



**ENVIRONMENTAL
STATEMENT**
NEW POWER STATION
NORTH MOLE
GIBRALTAR

JULY 2015

INTRODUCTION

This document provides a summary, in non-technical language, of the findings contained in the Environmental Statement for the proposed power station at the North Mole, Gibraltar.

The Environmental Statement reports on the findings of an Environmental Impact Assessment (EIA) that has been conducted voluntarily on behalf of HM Government of Gibraltar. It includes:

- **A description of the need for the project;**
- **Details of the main alternatives considered;**
- **Details of the proposed development;**
- **An assessment of the potential effects from the proposed development upon the environment;**
- **Details of the requirements to mitigate any significant effects to the environment.**

This is a public development project proposal by HM Government of Gibraltar.



SITE LOCATION

 New Power Station Site Location

 Existing Waterport Power Station

INTRODUCTION

HM Government of Gibraltar has submitted the Environmental Statement to the Development and Planning Commission as the deciding authority. The Environmental Statement has been submitted in accordance with the requirements of the Town Planning (Environmental Impact Assessment) Regulations, 2000 (the EIA Regulations) and European Union EIA Directive 2011/92/EU (as amended 2014/52/EU). Under the EIA Regulations the government will seek to obtain an EIA Certificate for the project.

The Environmental Statement has been coordinated by Environmental Gain Ltd on behalf of HM Government of Gibraltar, with technical contributions from a team of engineers and specialists.

A copy of the full Environmental Statement can be viewed during office hours at:

**Gibraltar Town Planner's Office,
Department of Trade, Industry and
Communications, Suite 63 I, Europort,
Gibraltar.**

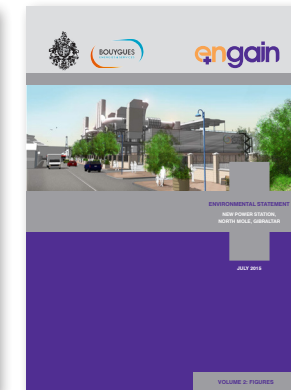
Further copies of the full Environmental Statement are available on request from Environmental Gain Ltd, The Old Church School, Butts Hill, Frome, Bath, UK, BA11 1HR, email: info@engain.com. A charge will be made to cover the costs of reproduction: £250 will be charged for full paper copies and £50 will be charged for CD versions. Additional electronic copies of this Non-Technical Summary are available on request at no additional charge via email.



Non-Technical Summary



Volume 1: Main Report



Volume 2: Figures

THE ENVIRONMENTAL STATEMENT SUITE OF DOCUMENTS

NEED FOR THE PROJECT

Gibraltar's existing power stations, Waterport, ISGS and OESCO, are nearing the end of their operational lives. The location of these power stations means they have contributed to degraded environmental conditions, which have been compounded by the age and inefficiency of the power stations.

Presently, Waterport Power Station is operating at a low capacity, since a fire in 2014. The OESCO Power Station's conventional units have been decommissioned, and the ISGS Power Station is on stand-by.

Temporary Caterpillar generating units have been installed at North Mole and the old OESCO site to augment power supply. This has been possible due to a European Union time extension on restrictions to air pollutants which ended in January 2015.

Gibraltar's Electricity Authority has forecast the energy demand for 2017 to be 42 megawatts of electricity. In 2027 the energy demand is estimated to be around 51 megawatts.

Due to these factors, it is evident Gibraltar requires a new power station to provide a more reliable and secure energy supply to replace existing supply and to meet growing energy demands.

In combination with Gibraltar's commitment to achieve 15% of energy provided by renewable sources by 2020, running the proposed power station on gas could contribute to a cleaner, more efficient and reliable energy network.



WATERPORT POWER STATION



TEMPORARY CATERPILLAR GENERATING UNITS ON NORTH MOLE ROAD

ALTERNATIVES

In developing the proposals for the new power station, the main options considered have been:

- 'No Development' Scenario
- Alternative Power Technologies
- Alternative Fuels
- Alternative Locations
- Preferred arrangement

'NO DEVELOPMENT' SCENARIO

Delays to the planned retirement of the three existing power stations have led to necessary temporary measures and contributed to greater emissions to the environment. Future energy demands have been calculated to outstrip current supply. These two factors would threaten Gibraltar's security of energy supply.

Importing power from neighbouring countries is not possible for Gibraltar due to its geographic and political setting, which means that it has to be self-reliant in providing its own energy. Any source of energy needs to be reliable, secure and sustained.

ALTERNATIVE POWER TECHNOLOGIES

Renewable sources of electrical energy could not meet the present or predicted future energy demand on their own, and based on current technology would not provide a secure and sustained supply.

There are restrictions on significant energy contributions from large wind farms due to the lack of land availability. Micro-wind turbines are being installed in some areas. Gibraltar does not have land suitable for a nuclear installation or a biomass plant.

Renewable sources, such as solar panels, are being phased into Gibraltar's supply. Other strategies are being considered to help reach renewable energy targets and add to the main supply. These include: wave and tidal generators, and options for purchasing renewable energy from sources outside Gibraltar.

ALTERNATIVES

ALTERNATIVE FUELS

Diesel oil is currently used in Gibraltar as the only fuel for power generation. Due to its adverse environmental and economic costs HM Government of Gibraltar does not perceive this as a sustainable fuel in the long-term.

Biodiesel is a petroleum substitute. Difficulties in finding a cost effective and guaranteed source for Gibraltar means biodiesel cannot be relied upon.

Natural gas has become a viable option for Gibraltar due to its increased availability and access, lower environmental emissions and lower cost in comparison to other fuels. It can be supplied as liquefied natural gas (natural gas which has been 'supercooled' to a liquid) for ease of storage and transportation.

ALTERNATIVE LOCATIONS

Availability of land in Gibraltar for development and construction purposes is a problem due to its small geographical size and population/development needs.

The choice of natural gas as the preferred fuel for the future power supply of Gibraltar conditioned the selection of the proposed development site. The port area offers easy access to possible supply networks by land or sea.

The alternative would have been the Lathbury Barrack site at Europa Point; however, the technical complication and challenges of supplying natural gas at this site would be immensely costly.

PREFERRED ARRANGEMENT

After an options evaluation and selection process, it was considered that the North Mole site offered the most suitable location for the new power station facility, as it avoids specific access, fuel supply and land use sensitivity problems present at other sites. Additionally, the North Mole site was considered to be the most viable site for Gibraltar's power station when the various planning and consenting issues were evaluated against the required project timescale.

Natural gas is the preferred fuel of choice available in time for commissioning in 2017, contributing to Gibraltar's reduced greenhouse gas emissions targets, with diesel intended to be a back-up and supplementary fuel. Gas is a significantly cleaner fuel than diesel, and should result in a net environmental gain.

THE SITE AND ITS SURROUNDINGS

The site of the proposed new power station is located at the northern end of Gibraltar along the North Mole breakwater on previously reclaimed land and to the southwest of the Gibraltar International Airport runway.

The area required for the development is approximately 1 hectare.

The site will be located on land presently occupied by Toyota Gibraltar Stockholdings; M.H.Bland; GFI Tracing; Sacarellos and a government catering facility, all of which will be relocated elsewhere in Gibraltar. Temporary energy generating turbines also present on site will be removed prior to commencement of works.



PROPOSED LOCATION OF NEW POWER STATION



BARRIERED ENTRANCE TO NORTH MOLE ROAD



VIEW ALONG NORTH MOLE ROAD

THE POWER STATION PROPOSALS

OPERATING CAPACITY

The new power station will initially consist of six generating engines (three natural gas and three dual-fuel diesel and natural gas engines). The proposed station is expected to operate continuously at an output that will be determined by the demand on the Gibraltar energy system, which is expected to vary between 16 and 42 megawatts of electricity in 2017.

Gibraltar's population and new designated development projects, will lead to an increased energy demand which is forecast at a maximum of 51 megawatts by 2027. The government may install an additional engine to meet such demand at a future point.










At any given time during normal operation, only four of the six generating sets will be operating (or five of the seven, if an additional engine is installed in the future). Additional capacity from the two other generators is required to enable operational units to be taken out of service for planned maintenance, and to allow for unscheduled breakdowns. It is also desirable that the number of generators running at any time is such that if one generator fails, the remainder can take the load without any loss of supply to consumers.



PROPOSED NEW POWER STATION

THE POWER STATION PROPOSALS



- | | | | | |
|--|--|--|---|--|
|  CAR PARKING |  LUBE OIL STORAGE AND MAINTENANCE TANKS |  ADMINISTRATIVE BUILDING |  HEAT RECOVERY |  STACKS |
|  DIESEL FUEL AREA |  WATER TREATMENT AND UREA STORAGE AREA |  ENGINE HALL AND SILENCERS (INCLUDING AIR COOLERS AND CONDENSERS) |  SELECTIVE CATALYTIC REDUCTION | |

LAYOUT OF PROPOSED POWER STATION

Each generating unit consists of an engine with auxiliary equipment, an air cooled generator, air intake and exhaust systems, and control and instrumentation equipment. Each generation unit will be housed in individual containers capable of withstanding a catastrophic failure. Installed air cooling radiators mean that there is no necessity for a seawater based cooling system.

The engine exhaust gases will be expelled via a flue within a chimney stack. The **stacks** will be 25 m in height, abiding to height limits imposed for the operation of the Gibraltar International Airport.

A heat recovery system is to be installed to recover energy from the exhaust gas of the natural gas engines, in order to produce additional electricity. This involves the use of a turbo-generator to transform thermal energy into mechanical energy, recovering 3.8 % of thermal energy.

THE POWER STATION PROPOSALS

Selective catalytic reduction (SCR) equipment will also be installed to further reduce the levels of air pollutants in the exhaust gases. **Urea solution** is used as the catalytic reduction agent. This system will be complete with storage tanks, interconnecting pipework, off-loading facilities and pumping facilities for urea solution. An on site urea solution receiving tank and pumping system will also be installed.

The plant will be designed to have an operational life of 30 years.



AERIAL VIEW OF PROPOSED POWER STATION FROM THE SOUTH WEST

The full built structures on the site will include:

- A generation building, including structures to contain the engine hall, central control room and employee facilities.
- 11 kilovolt station switchboard connectivity.
- An **administration building** to accommodate the Gibraltar Electricity Authority.
- Surface water drainage system and oil interceptor traps.
- Security fencing, **gates** and guard house.
- Surfacing and landscaping.
- On-site roads and **parking areas**.

Gas will be supplied at the site boundary by pipeline. Liquefied natural gas will be stored offsite, at a location to be determined by the government. Diesel, only used for start up and abnormal conditions, will be delivered by road tanker and short-term (approximately 20 days) supply in an **on-site tank farm**.

CONSTRUCTION

The construction period is estimated to take approximately 24 months. Working hours will generally be between 08:00 to 20:00 Monday to Saturday. There will be an allowance for weekend working where absolutely necessary and for night shifts to minimise disruption of normal road traffic in Gibraltar.



CONCRETE BATCHING PLANT

The key elements of the construction schedule are as follows:

- Site preparation, e.g. access for construction vehicles, temporary services, construction compound, safety fencing and signage.
- Earthworks and disposal of any waste arising using conventional construction equipment.
- Laying of foundations and piling for the buildings and plant – concrete may be produced on site using a small batching plant.
- Construction of the permanent site infrastructure: roadways, water supply etc.
- Construction of the permanent buildings, including those for housing the power and auxiliary plant and offices – predominantly steel construction.

- Testing and start-up of equipment.
- Removal of all temporary facilities, waste and debris.
- Landscaping work including new planting.

The engines will be brought to site in component parts by sea, and delivered to North Mole directly. Welding equipment will be used for tank and pipe construction.

The **Construction Environmental Management Plan** sets out the measures that will be undertaken by the Contractor (the organisation HM Government of Gibraltar selects to design and build the scheme) to ensure a safe site and good site practice with regard to the environment during construction activities. The measures will control noise, dust, site discharges, lighting, and works' traffic.

THE ENVIRONMENTAL ASSESSMENT PROCESS

The environmental assessment has been carried out at three levels:

- Scoping the projects to ensure relevant studies were included;
- A comprehensive technical assessment; and
- Reporting on significant effects drawn together and summarised in this Non-Technical Summary.

The assessment methodologies for each study were developed to reflect current best practice.

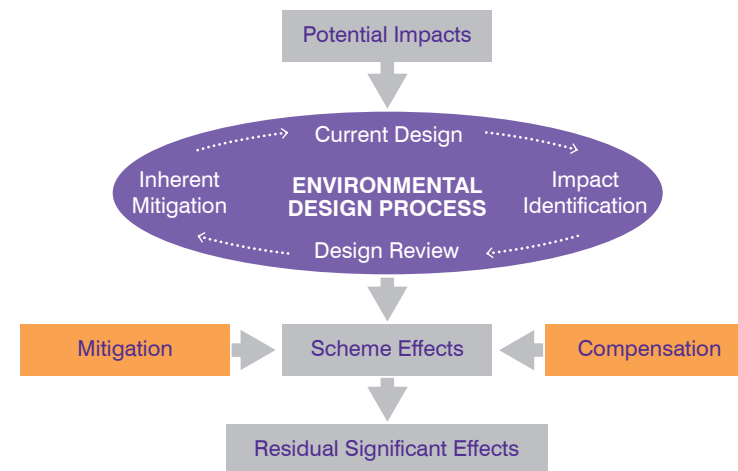
Relevant statutory and non-statutory organisations (e.g. Department of the Environment and Climate Change, Environmental Agency, Environmental Safety Group, Gibraltar Ornithological and Natural History Society, Ministry of Defence, Royal Air Force, Civil Aviation Authority) have been consulted on the methods for assessing the effects of the proposals and have assisted with information on the evaluation of the site and environmental sensitivities.

The environmental assessment has provided the power station designers with important information regarding the sensitivities of resources that could be affected by the proposed power station. The resulting design proposal has developed to take account of these sensitivities and avoid negative effects wherever possible.

The environmental issues that have been assessed as part of the EIA include:

- Air Quality
- Land Use and Community
- Traffic and Transportation
- Coastal Processes and Water Quality
- Landscape and Visual Amenity
- Waste and Material Resources.
- Contaminated Land
- Noise and Vibration
- Ecology and Nature Conservation

Environmental Assessment Generic Process



LIKELY SIGNIFICANT EFFECTS AND MITIGATION: Specific Mitigation Measures

HM Government of Gibraltar is committed to and will ensure the implementation of all necessary mitigation measures to avoid or reduce any significant environmental effects from the construction and operation of the new power station.

AIR QUALITY

During the construction there is the potential for buildings and residents within the area to experience adverse effects from small particles of dust. These effects will be minimal because of effective site management as detailed in the **Construction Environmental Management Plan**.

Once the new power station is operational, the existing Waterport Power Station and temporary generators will be decommissioned. The impact of these existing power supplies have been modelled, and it has been demonstrated that these facilities

are currently contributing to poor air quality conditions in the vicinity of North Mole Road. The proposed power station will run on a cleaner fuel, and with the new technology, will lead to a net environmental gain in air quality.

The proposed power station will not produce sulphur dioxide, nitrogen dioxide and particulate emissions in excess of the health based objectives set by European legislation. Mitigation measures have already been built into the design of the proposed power station.

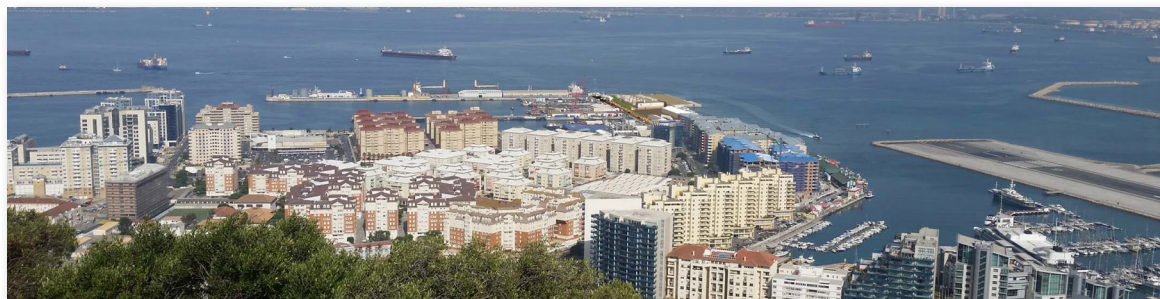


LIKELY SIGNIFICANT EFFECTS AND MITIGATION: Specific Mitigation Measures

COASTAL PROCESSES AND WATER QUALITY

The new proposed power station will be protected from coastal processes, such as flooding, wave action and future impacts due to sea level rise, by the North Mole Reclamation which includes caissons, revetments and rock armour.

Potential risk of pollution effects to surrounding waters from the power station are low as a **Construction Environmental Management Plan** and operational procedures will include pollution control measures which will be agreed with the regulatory authority.



VIEW FROM PRINCESS CAROLINE'S BATTERY

CONTAMINATED LAND

There is a low risk of exposing contaminated spoil during excavation or the accidental spillage of chemicals, that may prove a hazard to human health or vegetation.

Contaminated material, where found, will be separated and disposed of under licence from the appropriate authority to a registered landfill. The **Construction Environmental Management Plan** will include pollution control measures and these will be agreed with the regulatory authority.

Spill contingency in response planning will be developed for approval by statutory parties and emergency services.

ECOLOGY AND NATURE CONSERVATION

There are no plants or animals on the proposed development site of ecological significance. The ecological assessment has considered the coastal waters of Gibraltar for the risk of accidental spillages. In addition, it has assessed the Rock of Gibraltar Nature Reserve for the potential impact of nitrogen deposition emanating from the engine exhausts. It has been found that there will be no significant effect from such deposition.

Landscaping using locally native vegetation will improve the local habitat value of the area close to the power station.



VIEW FROM NORTH MOLE ROAD

LIKELY SIGNIFICANT EFFECTS AND MITIGATION: Specific Mitigation Measures

LAND USE AND COMMUNITY

The location of the proposed power station is sufficiently away from Gibraltar's main community amenities that none will be affected by its construction or operation.

Adjacent land users have been consulted throughout the design development. The airport operations are of particular importance and the proposals have been subject to specific aeronautical studies, taking account of airport operational constraints and requirements.

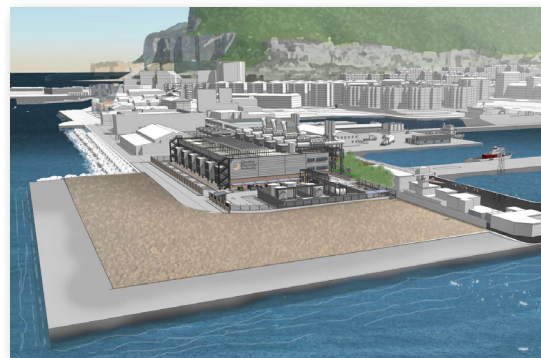
Port operations have also been specifically considered, including port operations and cruise liner requirements. Consultation has been important to understand how the area is used by cruise liner passengers, local harbour operations and business operators. There are no constraints to the local community or operators from the construction or operation of the new power station.

Affected parties will continue to be consulted throughout construction.

LANDSCAPE AND VISUAL AMENITY

The construction of the power station may affect viewpoints of the North Mole area, however, these effects are very limited. The **Construction Environmental Management Plan** will include robust and attractive hoarding around the site.

Care will be taken with the quality of the design of the power station to provide a neat and well ordered facility, using good quality materials and finishes.



AERIAL VIEW FROM WEST SHOWING RECLAIMED LAND

NOISE AND VIBRATION

During the construction there is the potential for buildings and residents within the area to experience adverse effects from construction activities. These effects will be minimised as far as possible with the implementation of noise and vibration mitigation measures and effective site management as detailed in the **Construction Environmental Management Plan**.

Strict requirements listed by HM Government of Gibraltar provided building design noise and vibration level limits ensuring nearby businesses and residents will not be significantly affected by the operation of the new power station.

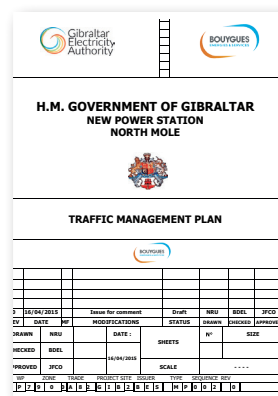
The new power station will improve on noise compared to existing sources from the Waterport Power Station and temporary generators.

LIKELY SIGNIFICANT EFFECTS AND MITIGATION: Specific Mitigation Measures

TRAFFIC AND TRANSPORTATION

During the construction of the proposed power station, there will be an increase to local traffic of an average of 2 HGVs per day, and a maximum increase of 10 HGVs per day, which is not expected to affect the local road network. This will be managed directly under a Construction Traffic Management Plan in agreement with the regulatory authority.

When operational, the new power station will not cause additional disruption to the local road network.



WASTE AND MATERIAL RESOURCES

The proposed development has been determined to be a small scale industrial project in terms of material resources and waste production.

Potential impacts associated with the movement of construction materials such as concrete, steel and aluminium, and waste are not expected to be significant.

Implementation of a Construction and Environmental Management Plan and a Waste Management Plan once construction is complete will ensure no effects on the local and wider environment.

CUMULATIVE EFFECTS

The proposed power station construction will have an adopted **Construction Environmental Management Plan** that will provide control measures for noise, dust, lighting, and construction traffic. The plan will be agreed with the relevant regulatory authorities. A site health and safety plan will also be adopted which will include signage, hoarding and fencing. With these plans in place, temporary construction effects will be reduced and managed.

There are other planned developments proposed within the vicinity of the new power station proposals. Many are small scale or are sufficiently distant from these proposals that there will be no predicted cumulative adverse effect.

The operation of the proposed power station will allow decommissioning of the existing power station and temporary generators, which will improve air quality.





This Environmental Statement has been produced by Environmental Gain Ltd on behalf of HM Government of Gibraltar. These documents can be viewed at Gibraltar Town Planner's Office, Department of Trade, Industry and Communications, Suite 631, Europort, Gibraltar. Further copies can be obtained from Environmental Gain Ltd.



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