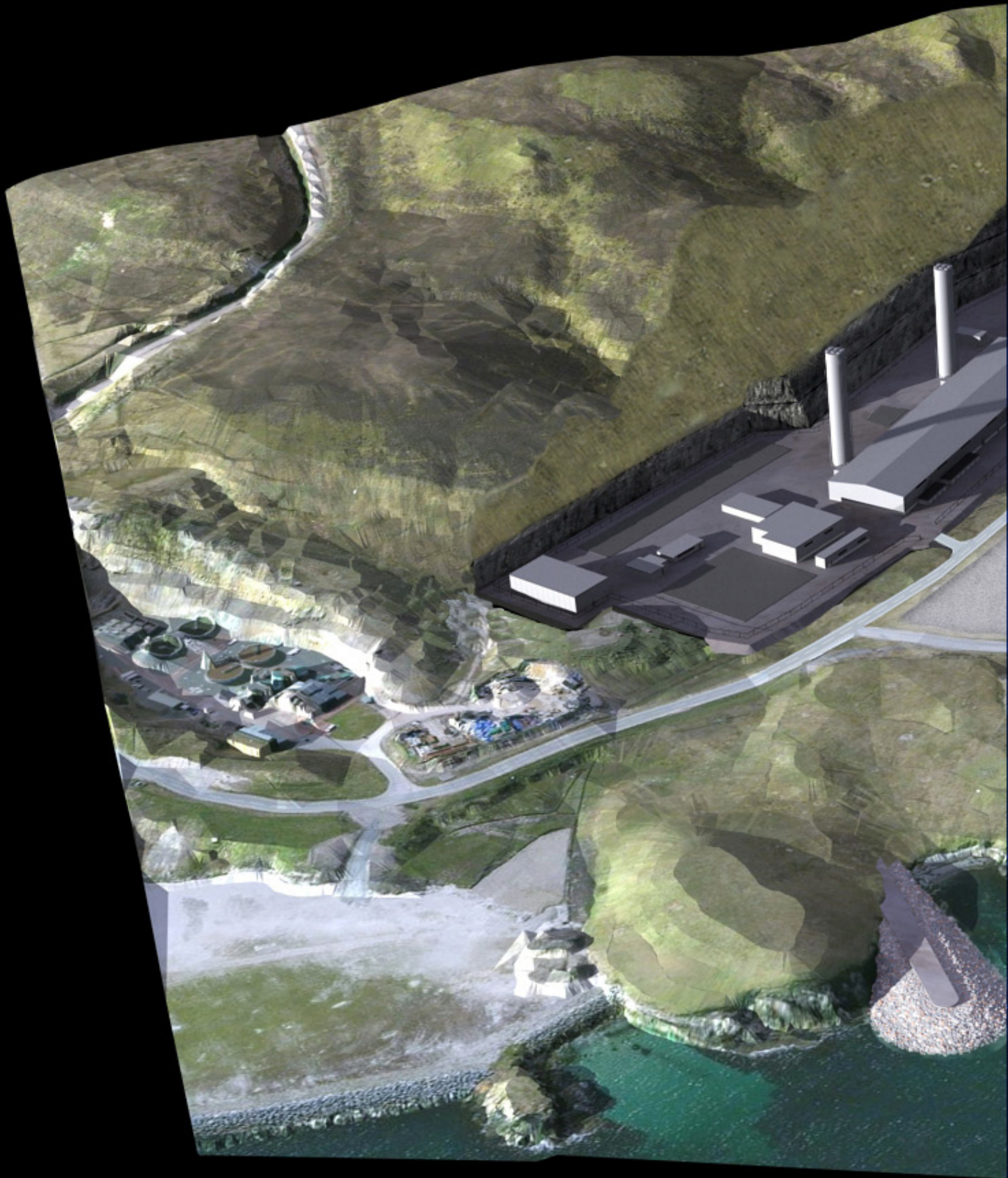


Replacement Lerwick Power Station

Consent Applications and Environmental Impact Assessment

September 2013

Non-Technical Summary



CONTENTS

SECTION	PAGE
1. INTRODUCTION	1
1.1 The Development	1
1.2 The Applicant – SSE Generation Limited	1
1.3 The Purpose of this Document	1
1.4 Structure of the ES	2
2. THE CONSENTS PROCESS	3
2.1 Consents Required	3
2.2 Contact Information	3
3. CONSULTATIONS	4
3.1 Overview	4
3.2 Public Consultation	4
4. PROJECT DESCRIPTION	5
4.1 The Proposed Development	5
4.2 Options Assessed	5
4.3 Option 1: Direct seawater cooling	5
4.4 Option 2: Air cooling	5
4.5 Description of the Development Site	5
5. PROJECT NEED	6
5.1 Current Power Generation and Electricity Demand	6
5.2 Plant output capacity and fuel choice	6
5.3 Combined Heat and Power	7
6. ALTERNATIVES ANALYSIS	7
6.1 No Development – The 'do nothing' alternative	7
6.2 Alternative Sites	7
6.3 Power Station design	8
7. CONSTRUCTION PROGRAMME	8
8. PLANNING POLICY CONTEXT	9
9. THE ENVIRONMENTAL IMPACT ASSESSMENT	10
9.1 Overview	10
9.2 Air Quality	10
9.3 Ecology	11
9.4 Cultural Heritage and Archaeology	11
9.5 Water Resources	12
9.6 Ground Conditions	14
9.7 Coastal Processes	15
9.8 Landscape and Visual	16
9.9 Traffic and Access	17
9.10 Noise and Vibration	18
9.11 Socio-Economics	18
9.12 Waste	19
9.13 Other Issues	20
9.14 Residual Effects and Conclusions	21
10. LIST OF ABBREVIATIONS	22

1. INTRODUCTION

1.1 The Development

SSE Generation Ltd (hereafter referred to as 'the Applicant') is seeking consent under Section 36 of the Electricity Act 1989, and deemed planning permission under Section 57 of the Town and Country Planning (Scotland) Act 1997, for the development of a new build Power Station of up to a nominal 120 Megawatts electricity generation capacity (MWe) at Rova Head, near Lerwick, Shetland (hereafter referred to as 'the Proposed Development').

The existing Lerwick Power Station is due to close around 2017 at which time a new solution for meeting electricity demand in the Shetland Islands will be required. In the fifth electricity distribution price control review (DPCR5), The Office of Gas and Electricity Markets (Ofgem) required the Applicant to present an Integrated Plan to manage supply and demand on Shetland. As part of this plan, the Applicant proposed the "Northern Isles New Energy Solutions" (NINES) project. This explored a range of solutions including replacement of the existing power station and other measures to smooth out the demand profile of Shetland. This application is for the proposed replacement power station.

1.2 The Applicant – SSE Generation Limited

The Applicant is wholly owned by SSE plc., one of the largest energy utility companies in the UK with over 9 million energy customers. The Applicant operates 12 Gigawatts (GW) of electricity generation, including 2.5 GW of renewable generation amongst other assets. SSE plc's other interests include electrical transmission and distribution, gas networks and storage, water supply and other energy related activities.

1.3 The Purpose of this Document

This document is the Non-Technical Summary (NTS) of the Environmental Statement (ES), which has been prepared to accompany the application for consent to construct and operate an electricity generating station under Section 36 of the Electricity Act 1989 (the 'Application') and deemed planning permission under Section 57 of the Town and Country Planning (Scotland) Act 1997. This NTS presents a summary of the findings of the ES.

The Application is made to the Scottish Government Energy Consents Unit (ECU). This ES provides details of the Environmental Impact Assessment (EIA) which was undertaken for the Proposed Development in line with the requirements of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000 as amended (referred to in this NTS as 'the EIA Regulations') and the Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended and referred to subsequently as MWR).

An initial scoping study of the potential environmental effects of the Proposed Development resulted in the submission of a Scoping Report to the Scottish Government in May 2012. During the scoping study, both statutory and non-statutory consultees were consulted to help define the scope of the investigations required to produce a comprehensive ES.

Subsequently, the ECU provided a formal Scoping Opinion on the Proposed Development in August 2012, which noted the issues that should be addressed further in the EIA process. The undertaking of the ES assessments followed receipt of the Scoping Opinion and were informed by it, and the results of this process are presented in the ES and accompanying appendices. A second, smaller scoping exercise was performed following revisions to of the design. The feedback from this exercise has also been incorporated into the ES.



The ES is considered to present a robust assessment of the Proposed Development's likely effect on the environment during construction activities and future operation.

The potential environmental, social and economic impacts of the Proposed Development on local, regional and national scales have been considered, taking into account beneficial and adverse; short-term and long-term; and temporary and permanent impacts. Where it is considered that changes need to be made to eliminate or reduce adverse impacts, these have been included in the project design and the remaining or 'residual' impacts are then presented in the ES.

In order to provide a consistent approach to the way that residual impacts have been assessed, they have been categorised as 'negligible/neutral', 'minor', 'moderate' or 'major' and either 'adverse' or 'beneficial'. In this ES moderate or major adverse residual impacts are generally considered to be significant.

Potential cumulative impacts of this Application in addition to applications for other nearby developments have also been assessed to make sure that any combined impacts do not lead to significant effects.

Developments that have been considered within the cumulative impact assessments of the ES have been identified in consultation with Shetland Islands Council.

1.4 Structure of the ES

The ES consists of three volumes:

- **ES Volume 1: Main Text**
- **ES Volume 2: Figures; and**
- **ES Volume 3: Technical Appendices**

ES volume 1 forms the main body of the ES and details the results of environmental assessments, the impacts and effects that may arise and proposed mitigation measures. The ES is divided into a number of background and technical chapters, supported by tabular information, as follows:

Chapter 1: Introduction;
Chapter 2: Assessment Methodology and Significance Criteria;
Chapter 3: Assessment of Alternatives;
Chapter 4: The Proposed Development;
Chapter 5: Construction Programme;
Chapter 6: Planning Policy Context;
Chapter 7: Air Quality;
Chapter 8: Ecology;
Chapter 9: Cultural Heritage and Archaeology
Chapter 10: Water Resources;
Chapter 11: Ground Conditions;
Chapter 12: Coastal Processes
Chapter 13: Landscape and Visual;
Chapter 14: Traffic and Access
Chapter 15: Noise and Vibration
Chapter 16: Socio-Economics;
Chapter 17: Waste;
Chapter 18: Other Issues
Chapter 19: Residual Impacts and Conclusions; and
Chapter 20: Glossary of Terms.

Volume 2 contains the Figures (maps and images that support the assessments contained in Volume 1 whilst Volume 3 contains the technical appendices supporting both the assessments and the application as a whole.

2. THE CONSENTS PROCESS

2.1 Consents Required

The Proposed Development requires consent under Section 36 of the Electricity Act 1989. This states that generating stations of greater than 50 MW electrical output shall not be constructed, extended or operated without permission from Scottish Ministers.

Consent under Section 36 of the Electricity Act 1989 would enable the Proposed Development to secure planning permission directly from Scottish Ministers, although Shetland Islands Council will make representation as a statutory consultee to the application. Should the Proposed Development be granted a Section 36 consent by Scottish Ministers, they may also make a Direction granting deemed planning permission under Section 57 of the Town and Country Planning (Scotland) Act 1997.

The Proposed Development includes some seaward works that will include construction below Mean High Water Springs (MHWS) (specifically the reclamation of a small amount of the Bight of Vatsland and the creation of a berm in the Sound of Bressay). In accordance with advice from Marine Scotland, it is considered that these works would require a Licence under Section 20(1) of the Marine (Scotland) Act 2010 (Ref. 1-5). Accordingly a Marine Licence is being sought along with this Section 36 Application.

2.2 Contact Information

This ES is available for viewing by the public during normal office hours at the Planning Department of Shetland Islands Council or at Shetland Library. Comments on the application should be forwarded to the Energy Consents Unit of the Scottish Government or the Planning Department of Shetland Islands Council at the addresses below:

**Scottish Government
Energy Division
Directorate for Energy and Climate Change
4th Floor, 5 Atlantic Quay
150 Broomielaw,
Glasgow
G2 8LU**

**Shetland Islands Council
Office Headquarters
8 North Ness Business Park,
Lerwick
Shetland
ZE1 0LZ**

Comments specifically in relation to the marine aspects of this ES can also be made to Marine Scotland at the address below:

**Marine Scotland
Licensing Operations Team
PO Box 101
375 Victoria Road
Aberdeen
AB11 9DB**

In addition, SSE has published the ES on their website: www.sse.com/Lerwick

This Non-Technical Summary is available free of charge. All other documents are available for a fee from SSE using the contact details below. Copies of the full Environmental Statement can be purchased as a hard copy for £150. All documents are also available (as PDF for screen viewing) on CD for £10.

**Gavin Steel
SSE Plc
Inveralmond House,
200 Dunkeld Road
Perth, PH1 3AQ, UK**

3. CONSULTATIONS

3.1 Overview

In undertaking the EIA, the Applicant has carried out a programme of on-going consultation with a variety of stakeholders, which is recognised to be critical to the development of a balanced ES.

Furthermore, as required by the EIA Regulations and MWR, views of statutory and non-statutory consultees serve to focus the studies and identify those issues that may require further investigation. Consultation also enables mitigation measures to be introduced during the project design process. The Proposed Development has been designed in consultation with the local community, community councils, Scottish Government, Shetland Islands Council, the Scottish Environment Protection Agency (SEPA), Scottish Natural Heritage (SNH), and Marine Scotland among others.

3.2 Public Consultation

Two public information events have been held at Shetland Museum and Archives in May 2012, and June 2013 to introduce the Proposed Development and to present the initial findings of the EIA. These events also provided an opportunity for local people to comment on the Proposed Development at an early stage in the design evolution process and to discuss any concerns or issues which could be fed back into the EIA and associated design processes.



4. PROJECT DESCRIPTION

4.1 The Proposed Development

The key elements of the Proposed Development are summarised below:

- A new power station with a maximum nominal installed electricity generating capacity of 120MWe including engines, boilers, turbines, generators and transformers, located in purpose built steel-framed structures, as well as offices and welfare facilities and utilities;
- New stacks for releases to air from the power station (up to two of a maximum height of 73 metres (m) Above Ordnance Datum (AOD) or approximately 61 m Above Ground Level (AGL);
- Light Fuel Oil (LFO) storage of up to approximately 17,000 tonnes in above ground bulk tanks, for use as fuel within the power station;
- Battery compound housing a 1MW battery and associated equipment;
- An external yard for storage of equipment associated with the operation and maintenance of electricity infrastructure on Shetland; and
- Associated ancillary structures dependant on the option selected.

4.2 Options Assessed

The Proposed Development will be designed to offer maximum flexibility in terms of operational profile. It will be able to fire on either LFO or natural gas (should a suitable supply become available) and will be able to operate in a full duty mode running 24 hours a day to meet the electricity demand in Shetland. The Proposed Development will also be able to operate in a back-up mode running only when other forms of electricity supply are not available.

The power station element of the Proposed Development will require cooling in order to operate efficiently. This will be achieved in one of two ways presented below as Option 1 and Option 2. As the preferred option has currently not yet been selected, both options are presented in the ES and have been assessed as part of the EIA process. The final selection of cooling technology will be informed by an appraisal of which technology represents Best Available Techniques (BAT) for the installation, based on its mode of operation. This appraisal will be prepared and agreed in consultation with SEPA.

4.2.1 Option 1: Direct seawater cooling

Option 1 involves the abstraction of seawater from the Sound of Bressay to directly cool the engines prior to discharge of the seawater back to the Sound of Bressay. To avoid recirculation of warmer discharged water straight back into the power station, a new structure in the form of a berm projecting out from the shore into the Sound of Bressay would be constructed.

4.2.2 Option 2: Air cooling

Under Option 2 cooling would be achieved by forced draft heat exchangers (air cooled condensers) using ambient air. This option requires no seaward structures or pipelines for abstraction or discharge of seawater.



4.3 Description of the Development Site

The Development Site consists of two main parcels of land separated by the Gremista to Dales Voe road (which runs approximately in a southeast to north-westerly direction in the vicinity of the Site), together with, if required for Option 1, a strip of land extending east to the Sound of Bressay.

The village of Gremista lies approximately 1.5 kilometres (km) south of the Site. The Site lies within the administrative area of Shetland Islands Council.

As part of the Proposed Development, it is proposed that the road in the vicinity of the site be realigned northwards by an average of 20-30 m towards the inlet known as the Bight of Vatsland.

The parcel of land to the south and west of the realigned road will be the main power station location, siting most of the infrastructure associated with the Proposed Development. This parcel of land is located within an area dominated by rough open moorland which is currently used for rough grazing. This parcel of land will also occupy the original route of the Gremista to Dales Voe road. It will be necessary to make a cut into the hillside on this parcel of land to provide a working platform for construction of the power station.

In order to provide sufficient laydown area to allow construction works for the power station and to facilitate the realignment of the road, it is proposed the head of the Bight of Vatsland be infilled with suitable material extracted from the main power station site.

This infilled area together with an area of land located between the Bight of Vatsland and the road to the former landfill at Rova Head make up the second parcel of land. This parcel of land is bounded to the east by the road to Rova Head landfill site, to the north and northwest by rough, open moorland and to the southwest by the realigned Gremista to Dales Voe road.

Should it be required, a third area of land associated with the Site is a strip running west to east from the eastern most point of the main power station parcel of land to the Sound of Bressay. This parcel of land would be used for cooling water infrastructure under Option 1 only.

The location of the Development Site is illustrated in Figure NTS 1 with the layout of the two options shown in Figure NTS.

5. PROJECT NEED

5.1 Current Power Generation and Electricity Demand

Currently the Shetland Islands have no connection to the UK National Grid. This means that electricity supply to domestic and commercial properties is met predominantly by the existing power station.

Consideration is being given by Ofgem to the construction of a single interconnector to the mainland that would allow the Shetland Islands to be connected to the UK National Grid for the first time.

Should this interconnector be built, this will have capability to meet the entire demand of Shetland; however, a back-up electricity supply will still be needed on the islands in the event of planned or unplanned maintenance of this link and a shortfall in generation from renewable sources.

The Proposed Development is therefore intended to act as the principal electricity generator for the Shetland Islands in the case of no connection to the UK National Grid being in place or as a back-up generator in the case of an interconnector being constructed. In either case the electrical output of the Proposed Development must be sufficient to meet the electricity demand of the Shetland Islands.

5.2 Plant Output Capacity and Fuel Choice

The Proposed Development is a power station with a maximum electrical capacity of 120MWe, which is in contrast with the existing power station capacity of 67MWe. This increase in electrical output capacity is to allow the Proposed Development to meet the entire demand of Shetland and to allow for increase in future electricity demand on the Islands through expansion of housing, industry or commerce. In particular, the larger capacity would facilitate the provision of electricity to the Sullom Voe Terminal (SVT) which currently generates its own electricity.

The Proposed Development would be capable of utilising either LFO or natural gas delivered to the site by underground pipelines. The fuel supply pipelines are the subject of separate consent applications and do not form part of the Proposed Development.

5.3 Combined Heat and Power

Combined Heat and Power (CHP) opportunities have been identified and are reported in the CHP Feasibility Study which is submitted along with the ES.

The design includes heat recovery boilers that will recover waste heat from the flue gases and will feed Steam Turbines to generate additional electricity. Heat recovery from the jacket water of the reciprocating engines is also included in the design, which is expected to provide useful heat to the existing Lerwick District Heating (DH) Scheme via a heat exchanger. This is anticipated to displace oil consumption in the existing Lerwick DH scheme back-up oil boilers. At present, the available heat load is identified as circa 2-4 Megawatts thermal (MWth) within the existing Lerwick DH scheme. Within the first five year period of operation of the replacement power station, subject to a more detailed assessment, a heat connection to the existing Lerwick DH scheme is considered feasible.

6. ALTERNATIVES ANALYSIS

A number of alternatives to the Proposed Development have been assessed. These include:

1. The 'No Development' alternative;
2. Alternative Sites; and
3. Alternative Designs for the power plant including alternative configurations within the Development Site.

6.1 No Development – The 'do nothing' Alternative

The 'do nothing' alternative refers to the option of allowing the current situation to persist indefinitely without the provision of a replacement power station.

This would still involve the closure of the existing power station but without the provision of a new thermal power station on the Islands. This would lead to a shortfall in electricity supply in the Shetland Islands, unless an interconnector was constructed to meet the closure timescales.

The earliest realistic date for the operation of any such interconnector is estimated to be 2018 subject to the approval of all relevant consents. This will be after the closure date of the existing power station.

Even if an interconnector was supplied within the closure timescales, Shetland would be without sufficient back up in the event of planned or unplanned maintenance of this link.

There is therefore considered to be an over-riding need for the Development and the 'do nothing' option has not been considered further.

6.2 Alternative Sites

In determining a suitable site for the Proposed Development, the Applicant identified the following key considerations:

- Physical infrastructure and land availability;
- Access to fuel supply; and
- Environmental Sensitivity.

The key considerations in terms of physical infrastructure and fuel supply are the connection to the existing electricity distribution network in Shetland and the ability to obtain a fuel supply. The distribution network in Shetland is radial from an 11kV/33kV substation at the site of the existing power station.

The location of the existing station near Lerwick is important as the majority of electricity demand in Shetland (with the exception of SVT) is in the Lerwick area. Siting a replacement power station in the Lerwick area would therefore reduce the need for additional electricity transmission or distribution infrastructure.

Proximity to a suitable fuel source was also considered. The only source of natural gas on Shetland is from SVT in the north of the Shetland mainland, whilst all liquid fuels need to be imported to the island. However, given the uncertainty in relation to the need and availability of a natural gas supply, this proximity consideration is secondary to the proximity to the existing distribution infrastructure and demand. These two factors led to a short list of two locations; one in the vicinity of Lerwick and one in the vicinity of SVT.

Consideration was given to other sites in the vicinity of Lerwick. The location of the existing power station was considered inappropriate due to the fact that the existing station will be required to be operational during the construction period. The existing power station site is also now embedded within the community of Lerwick that has developed around it since it was first constructed, and the development of a new power station in the same location may result in unacceptable potential air, noise and visual impacts on residential and commercial receptors. No other site in the vicinity of Lerwick town is considered suitable.

6.3 Power Station Design

The design of the power station depends primarily on the selection of the combustion technology and provision of power station cooling.

Selection of combustion technology is dependent on the anticipated demand profile. In the case of Shetland, being a small isolated system, demand is extremely variable; therefore responsiveness is a key requirement. Reciprocating engines were selected as being able to provide the responsiveness required to cope with the variations in demand, both seasonally and during the day. The principal alternative to reciprocating engines are gas turbines, however, these are less responsive and do not perform efficiently under low loads.

The Proposed Development is therefore modular with the footprint of the plant sufficient to house up to fifteen of these engines with sufficient space to allow for steam turbines to utilize some of the waste heat from the engines, liquid fuel storage, emissions abatement systems and discharge of emissions to air.

The area of platform needed for the power station was determined by an initial conceptual design completed by a third party commissioned by the Applicant. This design was based on the existing road route with the platform produced by cutting into the hill side to a level allowing vehicle access to the site from the road.

Following consultation and the completion of ground investigation works, an alternate site configuration was considered whereby the existing road is realigned to move it towards the Bight of Vatsland. This has the result of impinging on the remaining area available for construction laydown. In order to maintain a suitable space for laydown, the head of the Bight of Vatsland is therefore proposed to be infilled to create new land using suitable material extracted from the power station site. This has the benefit of greatly reducing the volume of material to be removed off site by road and any associated environmental impacts.

7. CONSTRUCTION PROGRAMME

Construction will consist of the following principal operations:

- Construction of compounds, car parking and laydown areas;
- Formation of new access for construction vehicles;
- Removal of overburden;
- Extraction of rock to below platform level;
- Infill of part of the Bight of Vatsland for the purpose of creating laydown space for construction;
- Formation of recirculation prevention berm in the Sound of Bressay (Option 1 only);
- Realignment of the Gremista to Dales Voe Road;
- Formation of platform for the construction of building structures;
- Installation of building structures;
- Installation of cooling water abstraction and discharge pipework (Option 1 only);
- Installation of major plant;
- Cladding and fitting out of buildings;
- Commissioning of generation plant; and
- General landscaping and site completion.



The construction activities will involve the removal of rock to allow the formation of a multi-level platform at between 10 m and 12 m AOD. On this platform, all the buildings and other structures associated with the Proposed Development will be constructed.

The Applicant is proposing a construction phase lasting around thirty-two months beginning with the granting of consent.

New access will be required onto the Gremista to Dales Voe road which divides the main power station site and the proposed laydown areas. The laydown area will require a new separate access to allow the transport of materials to and from the main power station site. The power station site will require two access points to allow access and egress of construction vehicles in a one way system.

The infill of the Bight of Vatsland will be formed by constructing an armoured reclamation bund at the maximum extent of the infill and backfilling with the crushed rock from the extraction area. The berm would be provided with primary and secondary armour. The infilled area will be profiled to a level that will allow access for heavy plant and equipment and to allow easy movement of vehicles between the power station and the laydown area including the formation of new temporary access if required.

Some of the overburden is likely to be unsuitable for reuse without further treatment. This will therefore be removed by a suitable licensed contractor and reused, recovered or disposed of in accordance with the relevant legislation. This material is estimated to consist of the following types and quantities:

- Peat: 119,000 cubic metres (m3) based on Option 1 as a worst case scenario; and
- Made Ground and road planings: 35,000m3.

Approximately one year into the construction programme, the major plant will be transported to the site and installed. This plant will include generating engines and transformers and will be transported to the area by sea and offloaded at a deep water port either at Dales Voe or Greenhead base before being transported to site by road.

8. PLANNING POLICY CONTEXT

The Proposed Development has been assessed against the relevant national, strategic and local planning policies. All of the prevailing planning policies identify the need for baseload power stations to maintain the stability of electricity supply.

Generally it is a requirement of the planning system to ensure that decisions are made in accordance with the development plan, unless material considerations indicate otherwise. In this case the relevant development plan policy context is set out in the Shetland Structure Plan and Shetland Local Plan.

Although the development plan has no statutory status under the Electricity Act 1989, the Applicant has nevertheless sought to ensure compliance where appropriate.

The Structure Plan recognises that the decision on Shetlands electricity supply arrangements rests with Scottish Hydro Electric (SHE, known now as Scottish Hydro Electric Power Distribution or SHEPD), a separate subsidiary of SSE plc. In essence the principle for the development will be established through an assessment of the key environmental policies set out within the Structure and Local Plans, hence the need and aim of this ES. The key policies are set out within the coastal management, natural and built environment and industry chapters of the Structure and Local Plans, and have been considered in detail in the Technical Chapters of the ES.

The Lerwick Community Statement (contained within the Shetland Local Plan) specifically notes the Proposed Development as an option being pursued by Scottish and Southern Energy plc and notes the potential of generating sufficient waste heat to support the Lerwick District Heating System. The options for exporting this waste heat are explored in the Combined Heat and Power Feasibility Study accompanying the ES.

The Proposed Shetland Local Development Plan (SLDP) 2012 is currently subject to public consultation and, when adopted, will supersede Shetland Structure Plan and Shetland Local Plan. The proposed SLDP identifies the Site as the potential site for a power station whilst also identifying that all the relevant policies set out within the SLDP must be met.

9. THE ENVIRONMENTAL IMPACT ASSESSMENT

9.1 Overview

The Proposed Development has been the subject of an EIA in full accordance with the requirements of the EIA Regulations and MWR.

The EIA was undertaken to determine the potential extent of any likely significant environmental effects, which are either beneficial or adverse, with regard to the Proposed Development. In addition, and in accordance with the EIA Regulations, any measures which are envisaged to avoid, reduce and, if possible, remedy any significant adverse impacts of the Proposed Development were also identified.

9.2 Air Quality

The potential emissions from each project phase have been determined or estimated, and current local ambient air quality, and key local receptors established and identified. Where possible, the potential ground level concentrations resulting from the projected emissions have been predicted using atmospheric dispersion modelling techniques.

A review of local air quality within the area by the Shetland Islands Council resulted in no Air Quality Management Areas being designated under the National Air Quality Strategy.

There are a number of potential air quality impacts associated with the Proposed Development, specifically through:

- Emissions generated from construction plant on site;
- Dust generation during the construction phase;
- Emissions from road traffic attributed to the construction and operational phases of the Development; and
- Emissions from the operational phase of the Proposed Development.

Following a review of Ordnance Survey maps and discussions with Shetland Islands Council, a number of sensitive receptors have been identified within the vicinity of the Proposed Development.

It is anticipated that construction plant and dust will cause a neutral effect to identified sensitive receptors.

The traffic increases experienced as a result of the construction phases of the Proposed Development are considered to be largely insignificant in air quality terms.

The Proposed Development will be capable of dual-fuel firing, by both LFO and natural gas. Due to advances in technology and tightening of emission legislation, significantly lower emission concentrations of nitrogen oxides (NO_x), sulphur dioxide and particulates will be released compared to the existing heavy fuel oil fired Lerwick Power Station.

Given the predicted reductions in emissions from the Proposed Development when compared with the existing Power Station, and the relocation of the power station further from residential receptors, a significant improvement in the overall air quality in the region is anticipated.

In particular, the proposed emission limit for NO_x is less than a quarter of the current authorised emission limit for the current Lerwick Power Station, with particulates limits almost halving from the existing power station.

Compared to the existing power station emissions, the maximum off-site short term predicted environmental concentration is considerably less from the Proposed Development.

The Proposed Development will also lead to beneficial impacts in relation to climate change reduction. Emissions of carbon dioxide (CO₂) from the Proposed Development will be less than those of the existing power station. This would be reduced further if a connection to the Lerwick district heating system can be made.

It is not anticipated that there will be any cumulative impacts from the construction phase given the relative localised impacts of construction site emissions.

9.3 Ecology

The principal nature conservation interests in the vicinity of the Development Site are blanket bog, otters, seals, breeding and wintering birds, and the marine ecosystem.

There is one statutory designated site within 2 km of the site. This is Easter Rova Head SSSI, located about 250m north-east of the closest parts of the Proposed Development. The interest is geological, covering coastal exposures of Devonian conglomerate rocks near the radar station.

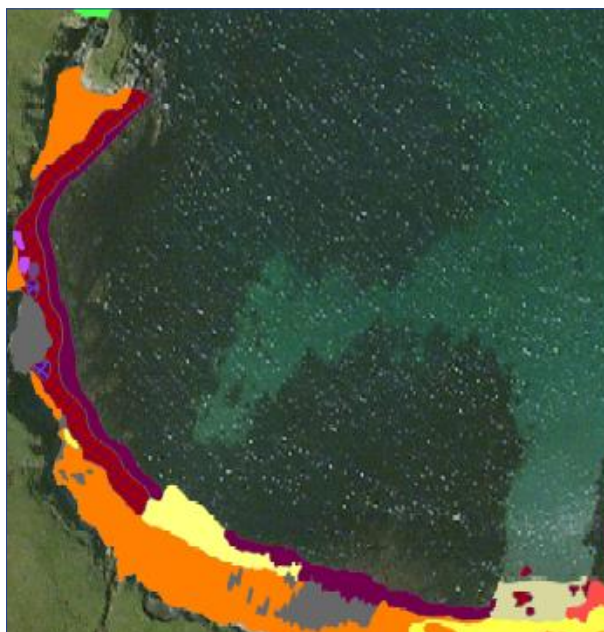
Observations have previously indicated the presence of three breeding pairs of red-throated diver within 2 km of the Development Site, including one pair approximately 450 m from the Development Site boundary.

Whilst evidence of otters was found along the coast, only one holt was found in close proximity to the Proposed Development, and significant impacts on otters are not anticipated. This is also the case for seals, for which no significant haul-out sites are known nearby.

Minimal impacts are expected on blanket bog because of small direct loss (the largest direct loss attributable to species-poor grassland and heath).

Most of the breeding bird species in the study area are common. Possible impacts on rarer species are avoidable by appropriately timing major disturbances such as rock blasting. Where possible, appropriate timing of works will also be considered to minimise possible impacts on wintering birds such as eider, long-tailed duck and great northern diver. These species which occur near the Development Site but also further afield at Dales Voe, Kebister Ness and many other locations around Shetland.

Possible effects on the marine ecosystem from the discharge of warm water associated with seawater cooling as part of Option 1) and biocide discharges (again option 1 only, see Section 9.5 water Resources for more detail) were found likely, although they would be highly localised and of minor impact at most.



9.4 Cultural Heritage and Archaeology

An assessment has been undertaken on the effect of the Proposed Development on the historic environment and cultural heritage assets.

The historic environment includes ancient monuments, archaeological sites and landscape, historic buildings, townscapes, parks, gardens, designed landscapes and other features. Heritage assets include those that are designated under legislation as well as those that are undesignated.

Cultural Heritage is generally and most easily divided into three key areas comprising:

- Archaeology;
- Historic buildings; and
- Historic landscape.

A total of 99 sites were identified from the search of the Shetland Scheduled Monument Record (SMR) and the National Monuments Record of Scotland within 5km of the Site or within the Zone of Theoretical Visibility (ZTV).

The construction of the Proposed Development will add the power station, including two 73m grey coloured chimney stacks, into the long distance views from the following scheduled heritage assets:

- Hill of Cruester Standing Stone;
- Hawks Ness, Broch at Corbie Geo;
- Score Hill WWI Gun Emplacement; and
- Ander Hill WWI Lookout Tower.

No mitigation is proposed for any of these monuments. The residual effect on these heritage assets is assessed as Minor Adverse.

There is a possible field clearance cairn at Rova Head that will be completely removed during construction. Prior to commencement of the construction, this will be investigated by trial trenching. Should significant archaeological remains be identified, these will be mitigated by suitable detailed archaeological excavation. Following implementation of this mitigation measure the residual effect on this heritage asset is assessed as moderate adverse.

The assessment identified a potential enclosure on the northernmost spur of the Hill of Gremista. The enclosure measures 85m (east-west) by 90m (north-south). It will not be physically affected by the Proposed Development but suitable slope protection measures will be incorporated within the design to ensure that the site is not destabilised by the terracing cut to the north.

The Proposed Development will have a medium adverse effect on the setting of enclosure due to the removal of the hillside to the north, the construction and operation of the power station and the effect on its setting and relationship to the coast and seascape. No mitigation or screening is proposed. The residual effect on this heritage asset is assessed as minor adverse.

For all other identified heritage assets (archaeological remains (terrestrial and marine), historic buildings and historic landscapes), conservation areas and historic landscapes the residual effect has been assessed as 'no change' and therefore the residual effect is assessed as neutral.

Although the Proposed Development extends the industrial development northwards along the coast and adds two new tall structures to the baseline, this, in combination with the new wind farms at Gremista Hill and Hoo Fields (if consented), is assessed as a minor cumulative adverse effect on heritage assets.

9.5 Water Resources

The Site is bounded to the east by the Sound of Bressay and to the north by the Bight of Vatsland. The Sound of Bressay is currently classified as a coastal water body of 'Moderate' status. The Bight of Vatsland is classified as a coastal water body of 'Good' status.

Fresh surface water features within 1 km of the site are not big enough to attract a classification. There is one unnamed watercourse within the Site draining to the Sound of Bressay and two unnamed watercourses which lie approximately 85m south of the Site and drain a small region of the southern end of the Site. These flow from the eastern slopes of the Hill of Gremista to the east around the recycling centre and discharge into the Sound of Bressay.

The Site is underlain by the Shetland Groundwater Body, which is classified within the Scotland River Basin Management Plan as having an overall status of 'Good'; this classification considers both groundwater quantity and quality. One abstraction licence has been identified within 1km of the Site and there are no recorded private water supplies within 1km of the Site.

Groundwater strikes have been recorded within the peat deposits suggesting that a perched groundwater table is present within the peat. This was further confirmed by the presence of surface water and water logged soils within the low lying areas of the site.



Significant groundwater occurrence is likely to be associated with the colluvium channel associated with the thrust line running through the centre of the Site; this is referred to as an intermediate aquifer. The permeable and productive nature of the colluviums channel is confirmed by site observations that the wettest area of the Site is at the base of the in-filled thrust line, suggesting the colluvium is acting as a drainage channel from the top of the hill in the west to the flatter low lying areas in the east.

The Proposed Development requires a large cut into the eastern flank of the Hill of Gremista. This cut will cause permanent changes to the surface and groundwater environment in the vicinity of the Site and could potentially result in a drawdown of the groundwater in the intermediate aquifer due to large quantities of soil and peat, superficial deposits and rock being removed from the Site.

The Proposed Development will affect a significant portion of the catchment of the unnamed watercourse running through the southeast part of the Site. A portion of the catchment area of the watercourse will be levelled resulting in the upper catchment area (above the cut) potentially being cut off from the lower reaches of the watercourse. The removal of catchment area could result in a reduction of 'natural' catchment flows to the watercourse.

However an increase in runoff rate is likely to occur with the change in landform and land use through the exposure of low permeability rock where currently soil and the superficial aquifer are likely to act as storage for a significant proportion of rainfall. This will be managed through incorporation of standard good practice SUDS principles into drainage design, and will seek to attenuate any increases in peak flows to pre-development levels and maintain flows in the down-stream reach of the unnamed watercourse. Due to the fact that the existing watercourse running through the Site is already altered at its downstream reach as a result of land reclamation works, the magnitude of the potential effects associated with increased runoff rate are considered to be small, resulting in a negligible effect.

The creation of a large cut on the east side of the Hill of Gremista could cause potentially changes in the groundwater levels in the superficial and intermediate aquifers in the vicinity of the Site. The superficial aquifer (peat and isolated pockets of glacial till) will be removed completely in the parts of the site requiring significant levelling. Any impacts on water levels in the superficial aquifer will be very local to the levelled area and will not result in effects on sensitive receptors such as Groundwater dependent terrestrial ecosystems (GWDTes) beyond the Site boundary.

The magnitude of the impacts from an altered shallow groundwater flow regime are considered to be medium, resulting in a non-significant minor adverse effect localised to the Site. Therefore, no further mitigation measures are proposed.

The control measures for earthworks will generally comprise infiltration and cut off trenches, silt fences etc., formed at suitable locations to intercept and attenuate surface water runoff from the works and avoid sedimentation of watercourses and increased turbidity in coastal water bodies during the construction phase. The Site will also make use of purpose built settlement ponds to contain and control runoff.

To minimise the potential for introduction of fine particles into coastal waters during construction of the infill bund, material used for creation of the bund will be graded and fine particles removed where possible.

Good practice measures in relation to pollution control, sediment management and runoff rates and volumes will be adhered to during the construction, operation and decommissioning phases of the Proposed Development. The measures presented are in accordance with established best practice, including SEPA's Pollution Prevention Guidance and Controlled Activities Regulations. The good practice measures will be incorporated as part of the design and construction planning associated with the Proposed Development, and as such, this impact assessment assumes these measures will be in place.

A site Construction and Environmental Management Plan (CEMP) will be in place during the construction phase of the Proposed Development incorporating site and project specific good practice and environmental management measures and procedures. The plan contains sections addressing Pollution Prevention, Water Management, Construction Management and Monitoring to protect surface water, and ground waters.

The potential operational effects associated with the discharge of the heated water as part of the cooling system (Option 1 only) have been assessed through the development of thermal plume model. The model showed that the thermal plume discharged from the cooling water outfall would be rapidly mixed with the ambient receiving waters.

Specifically, the modelled cooling water/receiving water mixture achieves the specific target temperature of 2°C above ambient within a distance of 17 m from the discharge point. This discharge would potentially meet the criteria for initial dilution of the effluent, as specified in SEPA's guidance. Based on this, the effect of the discharge of heated water into the Sound of Bressay is considered to be negligible.

The effects of the discharge of biocide (sodium hypochlorite) dosing (required as part of the cooling system for Option 1) have been assessed through the development of an initial dilution model. The results of this model show that, the cooling water discharge would typically meet the required Environmental Quality Standard within 100m of the release point.

This effect has been assessed as having a significance of negligible to minor adverse.

None of the other potentially cumulative developments identified are considered to have any significant impact on hydrology, hydrogeology and coastal waters in the vicinity of the Development Site. Where minor effects have been identified, these are generally considered to be local to the site and not expected to cause any effects when considered in the context of the wider area.

9.6 Ground Conditions

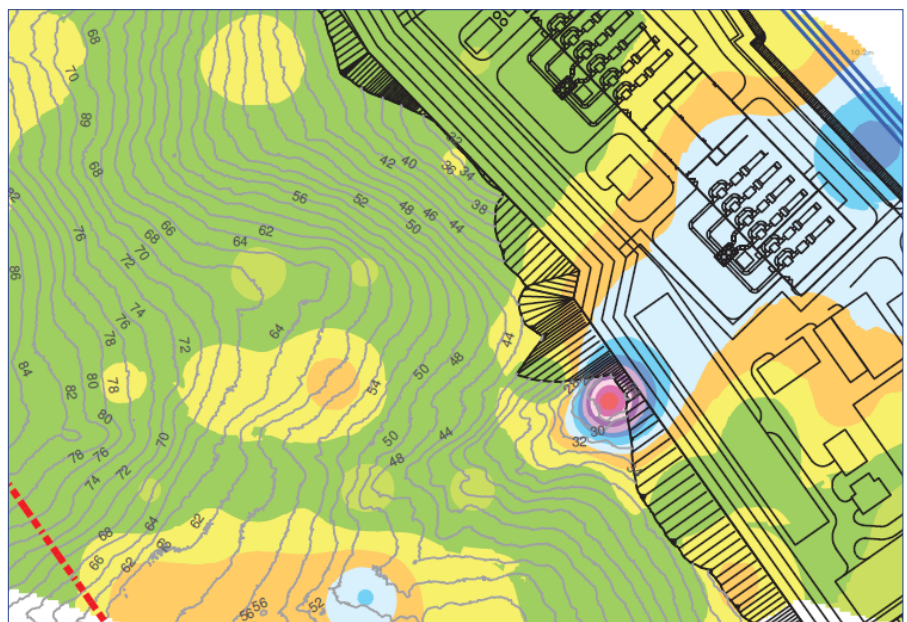
The superficial deposits beneath the Development site predominantly comprise peat and peaty topsoil, ranging from 0.45m to 5.80m below ground level (BGL) with localised areas along the coastline where the superficial deposits are recorded to be absent and several isolated rock outcrops are recorded instead.

The underlying bedrock is characterised by two distinct lithologies, divided by a south-west to north-east trending normal fault. To the north-west of the fault the bedrock is hard dark grey pelite with conglomerate to the southeast. The conglomerate is described as a red brown sandy gravel matrix with clasts of sandstone, granite and schist; and is very susceptible to weathering when exposed.

The thrust line has created a weakness within the rock that over the years has eroded and colluvium and peat have accumulated within the eroded thrust line. The colluvium soils are described as a loose to medium dense grey silty sand or peaty sandy gravel with occasional zones of silty clay.

There is potential for instability within the peat deposits across the Development Site with evidence of localised peat failures noted on site during a site walkover. This issue has been assessed as part of a Peat Stability Risk Assessment (included as an Appendix to the ES), which indicates that there is a risk of peat slips occurring around the top edges of the cut rock slopes, which may require mitigation.

The site is largely greenfield; however, there are potential sources of contamination from surrounding land uses. An intrusive ground investigation identified an isolated area of made ground in the south of the site but no visual or olfactory evidence of contamination was noted. Elevated concentrations of methane and carbon dioxide (ground gas) were noted isolated within this made ground. No other parts of the Site recorded any elevated gas concentrations.



Unexploded ordnance has previously been identified within close proximity of the Development Site; however no unexploded ordnance were encountered during the ground investigation works.

The removal and/or disturbance of significant quantities of soil (including peat and colluvium) and bedrock during the construction of the Proposed Development is considered to be a major impact. However, the soil (peat overlying colluvium) within the Development Site is of moderate sensitivity, whilst the bedrock is of low sensitivity and therefore the significance of this effect is considered to be minor to moderate.

The rock cuttings can create potential for stability issues associated with the rock faces. This is considered to be of moderate significance and may require mitigation in the form of engineering solutions.

The ground gas concentrations and the flow rates recorded suggest that the made ground may present a moderate risk to the built environment (underground structures and services) and human health. Given the sensitivity of the receptors (moderate/high), the significance of this effect is considered to be moderate. Mitigation measures include removal of this made ground to remove the hazard, thus reducing the effect to negligible.

Due to the nature of the geology and soils underlying the Development Site, no cumulative effects are envisaged.

9.7 Coastal Processes

The Proposed Development includes infill of part of the head of the Bight of Vatsland. However, this is unlikely to have a significant impact on coastal erosion rates and navigation given that the Bight of Vatsland is sheltered and afforded considerable protection from waves and tidal flows by the headland to the east. The embayment at this location is predominantly shallow (typically 0 to -5 m AOD) and is gently sloping; however it has a steeper rocky shoreline to the north and east of the bay itself.

Construction of a revetment in the form of rock armouring will be required as part of the reclamation of the Bight of Vatsland. Although no major effects are expected based on existing conditions within the embayment, it is possible that minor scouring could occur at the toe of this part of the structure.

The installation of a cooling water recirculation prevention berm as part of Option 1 could potentially result in the following impacts:

- Deflection of tidal currents (affecting navigation);
- Reduction in littoral sediment transport (affecting beach stability);
- Locally increased wave energy due to reflection from the seaward face; and
- Locally reduce wave energy due to sheltering in the lee of the structure.

Tidal and wave models have been produced based on available data to allow a quantitative element to the assessment.

Near field tidal flows are slightly influenced by the berm. This is considered to be a very minimal change and due to the berm's limited extension out of this embayment, the impact on far field flows is not detectable in the modelling and will not cause any adverse effects on shipping and navigation in the main channel, and therefore the significance of the effect is regarded as negligible in terms of navigation.

The wave climate in the vicinity of the Site is generally benign with larger waves only occurring from a north easterly direction. Depending on the design slope of the berm, and the material used, the reflection of wave energy from the structure is anticipated to be generally low. The waves reaching the shoreline are not predicted to be significantly altered by the Proposed Development, except for local focussing and sheltering effects.

Therefore, the significance in terms of shoreline erosion effects is predicted to be negligible.

The berm itself (if required) is likely to have a minor effect potentially reducing the suspension of sediments at the site due to tidal flows.

Implementation of the berm will not increase the wave energy or change the incident wave angle significantly from that of the baseline and therefore will cause no significant effect in terms of littoral transport.

The beaches of the embayment's (both locations) are comprised of pebbles and cobbles and small boulders. Due to the embayments geometries and generally low wave energy, there is limited potential for net littoral transport to occur.

Given the negligible significance of any effects in terms of shoreline erosion or navigation, no cumulative or combined effects are predicted.

9.8 Landscape and Visual

There are a number of elements of the Proposed Development likely to result in landscape and visual effects. These include:

- Permanent buildings and structures associated with the power station, including stacks;
- The benched rock face;
- Re-profiled landform of the laydown areas (including the partial infilling of Bight of Vatsland);
- Crushed rock berm at the outfall pipe (Option 1 only); and
- Security fencing and other external equipment.

A 5 km extent of study area was identified in consultation with SNH and Shetland Islands Council as it is predicted that any potentially significant effects would be limited to this area.

A series of six viewpoints were selected to form the basis of the visual assessment. These viewpoints have been chosen to give a representative cross section of receptor types, potential visibility and range of likely visual effects resulting from the Proposed Development.

The Site area consists largely of rough and semi-improved grazing land which slopes north-eastwards towards Rova Head and the sea. There are open panoramic views to the north and northeast whilst the adjacent landform provides containment to the west and southwest. An existing waste disposal and treatment centre, located at Rova Head, and other adjacent development provides an industrial context to the local area.

The whole of the Shetland Islands are designated as an Environmentally Sensitive Areas (ESA) where the landscape, wildlife or historic interest is recognised as being of particular importance.

There is one Garden and Designed Landscape (GDL) found within the study area. Gardie House GDL is located on the west coast of Bressay and consists of a country house surrounded by a formal 18th century garden of walled enclosures and terraces.



Sixteen Local Protection Areas have been identified within the study area, predominantly in and around Lerwick but also including sites on Bressay and at the head of Lax Firth. These are areas regarded by the local community as being worthy of protection for a variety of reasons such as important viewpoints, local historic interest, open space and wildlife importance. These areas are generally not protected by any statutory designations.

Careful site selection and design of the Proposed Development have contributed to a reduced visual envelope and a reduction in the potential extent of effects on the landscape character of the surrounding area. The majority of the Landscape Character Areas (LCAs) and designated sites found within the study area would receive minor adverse, negligible or no effect during both construction and operation.

However, the assessment has identified some locally moderate adverse, and therefore significant, effects on the South Mainland Spine LCA. These local effects would largely be restricted to the area directly affected by the Proposed Development and its immediate surroundings. The Proposed Development would be located on the fringe of this LCA within an area already influenced by extensive adjacent industrial development. Effects on the wider area of the South Mainland Spine LCA are predicted to be minor adverse, and therefore not significant, during construction and operation.

The Proposed Development makes use of adjacent topography, particularly to the south and west, to reduce the visual envelope and magnitude of change from key locations such as Lerwick. The existing industrial context of the surrounding area, and particularly along Sound of Bressay, reduces the sensitivity to change of many receptors. Due to the reduced sensitivity to change and limited magnitude of change, the assessment has identified that receptors at each of the viewpoint locations would receive negligible or minor, and therefore not significant, effects during construction and operation.

9.9 Traffic and Access

An assessment of the impact of the Proposed Development on users of the local road network has been conducted in accordance with the guidance given the Institute of Environmental Management and Assessment's (IEMA) 'Guidelines for the Environmental Assessment of Road Traffic'.

The roads in the vicinity of the Development Site are operating well below their respective capacity limits, even at peak times. This would indicate that there is a low degree of sensitivity in terms of traffic flow capacities, to changes in these flows. The Gremista Road, north of the Marina access and the Gremista to Dales Voe Road north of the SBS base can be said to have a very low sensitivity to change, owing to the very low vehicle numbers observed.

In total, six accidents were recorded in the vicinity of the Development Site over a five-year period. Of these, four were recorded as 'slight' and two as 'serious'. The cause of all the accidents was identified as either driver error or unforeseen circumstances.

An access road from the Gremista Road will be constructed and utilised throughout the construction period. Transportation of construction material to and from the Development Site will be via the existing local networks including Gremista Road and the A970. Major plant and equipment will also arrive by sea via either the deep sea port at Dales Voe or from Greenhead base.

During the peak construction period there will be negligible traffic impact during the morning and evening peak periods. On Gremista Road, north of the Marina access, the total flow increases are all below 30% and are therefore considered to be negligible. The Heavy Goods Vehicles (HGV) percentages increases are all below 60% and of minor magnitude. However, the sensitivity of the road here is considered to be very low which results in an overall negligible impact.

Further north, on the Gremista to Dales Voe road (near the SBS Base), the percentage increases in total traffic are all below 60% for the daily totals and less than 30% during the peak hours (due to construction staff shift working). The percentage increases in HGVs are significantly higher (over 200%). However this is due to the very low existing HGV numbers recorded along this stretch of the road. The sensitivity of the road here is considered to be very low which results in an overall negligible impact.

The additional traffic due to the Proposed Development construction phase will result in varying percentage increases in total traffic flows on the observed roads leading to the Site. The impacts of construction traffic on all the A970 sections of road and junctions are considered to be negligible.

The number of operational staff is likely to be the same as at the existing Power Station. It can be assumed therefore that there will be no change in vehicular commuting trips on the wider network by employees during the operational phase of the Proposed Development compared to the number made to the existing Power Station. On the local network however, the employee commuting trips would be additional traffic flows, but would not represent a significant increase. Therefore the impact on the local road network as a result of the operational Proposed Development is considered negligible.

The key proposed mitigation measures are as follows:

- All construction vehicles will be required to use only the approved access routes to the Development;
- A Traffic Management Plan to identify appropriate and safe routes to and from site will be developed and implemented;
- A Travel Plan will be implemented aimed at reducing the number of trips made to the Development, including the proportion of private vehicles used by employees and construction staff (a Travel Plan Framework has been included with this ES); and
- The potential for construction staff and employees to use more sustainable modes of transport (e.g. minibuses, car sharing etc.) will be encouraged, where appropriate.

A baseline noise survey was conducted between September and October 2012. Long-term monitoring was undertaken at three locations, representative of the nearest accessible residential receptors in each direction from the Site.

Construction and Operational noise levels for a typical one hour period have been predicted at the location of the closest receptors to the Site. These receptors have been chosen as they are representative of the closest noise sensitive properties in different directions from the Development Site.

The distances from standard construction activities, including piling, are large; therefore vibration effects from construction activities, other than blasting, are likely to be negligible. Blasting effects have the potential to be of temporary moderate adverse significance. Appropriate blast design will be employed to ensure vibration limits and air overpressure limits at sensitive receptors are not exceeded.

Operational noise levels were predicted and assessed against lowest ambient and average background noise during good weather. The predictions demonstrate that during daytime periods there is no adverse noise impact predicted for either option. At night no adverse noise impact is predicted for all but one noise sensitive property. At Huntersfield a 'moderate' significance of effect is predicted for both cooling options at night. This is assessed as not being a key issue as the overall predicted noise level at Huntersfield at night still falls below the World Health Organisation (WHO) recommended external noise level limit by 4 dB and the recommended internal noise level limit by 9 dB. In addition, this assessment has used a worst-case scenario including non-typical ambient and background noise levels; typical weather conditions on the Shetland Islands having greater wind speeds and precipitation.

The existing oil-fired Lerwick Power Station has a current staff complement of 28 full-time equivalent (FTE) posts. All of these posts would be transferred from the existing Power Station staff complement.

The construction job opportunities will have a short-term, moderate beneficial effect on the Local (Lerwick) and Regional (Shetland Islands) economy.

18

Although published data suggests that there is substantial occupancy capacity in all Shetland accommodation supply sectors, even during the peak summer season (May to August), discussions with Shetland Islands Council indicate that current accommodation occupancy demand in Lerwick, and the wider Shetland mainland area, is presently often at, or near full capacity, particularly for serviced accommodation e.g. Hotels, B&Bs and Guest Houses.

The very high rates of occupancy are principally driven by the Shetland oil and gas business – with accommodation being block booked well in advance, reducing the availability of supply for tourism. It is deemed likely that this situation will continue for the foreseeable future.

In light of the particular occupancy demands on the Shetland mainland visitor accommodation sector, the Applicant will consider mitigation measures for the Proposed Development in the context of the temporary accommodation requirements for workers during the construction phase.

This is centred around early planning of the Proposed Development temporary accommodation needs including:

- Identification of the specific construction work-force accommodation requirements;
- Need discussions with key accommodation providers e.g. Lerwick hotels and/or the VisitScotland (Shetland office); and
- Achieving secured room booking guarantees well in advance of the commencement of the Proposed Development construction programme.

9.12 Waste

Approximately 35,000m³ of excavated material (excluding peat) is considered unlikely to be suitable for infill purposes at the Development Site. Depending on the nature of this material it will either be transported to the nearby landfill for treatment and/or disposal to the nearby Staney Hill quarry in Lerwick for sorting and reuse (subject to obtaining the appropriate permit or applicable exemption).

Where possible, peat excavated on site will be reused on site for the following purposes:

- Stabilisation and landscaping of the rock cut; and
- Reinstatement of road verges for the realigned Gremista to Dales Voe Road.

The reuse on site would be subject to agreement by the relevant authorities. A worst case scenario equivalent to 119,000m³ of peat requiring removal off site has been assumed. This is the estimated quantity of excess peat arising as a result of Option 1.

The peat would be transported off site to Staney Hill quarry and stored (and treated, as appropriate) prior to reuse in the restoration of the former landfill.

The predicted quantity of construction waste anticipated to be generated is around 6,500 tonnes of waste (calculated using benchmark data). Assuming the construction phase has a duration of around 3 years; this equates to around 2,200 tonnes of waste per annum. Based on this weight of waste arising, the availability of local facilities and the management method, this effect is considered to be minor (non-significant) for non-peat excavated waste and negligible for peat wastes (on the basis that it is suitable for reuse at Staney Hill quarry).

Operational waste arisings have been estimated using data from the existing Power Station. The data is considered to be a conservative estimate of potential production operational wastes at the Proposed Development, as the fuel types (LFO and natural gas) are likely to require less treatment and therefore waste and new infrastructure and generation equipment is likely to require less maintenance and generate less associated.

Based on the quantity of waste arising, the availability of local facilities, and the management method, this effect is considered to be minor/ negligible (non-significant) for operational wastes.

No cumulative waste related impacts are anticipated associated with the construction and/or operation of the developments.

9.13 Other Issues

In addition to the topics assessed above, the effects on electrical interference and aviation were also considered. A screening exercise was undertaken for both these topics which concluded that detailed assessments are not required and no effects are anticipated.



9.14 Residual Effects and Conclusions

The Proposed Development is generally considered not to have significant adverse effects on the environment with the exception of the following moderate adverse effects. No major residual effects were identified:

- The removal of a possible field clearance cairn during construction;
- The removal and/or disturbance of soil and bedrock during construction;
- Local landscape effects on the South Mainland Spine LCA (largely restricted to the area directly affected by the Proposed Development and its immediate surroundings);
- Potential temporary noise and vibration effects from blasting; and
- Night-time operational noise levels at Huntersfield, although the overall predicted noise level falls below the WHO limits.

The removal of the cairn and disturbance of soil and rock are considered unavoidable effects and no mitigation is considered possible. The field cairn will be subject to an archaeological investigation and excavation (if appropriate) prior to removal.

The current design has been chosen to minimise the visual intrusion of the Proposed Development and hence no further mitigation is considered possible at this stage.

Noise and Vibration effects as a result of blasting will be mitigated by blast design and the operational noise effect at Huntersfield is considered a factor of the assessment methodology. However, noise effects will be considered through the detailed design process as informed by the assessment.

There are also a number of other minor adverse impacts which are not significant in terms of the EIA regulations. They are associated with ecology, archaeology and cultural heritage, water resources, ground conditions, landscape and visual, noise and vibration, and waste.

The Proposed Development will lead to a number of beneficial impacts. There would be a net beneficial effect on pollutants emitted to air on ecological receptors and human health when looking at the Proposed Development as a replacement for the existing Lerwick Power Station; and a number of socio-economic benefits to the local economy from temporary employment options, maintenance of power station employment, temporary increased accommodation demand, and the fact that the replacement power station would be located further from tourist locations than the existing Lerwick Power Station.

The Proposed Development will also lead to beneficial impacts in relation to climate change reduction. Emissions of carbon dioxide (CO₂) from the Proposed Development will be less than those of the existing power station. This would be reduced further if a connection to the Lerwick district heating system can be made.



10. LIST OF ABBREVIATIONS

Abbreviation	Definition
AGL	Above Ground Level
AOD	Above Ordnance Datum
BGL	Below Ground Level
CEMP	Construction Environmental Management Plan
CO ₂	Carbon Dioxide
dB	Decibel
DPCR	Electricity Distribution Price Control Review
ECU	Scottish Government Energy Consents Unit
EIA	Environmental Impact Assessment
ES	Environmental Statement
ESA	Environmentally Sensitive Areas
FTE	Full-Time Equivalent
GDL	Garden and Designed Landscape
GW	GigaWatt
HGV	Heavy Goods Vehicle
IEMA	Institute of Environmental Management and Assessment
LCA	Landscape Character Area
MHWS	Mean High Water Springs
LFO	Light Fuel Oil
MW	MegaWatt
MWR	Marine Works (Environmental Impact Assessment) Regulations 2007
NINES	Northern Isles New Energy Solutions
NO _x	Nitrogen Oxides
NTS	Non-Technical Summary
Ofgem	Office of Gas and Electricity Markets
SEPA	Scottish Environment Protection Agency
SLDP	Proposed Shetland Local Development Plan
SHE	Scottish Hydro Electric
SMR	Scheduled Monument Record
SNH	Scottish Natural Heritage
SSSI	Site of Special Scientific Interest
TAN	Technical Advice Note
WHO	World Health Organisation
ZTV	Zone of Theoretical Visibility



Key

Red Line Boundary

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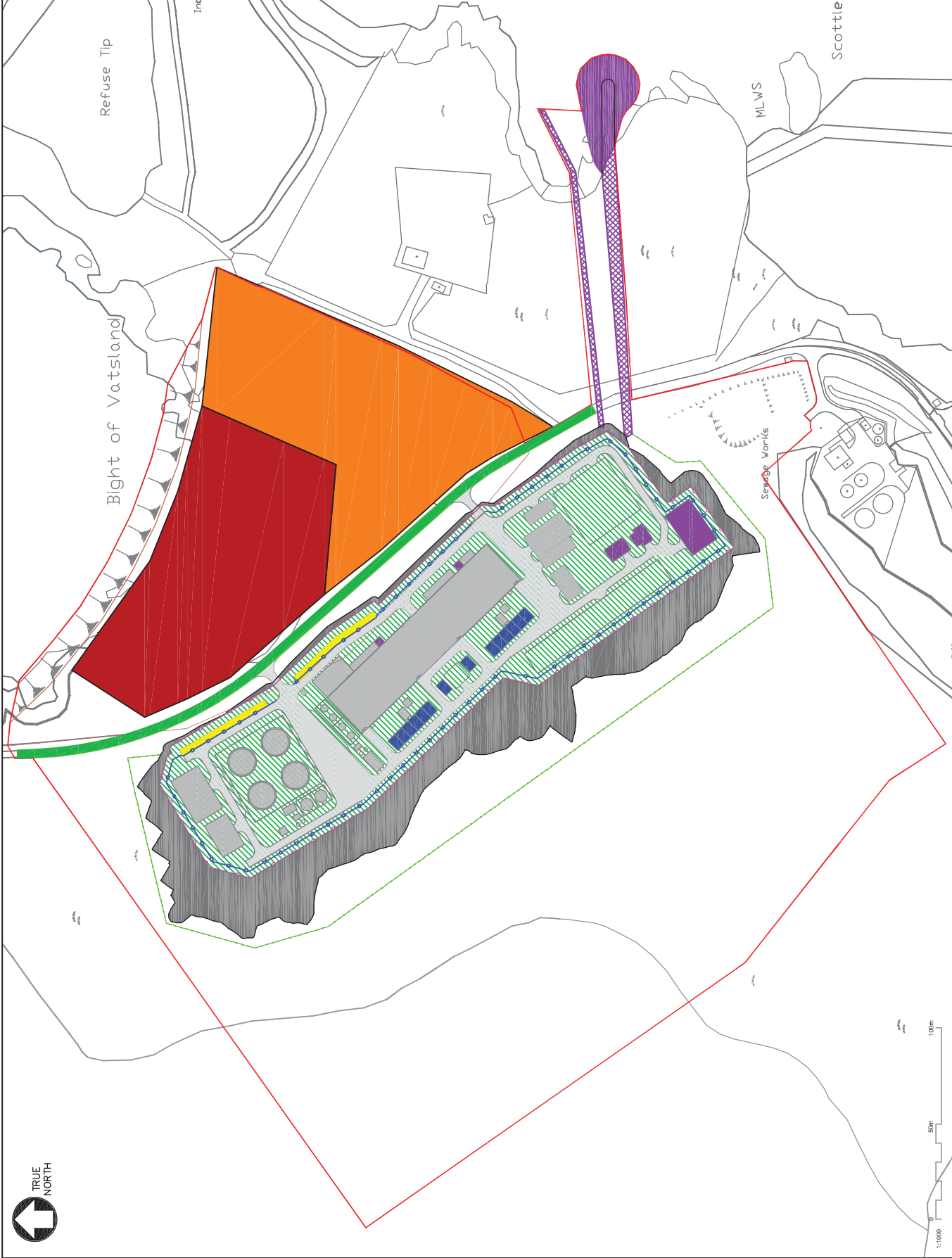
Replacement Lerwick Power Station Environmental Statement

Site Location Plan

Figure NTS 1

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Replacement Lerwick Power Station Environmental Statement

Proposed Development Indicative Layout - All options

Not To Scale



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Figure NTS 2

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