Helena's water supply is reliant on reservoirs, springs and a small number of boreholes, which in turn are reliant on the amount of precipitation (mist and rain) the island receives; this can be very low in the dry summer months. With the advent of the airport and estimated influx of tourism, the demand for drinkable water is going to increase significantly and is likely to be an important issue over the coming years.

Plate 2.1: Scotts Mill Reservoir which supplies the Red Hill distribution area. © Connect St. Helena Ltd., 2013.

2.1 VOLUMES OF WATER SUPPLIED

The total volume of water supplied to the island over the 2012/13 financial year was 347,449m^3, of which 321,536 m^3 was treated water and 25,913 m^3 was untreated (from springs and boreholes) (I&U, 2012-13). Table 2.1.1 shows the source and breakdown of domestic water supplied; of the treatment plants, Red Hill produced the highest output and Levelwood the lowest. Overall, springs supply the least amount of water for domestic use.

Table 2.1.1: Breakdown of water supplied to the island. Source: I&U, 2012-13.

Water supplied from:	**Volume (m^3)**
Levelwood Treatment Plant	19,899
Hutts Gate Treatment Plant	100,421
Red Hill Treatment Plant	146,973
Jamestown Treatment Plant	54,243
Springs (untreated water)	2,822
Boreholes (untreated water)	23,091
Total	**347,449**

Fig. 2.1.1 shows the amount of water supplied from each source throughout the year. The amount of water supplied noticeably increased from October to January, following which there was a prominent decrease. This is likely to be fuelled by the temporary rise in the resident population of St Helena over the same period (see Fig. 2.1.2). Consumption per

capita varies from around 185 to 265 litres per person per day. These figures include non-domestic consumption, so actual use per person is considerably less. Consumption is also likely to be higher in warm, sunny months when water is used more intensively for agriculture and gardens.

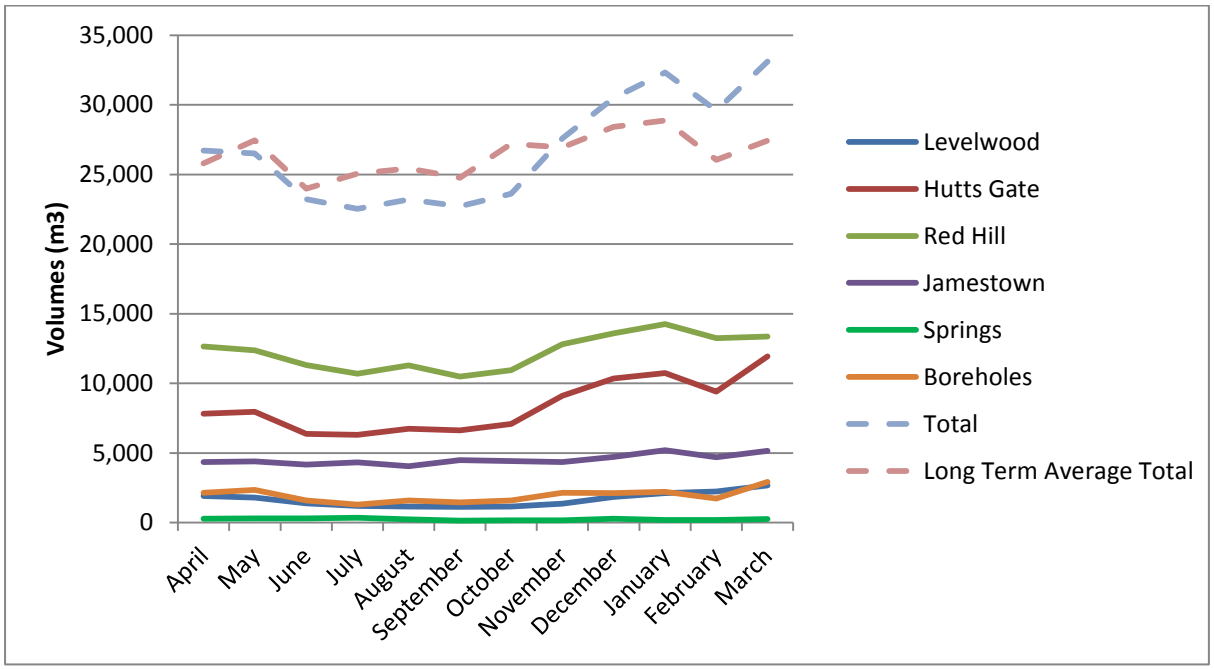

Fig. 2.1.1: Monthly volumes of water supplied to the island. Source: I&U, 2012-13.

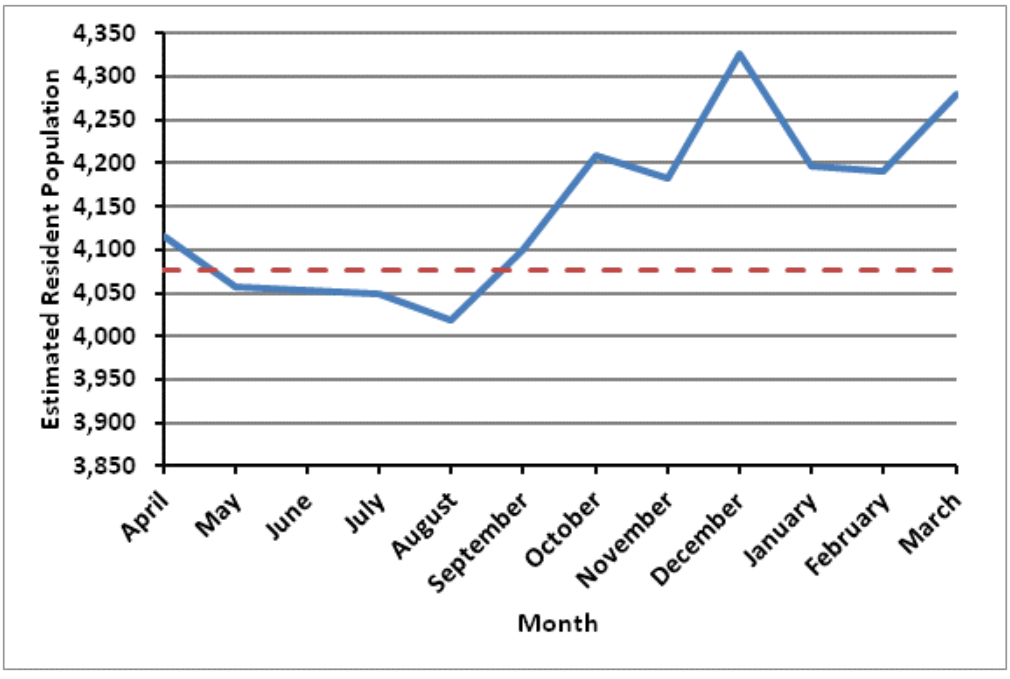

Fig. 2.1.2: Monthly population statistics. Source: SHG Statistics Office, 2012-13.

2.2 FRESHWATER MONITORING

Freshwater is the name for all sources of non-saline water and includes most groundwater, runoff from guts, springs and direct collection in ponds and reservoirs.

Connect St Helena currently monitor the levels of Free Chlorine within the drinking water collection and distribution system only. They monitor the clarity and the bacterial quality of the water; Environmental Health also monitors bacterial quality of water (I&U, 2012-13).

Over the last financial year the vast majority (95%) of samples taken were within accepted benchmarks[1] (I&U, 2012-13). In each case of detection of any samples outside of those benchmarks; immediate investigation and actions, such as precautionary flushing of mains, were taken (I&U, 2012-13).

There is currently no environmental monitoring of any of the other freshwater sources (springs, streams or pools) on the island. Monitoring of the freshwater sources on the island was part of the unsuccessful Darwin+ bid submitted to the UK Department of Environment, Food and Rural Affairs (Defra) in January 2013.

REFERENCES:

Infrastructure & Utilities Directorate** (I&U). (2012-13). *Output performance: Water Division, monthly reports April 2012- March 2013. Unpublished data*. St Helena Government.

**From April 2013 the water, drainage and energy utility provision was transferred from the St Helena Government to a new company called Connect St Helena Ltd.

Plate 2.2.1: Mist on the Peaks © Dr David Higgins, 2013.

[1] No bacteria present.

3.0 BIODIVERSITY:

The island's biodiversity is globally important. In the terrestrial (land) environment there are 46 endemic (i.e. occurring only on St Helena) species of flowering plants and ferns; over 400 endemic invertebrate species; and around 26 endemic bryophytes (mosses, hornworts and liverworts), lichens and algae. In the marine environment there are 13 endemic fish species. There are also a wealth of endemic and native plants, animals and other life still to be discovered.

This section gives a snapshot of some of the data that has been collected by the various teams and individuals working on biodiversity conservation on St. Helena over the last year.

3.1 MARINE

SEABIRDS

The EMD Marine Team undertake monitoring of seabirds (see Table 3.1.1) throughout the year, this is done via boat surveys, land surveys and nest searches; the Marine Team have written a comprehensive report outlining the results of their seabird monitoring from 2004-2011 (Beard, A. *et al.* 2013).

Table 3.1.1: Seabird species surveyed. Source: Beard, A. *et al.* 2013.

Sooty Tern
Fairy Tern
Red-billed Tropicbird
Brown Noddy
Black Noddy
Brown Booby
Masked Booby
Madeiran Storm Petrel

Plate 3.1.1: Red-billed tropicbird in flight © Dr David Higgins, 2013.

The three key findings from the period of the report are:

- The Masked Booby is seen to be recolonizing the mainland, despite the presence of predators such as rats and feral cats.
- The identification of two separate seasonal breeding populations of Madeiran storm petrels. (see Fig. 3.1.2)

- A potentially internationally important population of red-billed tropicbird present on the island.

1. Speery Island and Camel Rock (Salt Rock)
2. James Bay-Rupert's Bay
3. George Island
4. Shore Island
5. Peaked Island
6. Mainland Opposite Peaked Island
7. Thompson's Valley Island
8. Egg Island
9. Great Stone Top
10. Lot's Wife
11. Blue Point

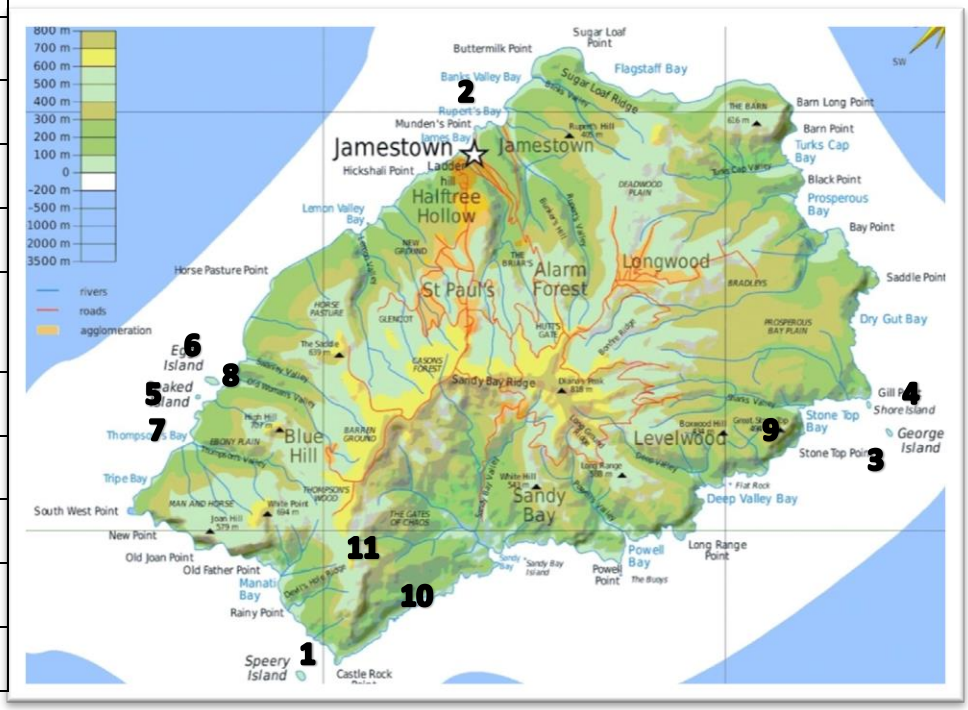

Fig. 3.1.1. Locations surveyed during seabird monitoring. Source: Beard, A. *et al.,* 2013.

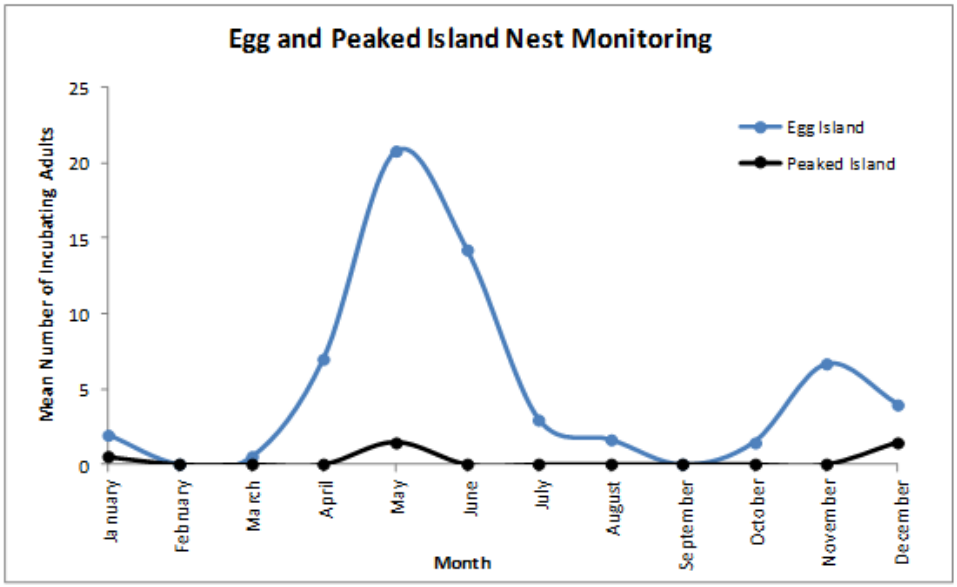

Fig. 3.1.2 The mean number of incubating adult Maderian Storm Petrels per month on Egg Island and Peaked Island 2004 - 2011: Source: Beard, A. *et al.,* 2013.

UNDERWATER FISH SURVEYS

The EMD Marine Team undertake underwater fish surveys at 18 sites along the leeward side of the island (see Fig. 3.1.3.) twice a year: in summer (April) and in winter (October), and have written a comprehensive report outlining the results of these surveys from 2002-2013 (Henry, L. *et al.*, 2013). The purpose of the surveys is to gather information about distribution and abundance of fish populations along the leeward side of the island. These surveys began in October 2002 and continued until April 2007 making five complete seasons. No surveys were conducted for four years until the surveys resumed in October 2011; however no survey was done in April 2012. 197 surveys have been conducted to date (Henry, L. *et al.*, 2013).

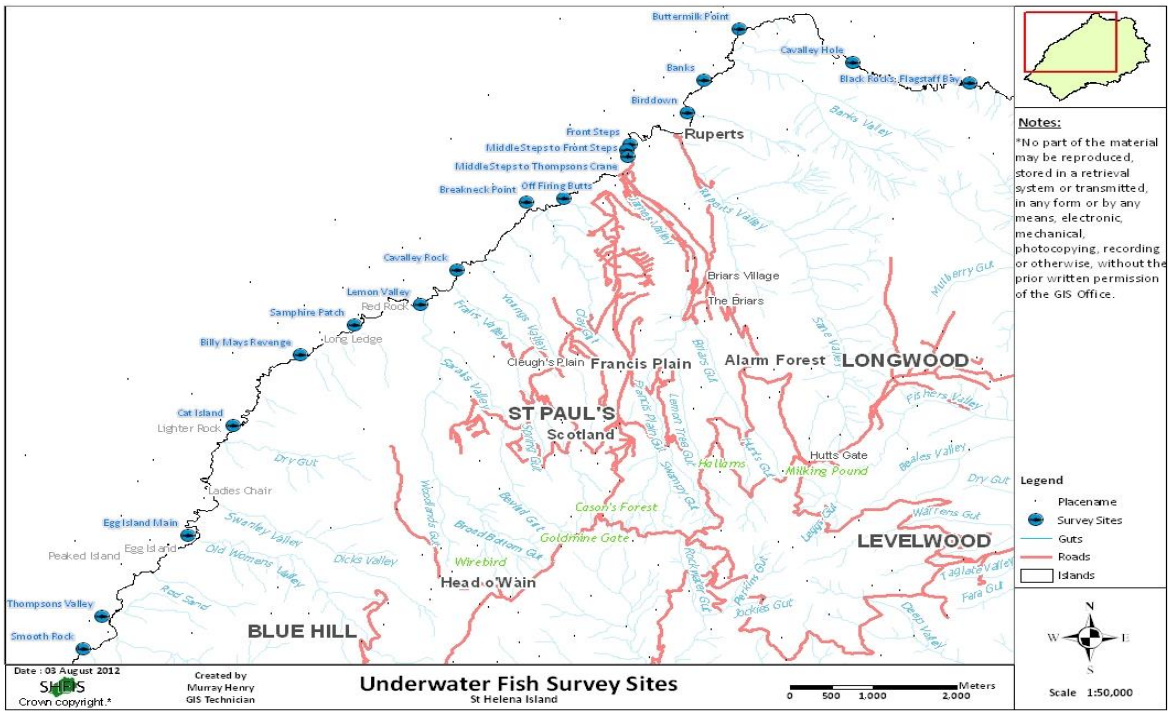

Fig. 3.1.3. Underwater Fish survey sites: 1-Smooth Rock, 2-Thompsons Valley, 3-Egg Island Main, 4-Cat Island, 5-Billy Mays Revenge, 6-Samphire Patch, 7-Lemon Valley, 8-Cavalley Rock, 9-Breakneck Point, 10-Off Firing Butts, 11-Middle Steps to Thompsons Crane, 12-Middle Steps to Front Steps, 13-Front Steps, 14-Birddown, 15-Banks, 16-Buttermilk Point, 17-Cavalley Hole, 18-Black Rocks Flagstaff Bay. Source: SHEIS, 2012.

Two of the key findings of the report are:

- Of all the survey locations, Billy Mays Revenge has the highest incidence of target species (species that people target for fishing and eating) – this area is a marine reserve where spearfishing is banned all year round.
- The abundance of endemic fish is highest at Break Point. The reasons for this are unclear.

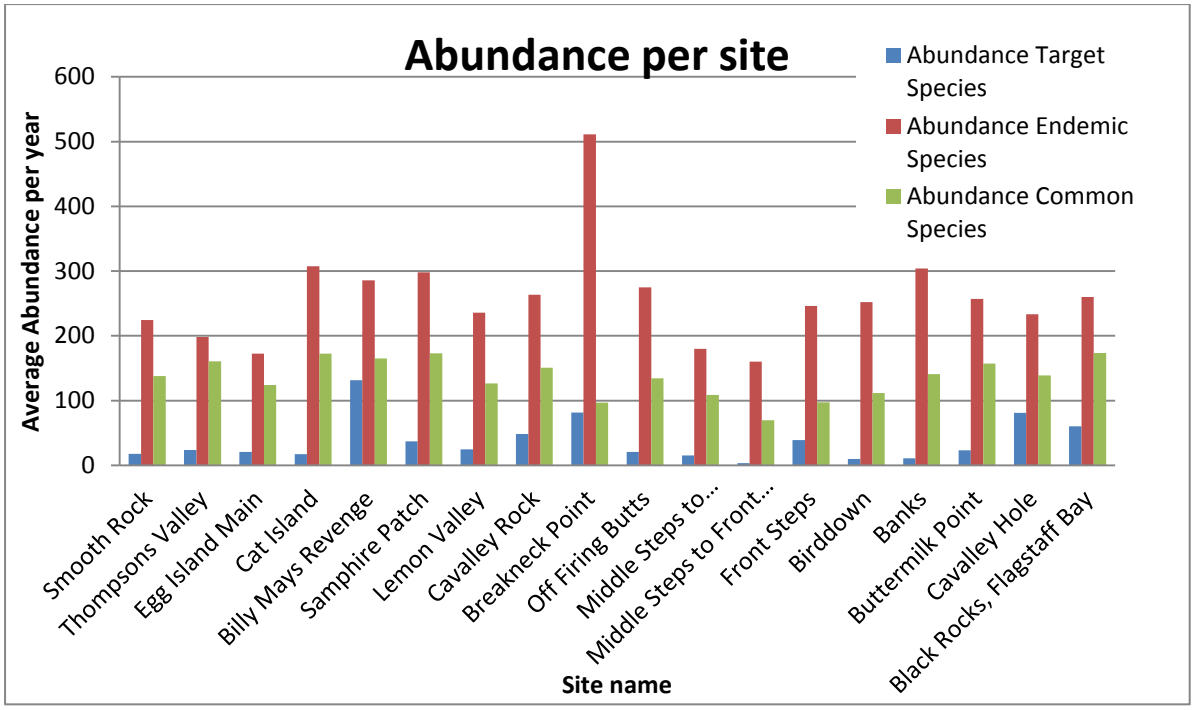

Fig. 3.1.4 Abundance of species at each sampled site. Source: Henry, L. *et al.*, 2013.

MARINE SIGHTINGS

Since April 2003 the Marine Section has publicised a marine sightings scheme, through which members of the public are encouraged to submit any sightings of particular marine species. The scheme collects data on the time of the sighting, the location, the type of species and the number of each species spotted.

145 sightings were reported over the 2012/13 financial year; just under half of these were for humpback whales with 70 reported sightings. The only other significant number of sightings for a single species, was for the bottlenose dolphin, with 22 reported sightings (E. Clingham, personal communication, May, 16, 2013). These are illustrated in Fig. 3.1.5.

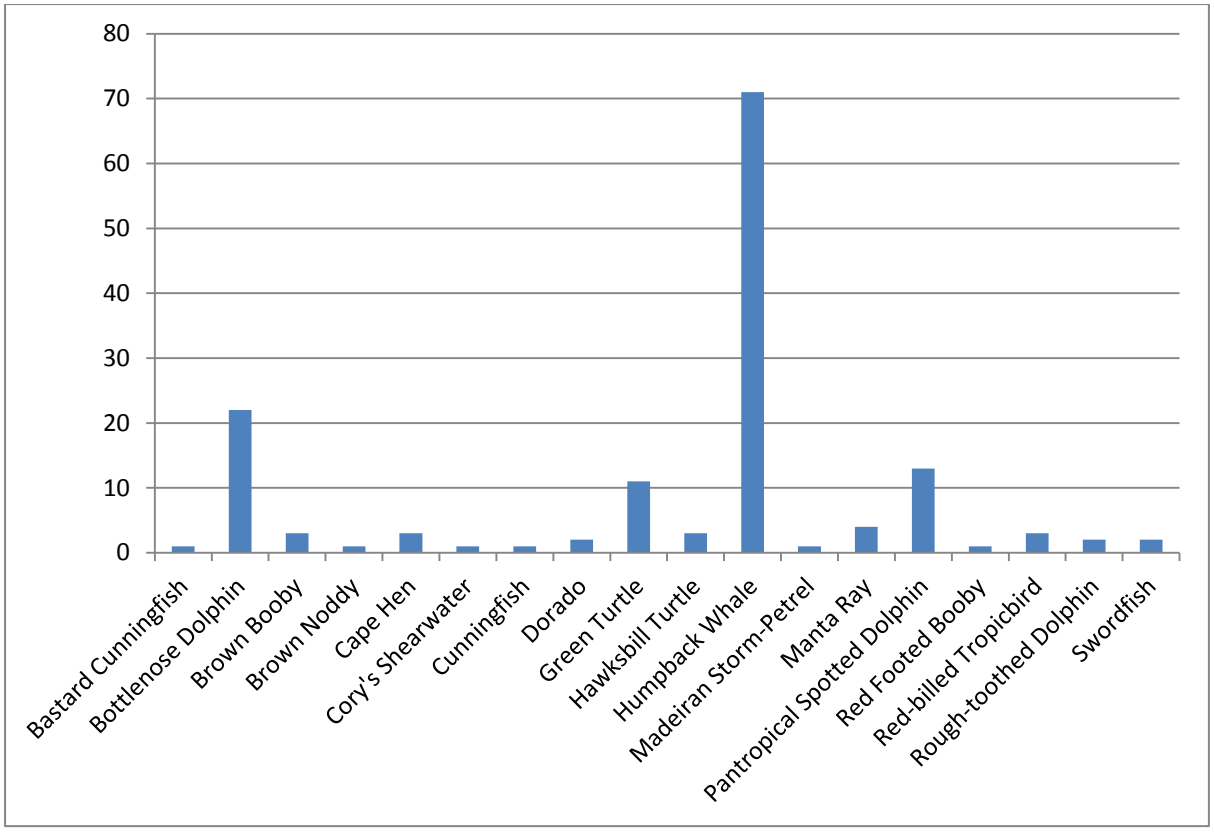

Fig. 3.1.5: Summary showing marine sightings recorded for 2012/13. Source: Marine Team, 2013.

CETACEAN MONITORING

The Marine Team have monitored cetaceans (whales, dolphins and porpoises) on St. Helena since 2003 and have written a comprehensive report outlining the results of these surveys (Clingham, E. *et al.,* 2013)

The monitoring of cetaceans is undertaken using two main types of surveys (land based and boat based) which are conducted twice a month:

Two of the key findings of the report are:

- Confirmation of resident and seasonal cetacean species found around St. Helena (Fig. 3.1.6).

- For pan-tropical spotted dolphins (the species of dolphins that most often seen on dolphin-watching trips) pod or group sizes seen ranged from 5 to 425 individuals at any one time. The most commonly estimated group size ranges from 210 individuals to 290. These numbers have been increasing over the last 9 years. (Figure 3.1.7)

Resident	
Pan Tropical Spotted Dolphins	*Stenella attenuatta*
Bottlenose Dolphins	*Tursiops truncates*
Rough Toothed Dolphins	*Steno bredanensis*
Seasonal	
Humpback Whales	*Megaptera novaeangliae*
Occasional sightings of species positively identified	
Blainville Beaked Whale	*Mesoplodon densirostris*
Sperm Whales	*Physeter macrocepalus*
Pigmy Sperm Whales	*Kogia breviceps*
Dwarf Pigmy Sperm Whale	*Kogia sima*

Fig. 3.1.6 Resident and seasonal cetacean species found around St. Helena. Source: Clingham, E. *et al*., 2013.

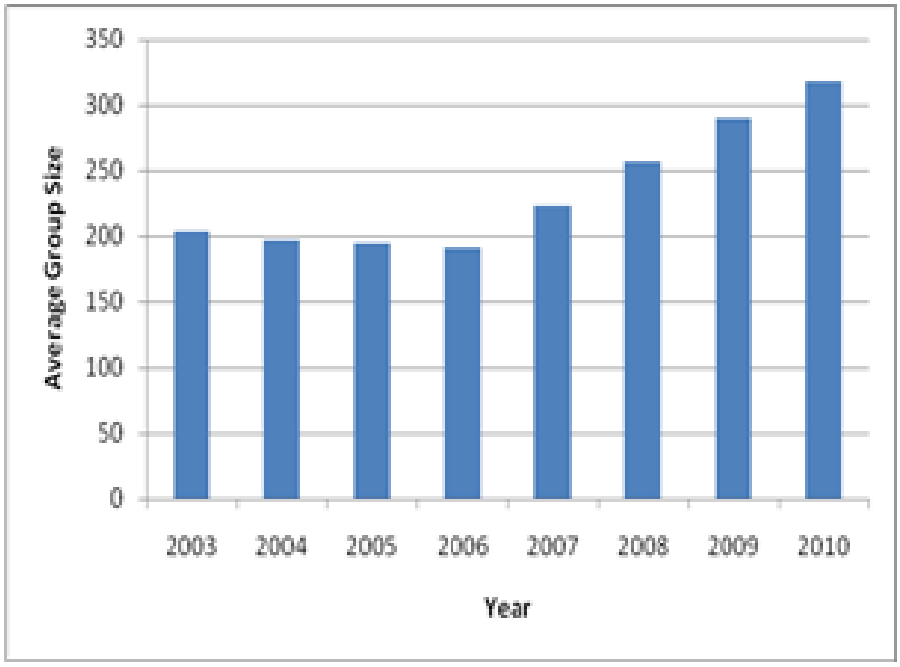

Fig. 3.1.7: Average group size of Pan Tropical Dolphins 2003 -2010 (Boat Surveys)

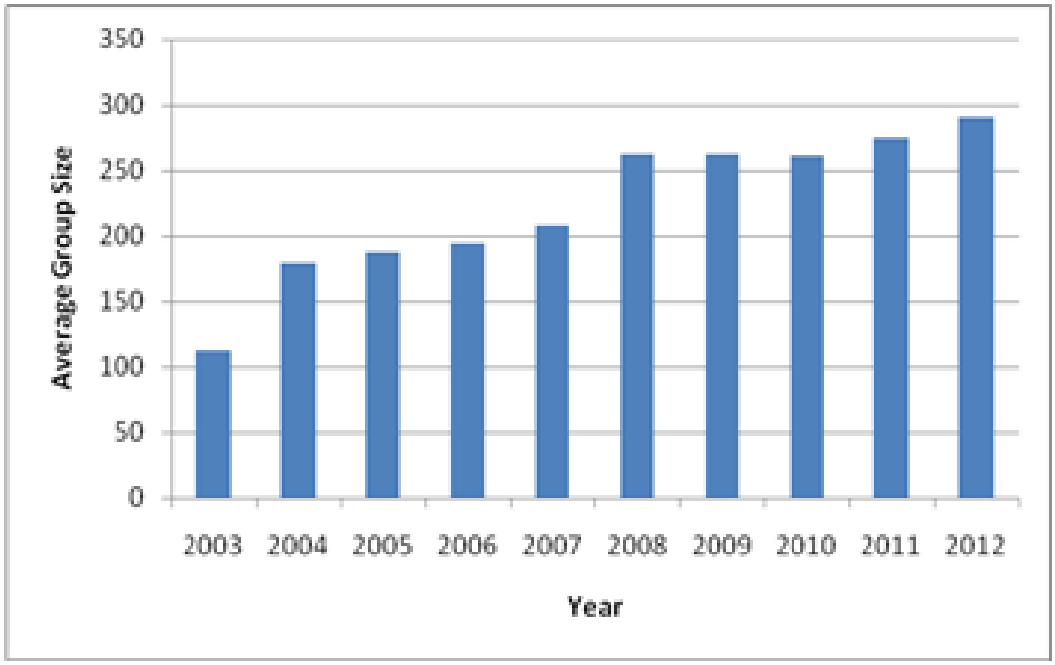

Fig. 3.1.8: Average group size of Pan Tropical Dolphins 2003 - 2012 (Land Surveys). Source: Clingham, E. *et al*., 2013.

MARINE MAPPING

The EMD Marine team has also started on a Marine Biodiversity and Mapping Project funded by the Darwin Initiative. The Project began in late 2012 and will run for 2 years, and will provide a baseline to guide effective evidence-based sustainable management of St. Helena's marine resources.

REFERENCES:

Beard, A., Clingham, E. & Henry, L. (2013). *St Helena Seabird Report 2004-2011. Unpublished manuscript*. Environmental Management Division, St Helena Government.

Henry, L., Clingham, E. & Beard, A. (2013). *Underwater fish survey report 2002-2007. Unpublished manuscript.* Environmental Management Division, St Helena Government.

Clingham, E. Beard, A., & Henry, L. (2013) *Monitoring population size of St. Helena Cetaceans. Unpublished Manuscript.* Environmental Management Division, St. Helena Government.

3.2 TERRESTRIAL

NATIONAL CONSERVATION AREAS

In 2012, the boundaries for 23 National Conservation Areas were delineated in the Land Development Control Plan (LDCP). 14 of these have been delineated for the significance of their natural environment, and 9 for the significance of their built heritage. National Conservation Area Development/Management plans are being developed for these areas. These will provide a framework for habitat management on St. Helena. The first of these, for the Peaks National Park, is due to be completed in 2013.

SPECIES ACTION PLANS

In 2012, the Wirebird (St Helena Plover *Charadrius sanctaehelenae*) species action plan was formalised and published. This plan details the measures required to conserve the Wirebird in the wild.

PROJECTS

There are a number of terrestrial research and restoration projects that were carried out by the conservation partners on the island during 2012/13. These include:

- SHNT: Darwin Initiative Habitat Restoration Project
- ANRD: Bastard Gumwood Recovery Project (Overseas Territories Environment Programme [OTEP] funded)
- SHNT: The Spiky Yellow Woodlouse Project
- Buglife: Darwin Initiative invertebrate project 'to lay the foundations for invertebrate conservation on the island' in partnership with SHNT and EMD.
- EMD: Data Management Project (Joint Nature Conservation Committee [JNCC] funded) to manage conservation data as an evidence-base for future decision making.

Monitoring on most of these projects is in the early stages, and as yet it is too early to reproduce any meaningful data.

ENDEMIC NURSERY

The EMD Endemic Nursery team undertake endemic plant seed collections, host and manage seed banks, and propagate a range of endemic plants. They also undertake habitat restoration at 14 key sites around the island.

The Endemic Nursery captures annual data on the numbers of each species leaving the nursery.

From January to December 2012, 10,901 seedlings left the nursery (V. Thomas, personal communication, May, 16, 2013), a breakdown of which can be seen in Table 3.2.1.

Table 3.2.1. Number of plants that left the Endemic Nursery from January 2012- December 2012. Source: Nursery Officer, 2013.

Species	Number of plants
Bastard Gumwood	30
Boneseed	38
Boxwood	375
Diana's Peak Grass	104
Dogwood	120
Dwarf Jellico	1021
Ebony	1399
False Gumwood	259
Gumwood	1398
Hair Grass	340
He Cabbage	84
Large Bellflower	2
Lobelia	42
Neglected Sedge	2
Old Father Live Forever	502
Plantain	6
Redwood	184
Rosemary	393
Salad Plant	6
Scrubwood	305
She Cabbage	3411
Small Bellflower	487
Tufted Sedge	304
Whitewood	89
Total	**10901**

Plate 3.2.1: False Gumwood © Dr David Higgins, 2013.

ECOLOGICAL RESTORATION

The EMD Terrestrial Conservation Team leads on ecological restoration practices and, through collaboration with SHNT and SNCG members, continually work to improve our understanding of the endangered habitats and its biota. Below is a summary of key achievements affecting advances in our knowledge and techniques over 2012-13:

- New discovery of a single Large Bellflower (LB) brings the mapped localities of this critically endangered species to a total of six
- Seed from the three inaccessible LB of 'The Depot' provenance were collected for the first time and five strong plants were raised through specialist horticultural attention, informing improvement in techniques to be adopted in future recovery programmes for this species
- Bastard Gumwood have temporarily been brought from the brink of extinction: from two lone survivors which gave poor seed set with average germination of 0.001% in 2010 used in a concentrated restoration programme. The first five plants from this

programme have now flowered for the first time. Seed set has improved and an average germination of 1% has been achieved giving a 1000% increase in viability

- Initial investigation of a newly found grass species seems to indicate that it is suitably different from its known relatives to warrant endemic status. This could bring the number of native grasses to three. The species is provisionally named Panicum joshui (Pers. comm. Dr. P. Lambdon. December 2012)
- A species of moth has been recorded as new to science (Arenberger, Beard, Hasenfuss & Karisch. 2012) and named Agdistis marionae. Studies into the moth have shown it to be dependent on the endemic St Helena Tea Plant for its entire life cycle

THE WIREBIRD; ST HELENA PLOVER

Wirebird numbers have been monitored periodically over the past 25 years. Prior to this time estimates of their numbers varied widely. Over the past 25 years attempts to census the entire population (see Fig. 3.2.1) have focussed on the 31 areas the species is known to frequent, which provides a modicum of systematic population assessment.

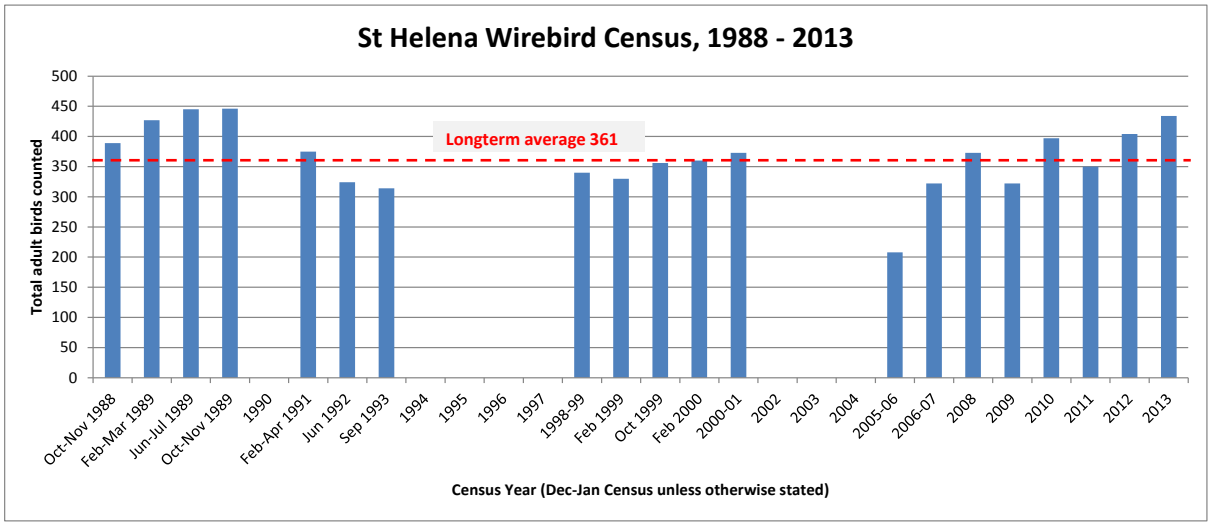

Fig. 3.2.1. St Helena Wirebird Census results 1988-2013. *(no census was conducted in 1990, 1994-1997, 2002-2004.* Source: St Helena National Trust, 2013.

Totals recorded have shown considerable variation which is to be expected with a relatively small bird that is so widespread on the island, and in such varied terrain. However, there has clearly been a period recently when the population numbers have been lower, and at the moment there would seem to be an upward trend to the numbers recorded 25 years ago.

Cat control has been carried out in three larger and important Wirebird areas. Control started in Deadwood Plain in December 2011, at Man and Horse in May 2012 and at Prosperous in July of the same year. To date a total of 90 cats have been removed from these areas. The apparent increase in Wirebirds noted between 2012 and 2013 may have been influenced by cat control, but more detailed analysis is required of the detailed Wirebird nesting success monitoring in order to determine this.

It is known from earlier research that in addition to predation, Wirebird numbers are also affected by habitat quality. Ideal Wirebird habitat comprises low ground cover vegetation of 5-10cms height, with minimal occurrence of shrubs, and on relatively level ground. Short sward pastureland is used, in addition to the arid fringes of the island covered either with bare soil, or patchy low herbs such as *Atriplex semibaccata*. Invasion of any area by shrubby plant species such as “Tungi”, Lantana, “Willows”, “Wild Coffee”, and “Furze” renders them less attractive to Wirebirds.

Additional Wirebird habitat has been made available through managing the spread of shrubby plant species in pastureland, where livestock management also benefits. This is part of the Air Access Mitigation process. Indications are that there has been some increased use of such areas by Wirebirds. On-going monitoring of Wirebird use and of pasture control is required to assess the efficacy of the work carried out.

In parallel with the cat control, and cat and rodent monitoring, records are made of all Wirebird nests encountered. Each is followed through from eggs being laid, to – wherever possible – eventual fledging of the chicks. In the current peak breeding season the indications are that more birds are surviving through to fledging, hopefully boosting population numbers. The next census in December 2013-January 2014 will give a better measure of any such improvements.

Current cat control research and rodent monitoring by the three-person Wirebird Team will continue for another year (to March 2014), after which results will be assessed and funds sought to apply the best methods to ensure the survival of the species, along with other environmental conservation initiatives on the island. The Wirebird is an indicator of the state of the environment in the pasturelands, and arid fringes of the island. As such any permutations in its population should not be ignored.

Plate 3.2.1: Wirebird © David Higgins

Contributed by Dr Chris Hillman, St. Helena National Trust, Manager – Wirebird Conservation Programme.

MYNA BIRDS

For a 12 month period (21 March 2012 – 20 March 2013) the presence of Mynas on the roads of St Helena have been monitored on a regular basis in order to establish a baseline for their presence , numbers and distribution, and that may lead to insights on their spread and possible controls. This work has been carried out by Chris and Sheila Hillman of the St. Helena National Trust.

All Mynas seen on road sections between junctions were counted if seen within a 30m hemisphere based on the road centre, i.e. for up to 30m away from the road on each side and/or above it in flight or in trees. Time of day, weather conditions and numbers were recorded for each road section. The results are in the process of being analysed at present for publication. This includes densities per km of road in the various areas, as well as difference if any over times of day, and months of the year with reference to the weather.

Results are being compared with those obtained in a few areas by Dr Chris Feare some years ago. Early indications are that the areas with the densest populations are in the Longwood area and the landfill site at Horse Pasture, in the Dungeon area, and a third dense zone in the West Lodge-Bluehill-Thompson's Wood locality. It may be that these are based upon the ready availability of food and water for the birds in the landfill area, and of feed beneath cow dung pats and water troughs in cattle pastures in the other two.

The information can be repeated in the future on a periodic basis in order to assess whether numbers of the birds are changing – on the increase as many people think – and whether their nuisance value is worthy of attention to try to eradicate them. This would not be an easy task given the island's topography and dense vegetation**.**

Contributed by Dr Chris Hillman, St. Helena National Trust.

4.0 FISHERIES REPORT FOR 2011

The main commercially exploited resources are Yellowfin, Bigeye, Albacore and Skipjack tunas which are seasonal, and in abundance between February and June each year. Wahoo, Mackerel and various species of groundfish make up the bulk of catch throughout the remainder of the year.

All fish from the local commercial fleet are landed daily and delivered within 12 hours of being caught. Fishing is done by reel-rod / pole and line for the local fishermen. No long lining was carried out during the period. Types of bait used are live, dead and artificial. A maximum of 12 boats fished full-time complementing a crew of 26 persons.

FISHERIES RESEARCH AND STATISTICS

Fish landings into the Fisheries Corporation over the period January 2011 to December 2011 totalled some 898.71 metric tonnes of fish, a record catch for St Helena. Of this amount, 53% of the species consisted of Tuna, 3.5% of Wahoo, 41.3% of Skipjack and the rest consisting of various other non-ICCAT (International Commission for the Conservation of Atlantic Tuna) species consisting of Grouper, Conger, Cavalley, Bullseye, Soldier, Yellowtail, Dorado and Filefish.

Table 4.1 shows the main ICCAT species caught in 2011 over a total of 3974 fishing days:

Table 4.1. ICCAT species caught in 2011. Source: Senior Fisheries Officer, 2013.

Species	**Weight (mt)**
Yellowfin Tuna	163
Albacore Tuna	120
Bigeye Tuna	190
Skipjack Tuna	371
Wahoo	31
Shark	<0.5
Marlin	2

Data of fish catches within the St Helena Exclusive Fishing Zone is submitted to the ICCAT Secretariat on an annual basis.

Contributed by Gerald Benjamin, Senior Fisheries Officer, Agricultural and Natural Resources Division, Environmental and Natural Resources Directorate.

5.0 WASTE:

The only formal method to dispose of domestic waste on the island currently is via the landfill site at Horse Point – but the amount of space in this location is finite. It is estimated that an average of 970.84 tonnes (Environmental Risk Management Section [ERM], 2012-13) of domestic waste was disposed of at the landfill site in 2012/13.

5.1 WASTE WHEEL RESULTS

In October 2012 EMD began monitoring the composition by weight of domestic waste disposed of at the landfill site, with sampling occurring every quarter- the results of this monitoring are used to produce a waste wheel (see pie charts below). It should be noted that at this early stage it is difficult to identify any trends in the data; these will emerge over a longer period of monitoring and as the total number of random samples overall increases. However, the waste wheels shown in Figures 5.1.1 and 5.1.2 give an indication of the type and amount of waste sent to landfill towards the end of the last financial year.

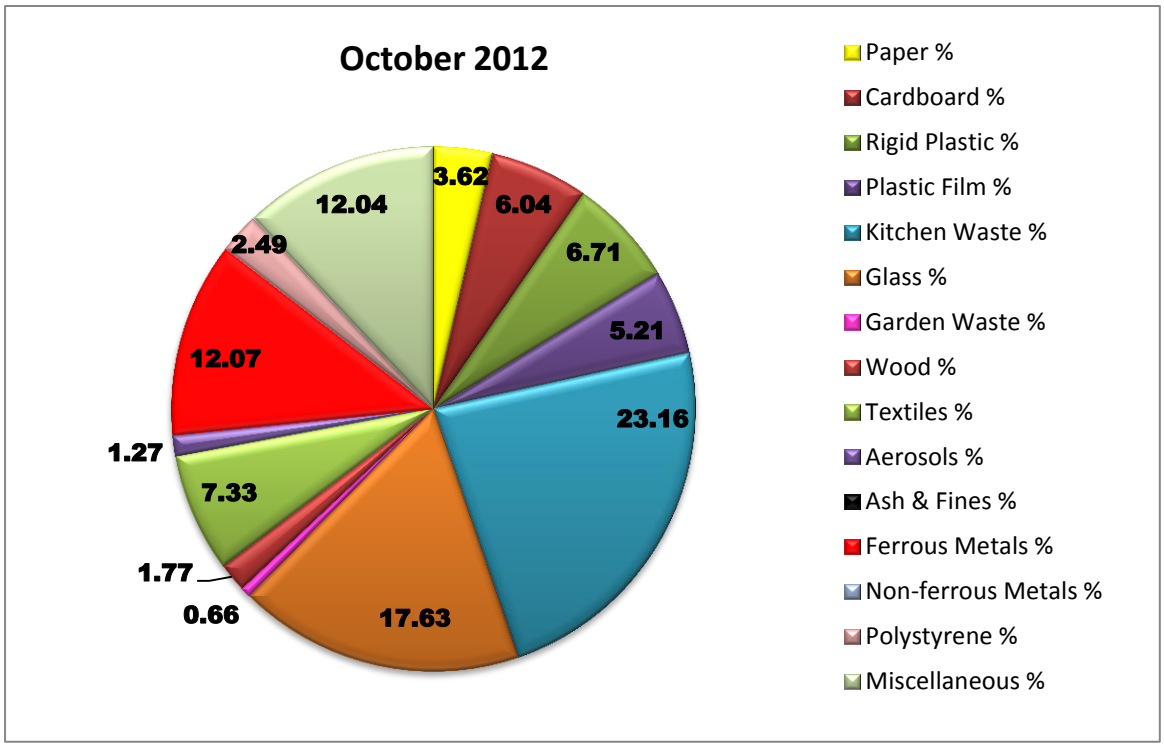

Fig. 5.1.1. October 2012 waste analysis by weight. Source: ERM, 2012.

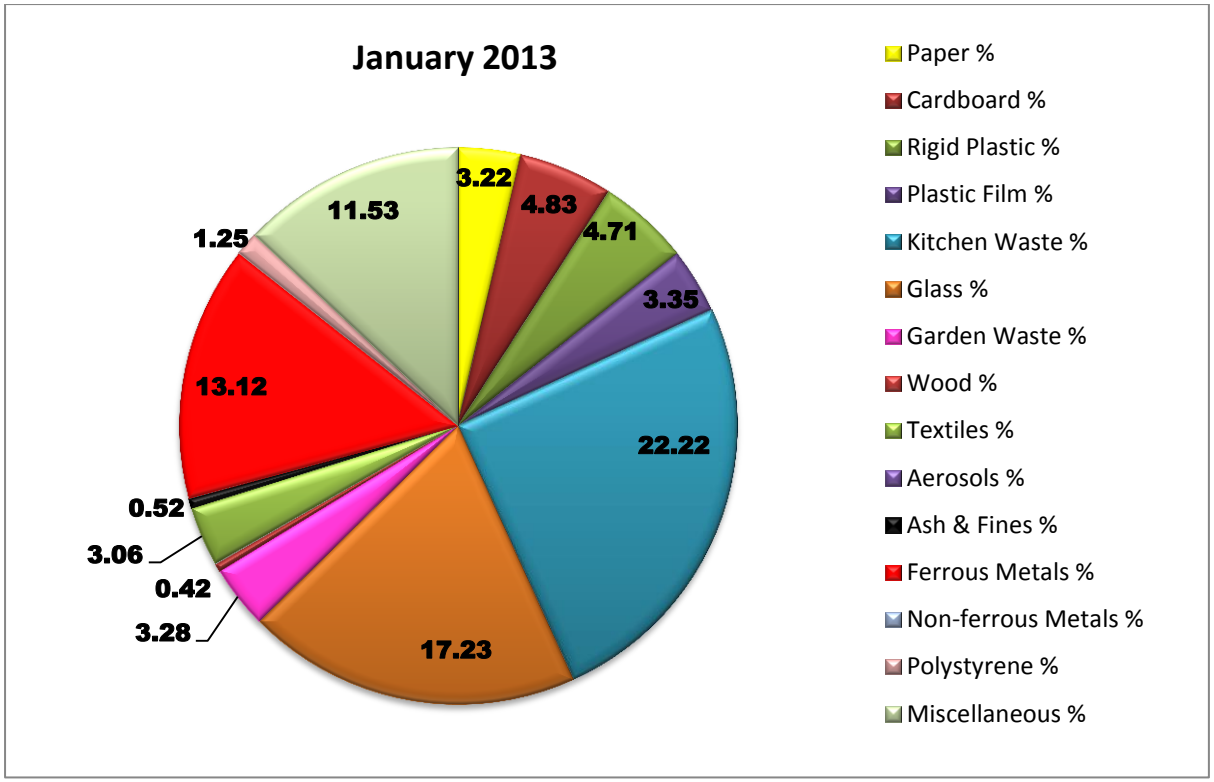

Fig. 5.1.2. January 2013 waste analysis by weight. Source: ERM, 2013.

Figures 5.1.1 and 5.1.2 indicate that kitchen waste is the largest proportion (by weight) of waste being sent to landfill, with glass coming second. Ferrous metals also account for a large proportion of the waste stream, and together paper and cardboard comprise a significant part as well.

It is interesting to observe that these three waste streams representing approximately 53% of the total mass sent to landfill are also the most easily recycled. EMD is currently working with ESH, SHAPE, H&SW and private individuals to get recycling initiates in place during 2013/14.

5.2 NON-DOMESTIC WASTE COLLECTIONS

Domestic waste is not the only type of waste that Horse Point landfill site accepts; the graph below shows the number of collections for the last financial year, of material that is not included within regular collections

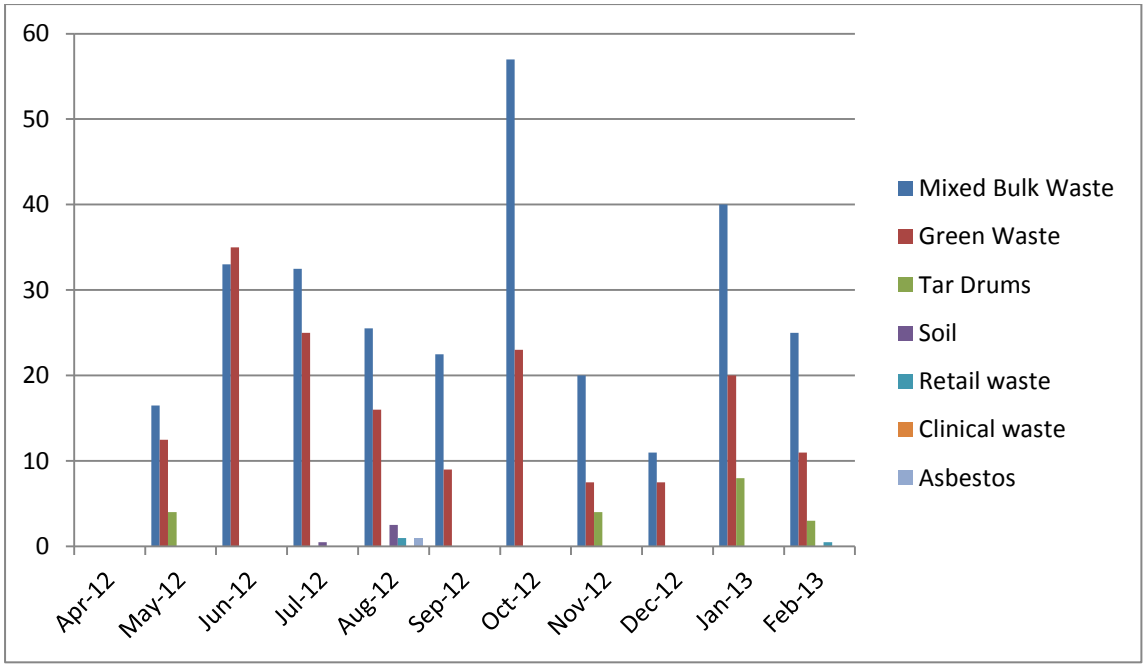

Fig. 5.1.3. Number of loads of non-domestic waste entering landfill*. Source: Environmental Health Section, 2013)

* Note: There are a number of assumptions that are built into the presentation of this data: number of loads is essentially number of vehicle visits, therefore one load may cover a range of vehicle sizes. No data was recorded in March 2013.

5.3 REDUCE, REUSE, RECYCLE.

There are a number of small-scale recycling initiatives on St. Helena, these include people saving their organic waste for animals, saving their jars for jam-makers, re-using egg boxes etc.

St. Helena Active Participation in Enterprise (SHAPE) undertake larger scale recycling and aim to eventually recycle all paper and card on the island. They are currently in the process of expanding their capabilities to work towards this.

5.4 SEWERAGE 2012/13

Connect St Helena Ltd. monitor on a monthly basis how many private septic tanks are emptied, and the number of public and private sewerage blockages that occur. Over the 2012/13 financial year 43 private septic tanks were emptied, there were 44 public sewerage blockages and 16 private sewerage blockages (I&U, 2012-13).

REFERENCES:

Environmental Health Section. (2013). *Waste Stream April 2012 to March 2013. Unpublished data*. St. Helena Government.

Environmental Risk Management Section (ERM). (2012-13). *Waste Wheels October 2012 & January 2013. Unpublished data*. Environmental Management Division, St. Helena Government.

Infrastructure & Utilities Directorate** (I&U). (2012-13). *Output performance: Water Division, monthly reports April 2012- March 2013. Unpublished data*. St. Helena Government.

**From April 2013 the water, drainage and energy utility provision was transferred from the St. Helena Government to a new company called Connect St. Helena Ltd.

6.0 ENERGY

St. Helena relies heavily on the importation of fuel both for production of energy and for use in transportation. In 2012/13 2.9 million litres of diesel (3,049 tonnes) and 860,000 litres of petrol (650 tonnes) were imported to the island (Source: HM Customs, 2013). Of this, 2.2 million litres of diesel were used for energy production (B. Hubbard, personal communication, April, 18, 2013).

6.1 RENEWABLE ENERGY FIGURES 2012/13

The total amount of energy produced over the 2012/13 financial year was 9,666 MWh. Of this, 9.13% was renewable energy, comprising 867MWh of wind energy generated and 15kWh of solar energy generated (B. Hubbard, personal communication, April, 18, 2013). The quantity of wind energy produced resulted in the saving of approximately 200,000 litres of diesel that would otherwise have been used (B. Hubbard, personal communication, April, 18, 2013).

Plate 6.1.1 Wind turbines at Deadwood Plain © EMD, 2013.

REFERENCES:

HM Customs. (2013). *Fuel imports summary 2012-13. Unpublished data*. St. Helena Government.

7.0 ENVIRONMENTAL REGULATION

EMD has implemented an incident reporting system whereby members of the public can report both positive and negative environmental incidents to EMD for action.

12 incidents were reported over the 2012/13 financial year, all of which were pollution incidents. Of the 12, 6 have been resolved satisfactorily, three are still under investigation, for two we have no authority to remove the cause of the complaint and one cannot be resolved because no further information was given.

Table 7.1. A summary of the reported incidents. Source: *Pollution monitoring and clean-up record. Unpublished data.* ERM, 2013

Date	**Incident and Action taken**
October 2012	One incident of fish bags and fish waste dumped at sea.
October / November2012	Four incidents of fly tipping at West Rocks, for two of these the polluter was identified spoken to. In all cases investigation was undertaken and clean up occurred
November 2012	One report of waste at Lady Margaret Field Home which was removed.
November 2012	One report of abandoned cars at Horse Pasture, which we have no authority at present to remove.
November 2012	Two incidents of rubbish dumped, one on government land of which advice is being sought on how to proceed; and 1 on private land for which we have no authority to remove.
November 2012	One report of contaminated water entering a water supply at Ruperts, no further information was supplied from the complainant and thus the incident could not be investigated further after initial visit
January 2013	One report of tar balls at Sandy Bay beach for which a clean-up was organised and took place
January 2013	One report of an offensive odour in the Arch area which was found to be due to an old sewage pipe.

Plate 7.1 Waste dumped at West rocks © Mike Durnford, 2012.

8.0 NATIONAL ENVIRONMENTAL MANAGEMENT PLAN (NEMP)

PERFORMANCE AGAINST NEMP TARGETS

The National Environmental Management Plan was launched in 2012 and provides the blueprint for environmental management on St. Helena for the next 10 years. The targets set for year 1 were ambitious in the context of key delivery being through a newly created division of SHG. Approximately 60% of the targets were delivered on time (see Annex 1 for a detailed outline of delivery against targets), with 2 additional targets being delivered ahead of schedule. Key highlights are outlined below.

ENVIRONMENTAL LEGISLATION

New Environmental Legislation began being drafted in 2012/13. Existing ordinances for environmental protection on St. Helena were found to be out-dated, not robust enough or are simply non-existent for certain areas. There are elements of environmental protection clauses spread across over 20 Ordinances, but no general guiding legislation to cover protection of arguably the island's most precious resource. Terms of Reference (ToRs) for researching and drafting environmental legislation were written in 2011 but subsequently received submissions proved too expensive. The Environmental Risk Management Trainer/Advisor Technical Co-operation (TC) post was created in 2012 to carry out the research and early drafting of this work, the post was filled and work began in September 2012.

A set of outline clauses has been created from research, existing legislation elsewhere and from known deficiencies in St. Helena Ordinances. These clauses were selected following internal discussions and a technical workshop involving staff from the Police, Environmental Health, the Attorney General's office, ANRD, SHNT, I&U(as it was then) as well as SHG, and EMD. A draft set of clauses was presented to the Natural Resources Development & Environment Committee (NRDEC) on 11th November 2012, along with a brief set of notes on the clauses.

Since then ToRs to recruit the Legal Draughtsperson have been drafted, consulted on and agreed with the Attorney General's office, Human Resources and the Department for International Development (DfiD). The advert closed on 20th February 2013, and four of the seven applicants were interviewed. The preferred applicant was offered the contract and is currently employed on this work.

EMD are continuously consulting within SHG and wider environmental stakeholders through workshops to further develop the draft clauses and detailed content required/desired. This includes the schedules of protected species and detailed discussions on the National Conservation Areas, Biosecurity and other cross-departmental clauses.

The consultant will then work to set out a legally correct draft with the help of staff at the Attorney General's office, and continual dialogue with EMD, other organisations and reference to the outputs from the workshops.

This outline draft will be then sent for comment across SHG and the wider stakeholders before comments are incorporated and a final draft is presented to SHG. EMD will then begin the process for the formal legal public consultation of the Ordinance and approval through NRDEC, Executive Council and Legislative Council.

ENVIRONMENTAL POLICY

A suite of environmental policies are being developed.

- The National Environmental Management Plan was officially launched in 2012 following a period of public consultation and with significant input from a wide range of stakeholders.
- The Solid Waste Management Strategy was developed and became an official SHG strategy in 2012.
- The Peaks National Conservation Area Management Plan; the Plant Collection, Propagation and Distribution policy; the Research policy; and the Climate Change policy went through a range of consultation periods during 2012/13 and it is planned that these will be formalised early in 2013/14.

ENVIRONMENTAL ASSESSMENT

The EMD Environmental Assessment and Advocacy (EAA) Section provide the environment lead on Environmental Impact Assessments (EIA) which is an integral part of the work of EMD. The EIA process is clearly established as part of the planning process. An Environmental Assessment Framework covering other components of assessment, including strategic environmental assessments, is being developed and will be formalised in 2013/14.

THE AIRPORT PROJECT

EMD's EAA Section also leads on EMD's input into the airport project.

THE SOLID WASTE MANAGEMENT PROJECT

The EMD Risk Management Team oversee the implementation of one of the island's capital projects – the Solid Waste Management Project. This Project is focussed on upgrading the current landfill to ensure minimized bird-strike risk, and enhancing the existing waste collection. Preliminary resourcing arrangements were made in 2012/13 and the project is due to be completed in 2013/14.

STAKEHOLDER ENGAGEMENT AND COMMUNICATIONS.

MARINE AWARENESS WEEK

The EMD Marine Team held a very successful Marine Awareness Week from Saturday 22nd February 2013 to Friday 1st March 2013, based in the Consulate Hotel Ballroom. The aim was to promote awareness of St. Helena's unique marine environment, with the theme being "All things great and small". Pupils from all the schools attended participatory sessions at the Consulate Hotel, including informative displays, a touch and feel marine tank, a video of marine life and craft activities.

Throughout the week there were also boat trips and clean ups of the run in Jamestown and Sandy Bay Beach. Marine Awareness Week also saw the launch of Pilling Primary School's 'Marine Awareness' book, a book of marine stories written and illustrated by pupils of the school.

NURSERY OPEN DAY

The EMD Endemic Nursery team held a successful open day on 6th April 2013 – this is an annual event and was very well attended. There were lots of educational activities, opportunities for planting endemic species, and a miniature St. Helena airport terminal was also on display, complete with endemic landscaping.

NEWSLETTERS

Quarterly and monthly newsletters have been established and are published online. These keep wider stakeholders up to date on what is being done by EMD to deliver the NEMP.

Plate 8.1 Peaks NCA Youth Planning workshop ©Shayla Ellick, 2013.

9.0 STAFFING AND TRAINING.

A survey in October 2012 revealed that there are 162 people on the island across all sectors whose job has an environmental function; of these 119 were employed by the government and the remaining 43 were employed by the private sector (EAA, 2012).

EMD currently employs 29 staff. EMD is committed to staff development and training and the majority of staff have undertaken a range of training courses over the year covering areas such as data management, fire safety, scuba diving and project management, in addition to commencing academic courses such as A Levels and Higher National Diplomas (HNDs).

REFERENCES:

Environmental Advocacy & Assessment Section (EAA). (2012). *Report on the number of people working in the environment and environment related fields on St Helena as at October 2012. Unpublished manuscript*. Environmental Management Division, St Helena Government.

ANNEX 1: DELIVERY OF NEMP TARGETS 2012/2013

Target no.	Target	End of year report May 2013	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
7	**Links to social development**										
7.1	Green guidelines for homes created and implemented by March 2015	Not due									
7.2	Footpaths maintained at least once a year	ESH issued SHNT with footpath maintenance contract									
7.3	Francis Plain sports field regularly maintained	Regular maintenance scheme in place									
7.4	Green spaces in districts maintained at least once a year	Fed into the development of Half-Tree Hollow CDA masterplan development									
7.5	Areas for off-road biking and driving and mountain biking formailsed by 2016	Not due									
7.6	Healthy living public awareness campaign run annually	No update									
7.7	10 year agricultural production plan produced and implemented by 2013	Agricultural policy developed.									

7.8	2 new green spaces in Half Tree Hollow	see 7.4									
7.9	Included in the development brief of the Comprehensive Development Area	see 7.4									
7.1	Community garden - fresh food grown for the community by the Community	not yet due									
8	**Links to economic growth goal.**										
8.1	Environmental review of the tourism strategy incorporated into an updated tourism strategy by March 2013	Review done but not incorporated.									
8.2	Green Guidelines and best practice for large and small businesses produced by March 2013	Green guidelines drafted but not yet formally approved									
8.3	Green rating/certification system for businesses created and implemented by 2016	not yet due									
8.4	Green guidelines for procurement created and implemented by March 2015	not yet due									
8.5	Greening your business training programmes held every six months	will be initiatied after 8.2 formalised									
9	**People**										
9.1	Create a communications and stakeholder engagement strategy by March 2013	completed									
9.2	Implement communications and stakeholder engagement strategy 2013-2022	ongoing - implemented through 2012/13									
10	**Mainstreaming environment**										
10.1	Environmental mainstreaming policy framework adopted by SHG by April 2013	Behind schedule									
10.2	Environmental decision-making framework adopted by SHG by April 2013	Behind schedule									

10.3	Environmental mainstreaming policy framework adopted by ESH, private sector and civil society by December 2014	not yet due									
10.4	Environmental decision-making framework adopted by ESH, Private Sector and Civil Society by December 2014	not yet due									
11	**Legislation**										
11.1	Environmental legislation enacted and legislative framework adopted by SHG by December 2013	Preparatory work for environment law completed									
12	**Airport**										
12.1	coordinate SHG environmental responsibilities under the airport project	Ongoing									
13	**Environmental risk and disaster management**										
13.1	Mainstream risk assessment of natural hazards by December 2014	not yet due									
14	**Climate change**										
14.1	climate change policy created by December 2014	not yet due									
14.2	Develop data set and collet data relevant to climat change research. Work with the UK Meterological Office and other international organisations to strengthen climate change predictions for St. Helena by March 2014	not yet due									
14.3	Energy generation strategy implemented	not yet due									
14.4	Environmental review of the island transport plan developed in 2012	not implemented									
15	**Land and Land Use**										
15.1	Continue to implement the requirements of the land development control plan for all planning applications	ongoing - implemented as required									

15.2	Develop National Conservation Area Management Plans: Diana's Peak National Park by July 2012, Sandy Bay National Park by December 2012, Broadbottom Important Wirebird Area and Deadwood Plain Important Wirebird Area by December 2013. All NCA Natural Heritage management plans developed by 2016	behind schedule									
15.3	Implement prioritised species action plans for IUCN critically endangered species by 2015 and create new ones where required	not yet due									
15.4	Crown estates strategy to include provision for making best use of existing land and buildings	dd									
15.5	An environmental review of draft agricultural policy is undertaken	EMD inputted into agricultural policy development									
15.6	Create the solid waste management strategy and implement accompanying plan by December 2013	not yet due									
15.7	Implement priorty areas of the invasive speices strategy and develop biosecurity strategy by 2013	not yet due									
15.8	Review road policy to provide a framework for the management of the roads environment by 2015	not yet due									
15.9	Baseline data collection will be commissioned as required. Requirements for policies relating to footpaths, public rights of way, cultural heritage, archaeology and carrying capacity explored by December 2013	not yet due									
15.1	Carrying capacity study commissioned by 2012	behind schedule									
16	**Sea and coastal zone**										
16.1	Environmental review of the Commercial fishing policy by December 2012	behind schedule									
16.2	Create and implement a marine management plan by March 2015	not yet due									

16.3	Baseline data collection will be commissioned as required. Requirements for policies relating to marine archeology, marine pollution and carrying capacity explored by December 2013	not yet due									
16.4	Marine and coastal species action plans developed. At least 3 SAPs developed by 2015 for critically endangered species	not yet due									
17	**Water**										
17.1	water management best practice developed and implementation begins by 2016	not yet due									
17.2	Develop and implement a sewage policy by 2016	not yet due									
17.3	Research freshwater ecology by 2016	not yet due									
17.4	Create freshwater ecology management plan by 2017 to include habitat restoration	not yet due									
18	**Air and sky**										
18.1	Atmospheric pollution policy created and implemented by 2014	not yet due									
18.2	Noise Pollution policy created and implemented by 2014	not yet due									
18.3	Light Pollution policy created and implemented by 2014	not yet due									
19.1	**Financing**										
19.11	Funding sources for environmental projects sign-posted on SHG website by December 2013	not yet due									
19.12	Green financing mechanism established by March 2014	not yet due									
19.2	**Human Resources**										
19.21	Environmental Training programme developed by March 2015	completed ahead of schedule									
19.22	External expertise channel formailsed by March 2014	completed ahead of schedule									
19.3	**Evidence Base**										

19.31	National Environmental Data management system created and implemented by March 2013	partially complete									
19.32	Research projects commissioned and or undertaken by core staff	ongoing - research projects initiated									
20	**Assessment and monitoring**										
20.1	Environmental assessment and monitoring framework created and implemented by March 2013	behind schedule									
20.2	Environmental standards established by March 2014	not yet due									
21	**Environmental Scruitny Board**										
21.1	Environmental Scrutiney Board established with TORs and members by March 2013	behind schedule									
21.2	Review of the NEMP	not yet due									