SAND BAY POWER STATION
ENVIRONMENTAL IMPACT ASSESSMENT SCREENING REPORT
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1. **INTRODUCTION**

1.1 **Background**

Ramboll UK Limited (Ramboll) has been commissioned by Falkland Islands Government (FIG) to undertake an Environmental Impact Assessment (EIA) screening assessment for a proposed new power station near Stanley, East Falklands.

The purpose of this report is to provide a high-level assessment of potential environmental effects such that the FIG Planning Department has sufficient information to make an informed decision on whether an EIA in accordance with the relevant Ordinance is required.

1.2 **Site Selection**

In 2016 FIG commissioned a feasibility study (Mott Macdonald, 2016) for the proposed new power station. The study identified three alternative sites based on a new diesel fired power station, as follows:

- Stanley;
- Sand Bay; and
- Port William.

The site at Port William is linked to the potential development of a new port in this area. The Mott Macdonald study reported "The location of Site C\(^1\) as a new power station is not supported or identified at a local level within the Stanley Town Plan. Development of this site would require rezoning land to facilitate the development of a power station at this location. It is likely that a variation would be required in the location of the power station objective as set out in the Plan.” At the time of writing development of the Port is not proceeding and therefore this site has been excluded from this assessment.

This screening report relates to the proposed development of a diesel fired power station near the existing Sand Bay Wind Farm, hereafter referred to as the Sand Bay Power Station. A separate EIA screening report has been prepared for the alternative site near Stanley (Stanley Power Station EIA Screening Report, Ramboll 2018).

The screening assessment is based on the sites identified in the Mott Macdonald study only. No further assessment or consideration of other alternative sites has been undertaken at this stage.

1.3 **Existing and Future Power Generation**

The existing power station on East Falklands is located within Stanley and comprises eight diesel engines, the oldest of which are approximately 50 years’ old and the newest are approximately 30 years’ old. These engines range in power output and provide a combined total of approximately 6MW. However, due to ongoing service requirements and occasional engine failure all eight engines do not run simultaneously for the majority of the time.

In addition, Sand Bay Wind Farm produces a combined total of 2MW. However, power generation is intermittent in accordance with local weather conditions with too little or too much wind preventing operation at times.

\(^1\) Site C is the Port William site.
On this basis the need for a new power station has been identified to replace the existing facility, which is beyond or nearing the end of its serviceable life, and provide additional capacity to meet a growing demand for power.
2. THE PROPOSED DEVELOPMENT

2.1 Site Location

An indicative location plan and site layout for the proposed power station is shown in Figures 1 (shown hatched purple) and 2 below. The proposed location is immediately west of the existing Sand Bay Wind Farm, on the southern boundary of the road between the Mount Pleasant Airport and Goose Green to the west and Stanley to the east. Pony’s Pass quarry and an abattoir (Falkland Islands Meat Company – FIMCo) are present approximately 2.3km east and south east of the proposed site respectively. Figure 1 shows a possible location within the Sand Bay area however this indicative and shown only to indicate the scale of the development, the final location could be subject to change within the Category B land surrounding the Wind Farm.

![Figure 1: Location Plan](image-url)
Figure 2: Indicative Site Layout

The location above lies within Category B Stanley Common Land with Category A land and Stanley Common National Nature Reserve present immediately north.

Category B Common Land is defined in the Stanley Commons Ordinance 2017. Section 10(3) of the Ordinance allows for development of Category B land in accordance with the following:

"The following are permitted within the Category B Stanley Common Land:

(a) the cutting and taking away of peat under a licence or permission granted by or on behalf of the Governor;
(b) the use by the Falkland Islands Defence Force and the Royal Falkland Islands Police of firearms for training on approval by the Governor for that purpose;
(c) the use for training by the Falkland Islands Defence Force or the Fire and Rescue Service on a part of the Category B Stanley Common Land which has been approved by the Governor for that purpose;
(d) the grazing of animals
   (i) where it is in accordance with a grazing permit issued by the Department of Agriculture as provided for under section 13; or
   (ii) where the Department of Agriculture has authorised the grazing of animals on that part of the Category B Stanley Common Land for a specified period;
(e) the burying of animals on Category B Stanley Common Land, where it is in accordance with an authorisation by the Department of Agriculture;
(f) the throwing, depositing or causing to be thrown or deposited on Category B Stanley Common Land any waste or other noxious matter where it is done in a place and in accordance with such conditions as may be prescribed for that purpose; and
(g) any developments necessary for public purposes."
2.2 Proposed Development

It is anticipated that approximately 2ha of land will be required to accommodate the proposed development. Development of the power station will necessitate the creation of a new junction and access road off the Stanley to Mount Pleasant Airport Road.

In the indicative layout above the generator building and flue stacks have been positioned on the south side of the building complex so that they are partially screened from the view from Mount Pleasant Airport Road. An earth bund is also proposed on the northern boundary to provide additional screening and noise suppression.

The existing cables associated with the Sand Bay Wind Farm would not be capable of transmitting power to Stanley and, therefore, additional cables would need to be installed. At this stage it is assumed that any new cables would be underground (as the cables from the wind farm already are) and there would be a need for excavation of trenches though these would then be backfilled and the land reinstated.

Whilst consideration has been given to the construction of a pipeline to supply fuel to the proposed power station it is assumed at this stage that fuel would be transferred from Stanley to the site by road tanker.

The Mott Macdonald feasibility study proposed that eight new engines could be arranged in two groups of four, each group having a common chimney stack. The total power output would be approximately 11MW. As part of this work a stack height assessment was undertaken and it was concluded that a stack height of 30 m would be appropriate for the new power plant. However, this is subject to development of detailed design and is used as a guide within this assessment.
3. EIA REGULATIONS AND SCREENING PROCESS

3.1 FIG Regulations

There are three main documents that include information on or relating to the planning process and consideration of environmental impacts in the Falklands:

3.1.1 PLANNING ORDINANCE 1991

This document is the main document governing planning development in the Falklands. Schedule A1 of the Ordinance recognises different classes of development as set out within the EU Directive 2011/92/EU (as amended) but does not specifically list different types of development. The Planning Ordinance does not set out any mandatory threshold or criteria for proposals. Schedule A1 rather sets the selection criteria in regard to Annex II projects as referred to in Article 4(2) of the Directive. Subject to Article 2(3), for projects listed in Annex II, the Member States shall determine through:

(a) a case-by-case examination;

or

(b) thresholds or criteria set by the Member State.

Where a case-by-case examination is carried out or thresholds or criteria are set the proposal is screened against relevant selection criteria and a determination is made by the competent authority. The directive has been enacted through the Falkland Island Planning (Environmental Impact Assessment) Regulations 2015 as described below.

3.1.2 PLANNING (ENVIRONMENTAL IMPACT ASSESSMENT) REGULATIONS 2015

Section 33 of the Planning Ordinance 1991 provides for the making of the EIA Regulations and the requirements for assessment of environmental effects on projects in general. On this basis, the 2015 Environmental Impact Assessment Regulations were developed and adapted. The 2015 Regulations do not include any specific thresholds or criteria from the EU Directive 2011/92/EU.

With regard to the need for an EIA Section 4 (1) of the Regulations states:

"During the consideration of any application for planning permission, the Planning Officer may, in the Planning Officers discretion, determine that an environmental impact assessment is necessary".

3.1.3 PLANNING GUIDANCE NOTE 1 (PGN1) (2015)

This document provides guidance on the different stages of the EIA process and on the production of an Environmental Impact Statement (EIS) which is the outcome of the full EIA process should it be required for a project or plan. It also provides guidance on the application of EIA screening to assess whether or not an EIA, and resulting EIS, are required for projects or plans.

3.2 Screening

Screening is the first stage of the EIA process. The objective of screening is to provide information on a proposed project or plan and its potential to result in significant environmental effects. The submission of screening information or a screening report provides the relevant authority with
information to assess whether the project/plan is likely to have significant effects. Should the determining authority assess that there may be significant effects an EIA may be required.

PGN1 states:

"When assessing whether a proposal has the potential to have a significant impact on the environment, the factors set out in the table below shall be considered. Proposals which are in broad accordance with a statutory development plan allocation for housing, residential, mobile homes, community facilities, leisure facilities, greenspace (including Stanley Common), retail or office development are unlikely to require an EIS."

The following criteria are provided in the guidance, these are reproduced from the EU 2011 Directive:

<table>
<thead>
<tr>
<th>Area</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristics</td>
<td>The characteristics of development must be considered having regard, in particular, to:</td>
</tr>
<tr>
<td>of development</td>
<td>(a) the size of the development (including the scale of any built development);</td>
</tr>
<tr>
<td></td>
<td>(b) the cumulation with other development;</td>
</tr>
<tr>
<td></td>
<td>(c) the use of natural resources;</td>
</tr>
<tr>
<td></td>
<td>(d) the production of waste;</td>
</tr>
<tr>
<td></td>
<td>(e) pollution and nuisances;</td>
</tr>
<tr>
<td></td>
<td>(f) the risk of accidents, having regard in particular to substances or technologies used.</td>
</tr>
<tr>
<td>Location of</td>
<td>The environmental sensitivity of geographical areas likely to be affected by development must be considered, having regard, in particular, to:</td>
</tr>
<tr>
<td>development</td>
<td>(a) the existing land use;</td>
</tr>
<tr>
<td></td>
<td>(b) the relative abundance, quality and regenerative capacity of natural resources in the area; and</td>
</tr>
<tr>
<td></td>
<td>(c) the absorption capacity of the natural environment, paying particular attention to the following areas:</td>
</tr>
<tr>
<td></td>
<td>(i) wetlands;</td>
</tr>
<tr>
<td></td>
<td>(ii) coastal zones and mountains;</td>
</tr>
<tr>
<td></td>
<td>(iv) important areas for nature conservation;</td>
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<tr>
<td></td>
<td>(v) populated areas; and</td>
</tr>
<tr>
<td></td>
<td>(vi) landscapes of historical, cultural or archaeological significance.</td>
</tr>
<tr>
<td>Characteristics</td>
<td>The potential significant effects of development must be considered in relation to criteria set out under paragraphs 1 and 2 above, and having regard in particular to:</td>
</tr>
<tr>
<td>of the potential</td>
<td>(a) the extent of the impact (geographical area and size of the affected population);</td>
</tr>
<tr>
<td>impact</td>
<td></td>
</tr>
</tbody>
</table>
(b) the trans-frontier nature of the impact;
(c) the magnitude and complexity of the impact;
(d) the probability of the impact; and
(e) the duration, frequency and reversibility of the impact.

<table>
<thead>
<tr>
<th>Table 1: PGN1: Factors for consideration during EIA screening</th>
</tr>
</thead>
</table>

The guidance also states that when considering whether a development has the potential to have a significant impact on the environment, or whether an EIS is “fit-for purpose”, this is to be classed as a ‘determination’ for the purpose of applying section 25A (Development Plan). Section 25A of the Planning Ordinance States:

"Where, in making any determination under this Ordinance, regard is to be had to the development plan, the determination shall be made in accordance with the plan unless material considerations indicate otherwise”.

Therefore, when considering whether an EIS is required (or “fit-for-purpose”) any relevant development plan policies which would inform this should be taken into account.

The guidance also states:

"Important areas for nature conservation are those areas of likely importance for nature conservation based on the best available information. Consideration should be given to designated sites (such as National Nature Reserves, National Parks and Ramsar sites), however areas which are not designated or for which detailed information is not available should not be assumed to necessarily be unimportant (in other words absence of evidence is not evidence of absence).”

3.3 Island and Local Development Plans

The Falkland Islands Development Plan (FIDP) was adopted in 2015 and ‘provides a framework for the future spatial development of the Islands (including the determination of planning applications)’. It includes the Islands-wide Structure Plan, which provides the overall strategic approach, and Local Plans which provide more detail for areas within the Islands. Currently there is a Local Plan for Stanley (2015-2030 Stanley Town Plan) but Sand Bay is located outside of the boundary although it is noted within the wider Islands Structure Plan which states, "development of this area may need to be carefully managed so that it does not undermine the viability of developing a deep water port, land safeguarded to allow the potential future expansion of the abattoir and/or wind farm”.

The need for a new power station is set out in the "Towards an Infrastructure Delivery Plan (IDP)”. The IDP was developed to set out key decisions which must be made about the basic infrastructure provision needed to support the future development requirements of the Falkland Islands.
4. ENVIRONMENTAL BASELINE AND POTENTIAL EFFECTS

4.1 Scope of Screening Assessment

In order to address the factors noted in PGN1 consideration has been given to the following potential issues. This list has been derived from topics listed for consideration within the EU Directive (2014/52/EU):

- Air Quality;
- Climate Change;
- Cultural Heritage and Archaeology;
- Ecology;
- Geology and Soils;
- Landscape and Visual Impact;
- Major accidents and hazards;
- Materials and Waste;
- Noise;
- People and Communities (including traffic impacts); and
- Water, Flood Risk and Marine Environment.

4.2 Information Sources

The baseline information has been sourced as follows:

- Desk based information available from FIG, the world wide web and data held by Ramboll together with the Mott MacDonald Feasibility Study;
- Consultation with FIG including the planning and environmental departments; and
- Site walkover visit.

The site walkover was undertaken on 8th August 2018 by an environmental specialist from Ramboll. The walkover considered the proposed development site and the immediate surrounding area.

4.3 Consultation

As noted above consultation has been held with FIG departments but at this stage no wider consultation has been undertaken.

4.4 Air quality

<table>
<thead>
<tr>
<th>Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>To date no air quality monitoring has been undertaken to set a baseline for the proposed development area or its surroundings.</td>
</tr>
<tr>
<td>Existing sources of impacts on air quality within close proximity to the proposed site include traffic associated with the Mount Pleasant Airport Road and activities associated with commercial operations at the adjacent quarry and abattoir. However, traffic levels are small and the commercial operations are comparatively small scale and these activities are unlikely to result in significant air quality impacts.</td>
</tr>
</tbody>
</table>
There are no human receptors within close proximity of the proposed site. However, sensitive ecological receptors are present in close proximity (habitats associated with Stanley Common NNR) as described in the ecological assessment section below.

Prevailing winds in the Falkland Islands are generally westerly (i.e. from the south west to north west) with very little seasonal variation.

Potential effects of the scheme

During construction there may be a temporary impact on air quality through dust generation associated with excavation and vehicle emissions due to plant delivering to and operating within the development area.

Operation of the power station will lead to emissions including NO$_2$, SO$_2$ and particulate matter. Based on information available to date the project would be classified as a Medium Combustion Plant (MCP). EU Directive 2015/2193 includes emission limits for medium combustion plants which is transposed into the Environmental Permitting Regulations 2018 in England and Wales in the UK and Pollution Prevention and Control Regulations 2017 in Scotland. However, Article 6 of the EU Directive provides that the stated limits will not apply in the Canary Islands, French Overseas Departments, the Azores or Madeira. On this basis it appears that it would also be inappropriate to impose these limits in the Falklands.

Operation of a power plant in this location would require frequent deliveries of fuel from Stanley by tanker which would lead to increased vehicle emissions, alternatively a fuel pipeline of approximately 8km would be required although this is considered unlikely due to the high cost and associated environmental impacts.

There are no legal or guidance limits for air quality emissions in the Falkland Islands. EU Directive 2008/50/EC provides compliance parameters in the UK through the Air Quality Standards Regulations 2010 but the directive states that it is not appropriate to implement these guidance in several overseas territories and whilst the Falkland Islands is not listed, on this basis, it would appear that these guidelines should be applicable either.

In the absence of such local guidelines, guidelines produced by the IFC World Bank (World Bank and IFC Environmental, Health and Safety (EHS) Guidelines, including the General EHS Guidelines Environmental (2007)) may be applied.

The Mott Macdonald feasibility study found that a 30m stack height should be sufficient to ensure emissions are within IFC EHS guidelines for air quality. This would need to be taken into account in the design of the proposed power station.

Possible mitigation

Mitigation through careful will to reduce impacts on air quality. This includes determining in detail the required stack height as described above, and careful siting of the stack.

Emission treatment systems could be installed (or the design could allow for retro fitting if required in future) to further reduce emissions.

The use of a pipeline to transfer fuel would assist in reducing vehicle emissions associated with transferring fuel but the environmental effects of the pipeline and the costs would have to be considered in the context of the vehicular emissions.

Conclusion on significance of effects

Based on information available to date it is considered that emissions can be minimised to acceptable levels through design and therefore air quality mitigation should be integrated into the detailed design phase of the development.
No human receptors sensitive to air quality are located nearby and therefore it is considered unlikely that the development will lead to significant air quality impacts on human health. However, consideration should also be given to potential impacts on ecological receptors. Further assessment using air dispersion modelling should be carried out to demonstrate that plant has been appropriately designed to mitigate significant effects on ecological receptors.

Table 2: Air quality baseline and potential effects

4.5 Climate change

The main element of this topic is the production of greenhouse gases. The proposed development will replace an existing diesel fired power station which already produces greenhouse gases but further assessment is required to quantify the change in consideration of several variables including generator size, emissions associated with existing infrastructure at the power station and predicted limits for the new power station with new technology. However, due to its relatively small scale, considered in a wider context, the proposed development is considered unlikely to have a significant impact on climate change.

4.6 Cultural heritage and archaeology

Baseline

No known cultural heritage or archaeological assets have been identified within the proposed development area.

Potential effects of the scheme

No impacts on cultural heritage or archaeology are predicted.

Possible mitigation

N/A.

Conclusion on significance of effects

None predicted.

Table 3: Cultural heritage baseline and potential effects

4.7 Ecology

Baseline

The proposed development area falls outside of the boundary of Stanley Commons National Nature Reserve although the reserve is located directly north of the proposed power station on the opposite side of Mount Pleasant Airport Road.

There are two Ramsar sites on the Falkland Islands, Bertha’s Beach and Lion Island, neither are close to Sand Bay.

There are no recorded criteria against which Stanley Common NNR was designated, or indeed a list of important/valued features for the site (although Important Plant Areas are identified e.g. Cape Pembroke to the east); however it is a NNR and is known to support plant assemblages of international significance.
The area is not identified as an Important Plant Area (Falklands Conservation, 2012). The site is not located in close proximity to any known Important Bird Areas and is over 2km from Port Harriet Nature Reserve.

Habitats present within the site are typical of those found in the wider area, comprising a mosaic of lowland dwarf shrub heath and grassland grazed by sheep. Areas of peat are present throughout the area, with former cuttings notable within the southern and eastern extent of the site adjacent to the nearest wind turbine. A few areas of standing water were present within and adjacent to the proposed development area although they may only contain water seasonally. In the wider area to the south east there are two small coniferous plantations which offer shelter for livestock.

Figure 3: Looking south east from Mount Pleasant Airport Road, mosaic of common habitats with the wind farm visible left of shot, areas of peat denoted by darker habitat areas

No historic or recent records of protected plant species are available for the Sand Bay area and it remains possible that this area supports protected or rare plant species.

No protected or rare animal species were noted within the proposed development area and the habitat is not considered highly suitable for such species. However, the walkover was undertaken at a sub optimal time (winter season) and specialist input from a resident ecologist is required to corroborate these findings.

Potential effects of the scheme

Development will lead to direct habitat loss through land take. This is likely to include the requirement to remove peat and peat supporting habitats.

No direct impacts on Stanley Common National Nature Reserve are predicted. There is potential for indirect impacts to occur through pollution events although this is considered unlikely as the site is upslope and separated from the Nature Reserve by Mount Pleasant Airport Road and associated drainage ditches. Potential pollutants e.g. fuel would be securely stored and bunded within the power station site.

Whilst emissions may lead to an increase in atmospheric pollutants in the locality, it is considered unlikely that this would lead to significant impacts on habitats within the NNR due to the dispersal
of emissions by prevailing winds. However, further assessment is required to confirm this as recommended above (Table 2: Air quality).

Protected or notable plants may be present in the proposed development area.

To transmit power to Stanley several km of trench would be needed leading to temporary loss of habitats which may take several years to regenerate.

No direct impacts on bird colonies associated with Port Harriet are predicted, due to the distance, but up to date records should be obtained to confirm the current extent of breeding colonies along this section of the coast.

Impacts on habitats, in particular peat soils, could occur through increased or reduced drainage of the area.

**Possible mitigation**

Should rare or protected plants be present these could be translocated into suitable habitats locally, subject to the suitably and availability of receptor sites.

Any soft landscaping areas present within the grounds of the power station could include the planting of native species. Incorporating green roofs or walls on some of the infrastructure could be considered.

Any habitats lost temporarily should be seeded/planted with native species to aid re-establishment.

Appropriate drainage design to minimise the effects on local habitats.

In conjunction with air dispersion modelling proposed above, further assessment should be undertaken to quantify the effects of emissions on habitats within the NNR.

**Conclusion on significance of effects**

It is recommended that further assessment should be undertaken to categorise the mosaic of habitats present, assess impacts of emissions on habitats and undertake surveys to identify any protected plants present. Further information should be gathered on the presence of breeding bird colonies nearby. However, it is not considered at this stage that the project will have a significant negative impact on ecological receptors.

**Table 4: Ecology baseline and potential effects**

**4.8 Geology and soils**

**Baseline**

The proposed development area falls within the Port Stanley beds, lower carboniferous geological region.

Made ground, and potentially contamination, could be present within the northern extent associated with the development of the adjacent Mount Pleasant Airport Road although this is unlikely to be in significant quantities.

Local soils are likely to contain areas of peat and or soft soils.

**Potential effects of the scheme**

There is potential for soil contamination during the construction and operational phases of the development through fuel spills. There is also the potential for contamination to be encountered during construction.
Excavated soils could be reused in the bund planned on the northern boundary, subject to suitability. If they are not suitable, or the volumes are too great they would need to be removed from the site (see Waste and Materials below).

**Possible mitigation**

Implementation of environmental protection and best practice pollution prevention measures. If contaminated soils are encountered then these would need to be either remediated or disposed of appropriately (see Waste and Materials below).

**Conclusion on significance of effects**

Significant effects are considered unlikely.

**Table 5: Geology and soils baseline and potential effects**

### 4.9 Landscape and visual impact

#### Baseline

**Location**

The proposed site is located on the southern boundary of the Mount Pleasant Airport to Stanley road as shown on Figure 1.

**Land use**

The land falls away towards Port Harriet inlet to the south where an abattoir is located. To the east, adjacent to the main road Pony’s Pass quarry is present. With the exception of the wind farm the remaining area is undeveloped. Grazing rights apply for this area and sheep graze the site periodically.

**Landscape designation**

The area is not subject to landscape designation or statutory designation on the grounds of landscape or visual consideration.

**Landscape character**

The landscape within and immediately adjoining the site is typified by open peatland and grassland with Mount Wall, Harriet and William located to the north west, north and north east. The commercial buildings and infrastructure associated with wind farm, abattoir and quarry form a backdrop to views from the north where higher ground is present. In contrast, the peatland and grassland, to the south and west, is simple, large scale and essentially flat. The contrast between the developed and rural landscapes is a key characteristic locally.

**Visual amenity**

The visual amenity of the area is largely related to its coastal setting, but also the expanses of open undeveloped land. Key visual receptors include users of the Mount Pleasant Airport to Stanley road and users of the adjacent Stanley Common National Nature Reserve.
Figure 4: Looking north west from the stone track east of the wind farm that feeds the wind farm and abattoir to the south. Wind farm turbine visible east of shot.

Figure 5: Looking east from the wind farm towards the quarry, abattoir and Port Harriet.
### Potential landscape and visual effects

#### Effects on landscape fabric
The proposed development would permanently alter the topography and landcover of 2 hectares of undeveloped peatland and grassland habitat. However, given the scale of the development and the common and widespread distribution of this habitat locally, and presence of existing development, this is considered unlikely to result in any significant effects on landscape fabric.

#### Effects on landscape character
There is potential for any large built structure to adversely affect the perceived openness, horizontal form and simplicity of the moorland landscape in which it would be situated. Additionally, the introduction of artificial lighting on the edge of what is generally unlit moorland landscape (with the exception of minor lighting associated with the wind turbines) could have adverse effects on the night character of the area. The level of residual effect of the development on landscape character will be dependent upon the efficacy of mitigation measures.

#### Effects on visual amenity
The proposed development would be visible from Mount Pleasant road and the adjacent NNR. The power station is likely to result in adverse effects on views from the north. In addition, trenching associated with electrical cable installation is likely to result in adverse effects, on a temporary basis, on a large scale. Whilst the development would also be visible from Port Harriet to the south it would be seen against a backdrop of built forms including the Abattoir which is immediately adjacent to the coast and furthermore the power station would be located approximately 1.7km away. Therefore, subject to its design and mitigation, the proposed development is likely to be less prominent from the south. The level of residual visual effects will be dependent upon the efficacy of mitigation measures.

### Possible mitigation
Based on an initial review of the landscape and visual resource and an analysis of potential landscape and visual effects, the following preliminary mitigation measures are identified:
• Selection of a site design that places key infrastructure on the southern side of the development, e.g. emission stacks, which will allow partial screening from the Mount Pleasant Airport road and NNR by the main buildings.
• Excavation of ground levels within the site to allow for power plant structures to be positioned lower in views, thereby reducing the apparent scale of structures;
• Use of excavated spoil and soils to form a sensitively graded screening landform around the edges of the site to further reduce the visibility and scale of the development. Once vegetated this feature would merge with the adjoining moorland landscape;
• Careful selection of colours to render built structures to lessen their prominence; and
• Careful design of operational lighting to avoid introduction of intrusive lighting, especially in views from the Mount Pleasant Road.

**Conclusion on significance of effects**

Whilst the proposed development is capable of causing a number of landscape and visual effects, a large proportion of such effects could be mitigated, at least in part, by careful design and mitigation. To evaluate the efficacy of any such mitigation, it is proposed that a concise landscape and visual impact assessment be undertaken to verify that no significant effects would accrue to the scheme.

**Table 6: Landscape and visual impact baseline and potential effects**

4.10 Major accidents and hazards

The main risks of this project are the potential for an explosion event or a major fuel spill. In the event of an explosion event the nearest human operated receptors (quarry and abattoir) are over 2km from the proposed site and unlikely to be affected. However, the Sand Bay Wind Farm and Mount Pleasant road are immediately adjacent and could potentially be affected by a major event, including users of the road. The overall likelihood of an explosion event/major fire is considered to be low, with no recorded instances of such events at the current power station. A major fuel spill could enter the local drainage and find its way to the marine environment to the south, however it is anticipated that drainage will include interceptors to contain any fuel spill and an emergency response plan would be compiled to ensure such an event is dealt with efficiently.

4.11 Materials and waste

**Baseline**

Import and disposal of certain materials is difficult due to the remote location of the Falkland Islands and logistics may necessitate the use of certain materials either not available locally or not easily shipped. Aggregates may be sourced from the existing quarry south of Stanley although other key materials e.g. cement would need to be imported. Waste treatment and disposal facilities on the Falkland Islands are limited in terms of both capacity and the types of waste that can be dealt with.

**Potential effects of the scheme**

There may be significant excavation to form a suitable base for the proposed site which could both generate and/or require fill material. Where possible a cut and fill balance would be achieved, but there is the possibility that either a surplus could be generated or a shortfall would arise. There may be a lack of local disposal facilities. Consideration is required to ensure any non-native species present within the proposed development area are not transported into new areas offsite.
There is the potential, albeit likely to be very limited, that contaminated materials could be excavated which would be defined as a waste and so require either remediation or disposal off site (and potentially off island).

Topsoil excavated on site would be reused as part of the finished scheme and may be used to form bunds proposed around the site.

Construction would require aggregate and cement, steel and other manufactured products. Some of these would need to be imported to the islands.

During operation there may be a requirement for renewal of equipment requiring import of additional materials.

If waste materials cannot be dealt with on the Falkland Islands then there may be a need for treatment or disposal outside the islands. This could involve the transfrontier shipment of waste.

### Possible mitigation

- Construction site waste management plan to encourage effective waste minimisation.
- Reuse and recycling of materials generated and processing to maximise the value of excavated materials and minimise the need for disposal and/or removal of wastes off island.
- Should excavated material require disposal offsite, local receptor sites e.g. disused areas of the local quarry could be utilised, therefore reducing the need for transport and risk of spreading not native species.
- Minimise waste of construction materials imported to site.
- Purchase bulk raw materials from local sources to minimise use of the road network, the burning of fossil fuels and the production of exhaust emissions.

### Conclusion on significance of effects

Subject to the implementation of appropriate mitigation outlined above no significant impacts are predicted. Consideration would need to be given to the potential effects on local waste management infrastructure in terms of both capacity and capability to deal with waste arising from the project. The proposed development may require disposal of waste materials outside the Falkland Islands and the transfrontier shipment of wastes.

### Table 7: Materials and waste baseline and potential effects

#### 4.12 Noise

**Baseline**

Existing sources of noise include the wind farm turbines, quarry and abattoir together with the Mount Pleasant Airport to Stanley road. No noise data is available to quantify the noise from these sources.

There are no residential properties in the area.

Stanley Common National Nature Reserve is present immediately adjacent to the site.

There are no legal or guidance limits for noise levels in the Falklands. The World Bank Environmental, Health, and Safety (EHS) Guidelines sets out recommended environmental noise limits for new development. These limits are defined both in relative terms, in relation to the pre-existing ambient noise level, and with a lower threshold value, separately for daytime and night-time periods. Give the lack of baseline noise level data, it is likely the lower threshold values will apply. The lower threshold values are 55 dB LAeq and 45 dB LAeq for daytime and night-time periods respectively.
### Potential effects of the scheme

Potential effects of the scheme include noise generated during construction through excavation, vehicle movements, construction of buildings and vehicular transport.

During operation noise will be produced from the power station and changes in traffic patterns associated with deliveries/vehicle movements.

Potential impacts on the adjacent National Nature Reserve through disturbance from construction and operational noise.

The quarry and abattoir are located over 2km from the proposed site and therefore there are no local human receptors likely to be affected by noise produced from the power station.

### Possible mitigation

Incorporation of appropriate noise insulation in the design of the new power station, including adequate building fabric, acoustic louvres and ductwork attenuators, could help to significantly reduce external noise.

An earth bund is proposed at the northern boundary of the site and this could reduce the project of noise in the direction of the Mount Pleasant Airport road and users of the adjacent National Nature Reserve.

### Conclusion on significance of effects

Overall, subject to mitigation and careful design it is assessed that the development is unlikely to result in significant noise impacts.

### Table 8: Noise baseline and potential effects

<table>
<thead>
<tr>
<th>4.13 People and communities and all travellers (including traffic)</th>
</tr>
</thead>
</table>

#### Baseline

The proposed site is located just off the main road between Mount Pleasant and Stanley.

The proposed site lies outside Stanley and there are no residential properties or community facilities on or close to the site.

The main road from Goose Green to Stanley is located on the northern boundary of the site.

The land is currently owned by the Crown and in control of FIG. However grazing rights apply for this area and it is currently grazed by sheep.

#### Potential effects of the scheme

During construction it may be necessary to install some temporary diversions, traffic lights or closures to accommodate delivery of materials and key construction activities.

During operation, all existing routes will be retained in a fully operational form.

Construction and operation will result in increased traffic along the Mount Pleasant Airport road.

The location of the site is distant from Stanley and may result in potential impacts on employees relocating from the existing power station.

Loss of existing grazing land would arise, approximately 2ha, though in the context of the overall land area available this is unlikely to be significant.

Loss of existing heat re-use schemes locally would occur as a result of the new location and closure of the existing station. The current power station provides heating for the hospital, school and swimming pool to an extent and this would be lost.
Possible mitigation

Implement mitigation to minimise disruption during construction, this could be through the production of a Construction Environmental Management Plan (CEMP) and Traffic Management Plan (TMP).

As part of the design seek opportunities for reuse of excess heat through integration with nearby developments e.g. the adjacent abattoir.

Consideration should be given to whether alternative grazing areas need to be provided.

Conclusion on significance of effects

Subject to the implementation of appropriate mitigation it is considered unlikely that development of the power station in this location would lead to significant effects.

Table 9: People and communities baseline and potential effects

4.14 Water, flood risk and marine environment

Baseline

Port Harriet inlet is the closest marine environment located approximately 1.7km south of the site.

A few small areas of standing water were present and some of the drainage ditches alongside the windfarm access roads contained water at the time of survey. However, it is assessed that these areas may only be seasonally wet.

Potential effects of the scheme

Loss of seasonal pools through land take.

Potential contamination of groundwater from fuel spills.

Potential contamination of the marine environment is considered unlikely given the 1.7km distance to the site. In the event of a major spill it is possible that drainage could carry a spill to the marine environment.

Installation of site drainage may have an indirect effect on receiving habitats through interception of water and consequent changes to the existing hydrology.

No potential for increasing flood risk is predicted as a consequence of developing the site subject to the installation of appropriate drainage.

Possible mitigation

Implementation of best practice pollution prevention measures to minimise the potential for environmental incidents during both construction and operation. Include drainage interceptors in case of a spill to prevent impacts on the marine environment.

Design of site drainage to minimise changes in drainage to limit impacts on the hydrology, and associated habitats, of the adjacent area.

Conclusion on significance of effects

It is considered that with appropriate mitigation the development is unlikely to have significant impacts on the water environment.

Table 10: Water baseline and potential effects
## 5. SUMMARY OF POTENTIAL EFFECTS CONSIDERED AGAINST FIG SCREENING CRITERIA

The following table summarises the potential environmental effects in accordance with FIG screening criteria:

<table>
<thead>
<tr>
<th>Characteristics of the development</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) the size of the development (including the scale of any built development);</td>
<td>The proposed development is expected to require approximately 2ha of land.</td>
</tr>
<tr>
<td>(b) the cumulation with other development;</td>
<td>The area is classified as Category B which permits certain types of development but no other new developments in the immediate vicinity are currently known.</td>
</tr>
<tr>
<td>(c) the use of natural resources;</td>
<td>Cut and fill material will be required during construction although it may be possible to reuse excavated material on site to form the proposed screening bunds.</td>
</tr>
<tr>
<td>(d) the production of waste;</td>
<td>Waste during construction would be limited through the production of a waste management plan and reuse of material on site where possible. However, there will be a requirement to dispose of some waste offsite and any contaminated ground (if found) may require either remediation or disposal offsite (and potentially off island). Consideration would need to be given to the potential effects on local waste management infrastructure in terms of both capacity and capability to deal with waste arising from the project. There is the possible need for treatment or disposal of waste off island and the transfrontier shipment of waste.</td>
</tr>
<tr>
<td>(e) pollution and nuisances;</td>
<td>Main pollution and nuisances associated with the development will be emissions from the proposed power station (in terms of air quality and potentially noise) and visual impacts. Whilst these can be mitigated there are likely to be residual effects, especially in terms of visual impacts.</td>
</tr>
<tr>
<td>(f) the risk of accidents, having regard in particular to substances or technologies used.</td>
<td>Potential for fuel spills on site and/or tanker spills due to the increase in tanker delivery distance that would be required and potential for accidents during transport.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location of the Development</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) the existing land use</td>
<td>The land is owned by the Crown and therefore under the control of FIG. This area is currently partially developed with a quarry and abattoir adjacent to the site and the existing Sand Bay Wind Farm on the site. The proposed development area is subject to grazing rights and is currently grazed by sheep.</td>
</tr>
</tbody>
</table>
(b) the relative abundance, quality and regenerative capacity of natural resources in the area

| Habitats within the proposed site are considered to be common and widespread within the wider area. However, it is possible that protected plants occur in this area and further assessment is required in this regard. Affected areas (habitats lost temporarily during the construction phase) are likely to regenerate slowly due to the nature of the local climate. |

(c) the absorption capacity of the natural environment

| Habitats are considered to be common and widespread within the wider area. However, it is possible that protected plants occur in this area and further assessment is required in this regard. Affected areas (habitats lost temporarily during the construction phase) are likely to regenerate slowly due to the nature of the local climate. |

| (i) No wetlands were identified within or immediately adjacent to the proposed development site although several areas of standing water were identified which are considered to be present seasonally. (ii) The proposed site is approximately 1.7km north of Port Harriet inlet and away from mountainous regions to the north. (iv) The proposed site does not fall within an area designated for nature conservation or appear to present an important area for nature conservation. However, it is located immediately adjacent to Stanley Commons National Nature Reserve. (v) The proposed location is not near residential areas and there are no community facilities in the area. (vi) The proposed location lies within a partially developed area, development may affect the view south to Port Harriet from the Mount Pleasant Airport road. The proposed site is not subject to a statutory landscape designation. |

**Characteristics of potential impacts**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) the extent of the impact</td>
<td>The proposed development is expected to be sited on an area of approximately 2ha. The approximate population of the Falklands is 3000 people, with the majority located near the capital, Stanley. There are no residential properties in the immediate vicinity of the proposed development site. The proposed site is several kilometres from Stanley and no impacts are predicted at this scale.</td>
</tr>
<tr>
<td>(b) the transfrontier nature of the impact</td>
<td>Due to the scale of the development (i.e. relatively small in an international context) no direct transfrontier effects are predicted. However, should waste need to be taken off the island it could present a transfrontier impact.</td>
</tr>
<tr>
<td>(c) the magnitude and complexity of the impact</td>
<td>Impacts and impact significance are discussed separately in the tables above for each environmental discipline. There is the potential for environmental effects to arise and mitigation measures would need to be implemented to address these. Overall, at this stage, no significant effects have been identified although further assessment is recommended in some areas to establish impacts and there are likely to be residual impacts, in particular relating to visual effects.</td>
</tr>
<tr>
<td>(d) the probability of the impact</td>
<td></td>
</tr>
<tr>
<td>(e) the duration, frequency and reversibility of the impact</td>
<td></td>
</tr>
</tbody>
</table>

**Table 11: Summary of potential effects considered against FIG screening criteria**
6. REFERENCES


Environmental, Health and Safety (EHS) Guidelines (World Bank and International Finance Corporation, 2007)

Important Plant Areas of the Falkland Islands (Falklands Conservation, 2012)

Stanley Town Plan 2015 – 2030 (FIG, 2014)