

Government of Gibraltar



PROPOSED NEW
POWER STATION
LATHBURY BARRACKS
GIBRALTAR

FEBRUARY 2009

INTRODUCTION



This Non-Technical Summary provides an overview, in non-technical language, of the findings contained in the Environmental Statement for the proposed new power station at Lathbury Barracks, Gibraltar.

The Environmental Statement records the findings of an Environmental Impact Assessment of the new power station, and includes:

- A description of the need for the project;
- Details of the proposals and alternatives considered;
- The assessment of potential significant environmental effects; and
- Details of any required mitigation.

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



Approximate Site Location

NEED FOR THE PROJECT

Gibraltar will require a new power station to provide for growing energy needs and to replace 3 existing power stations whose engines have reached, or are rapidly reaching, the end of their operational lives.



OESCO Power Station

The 3 power stations (Waterport on the North Mole, OESCO in the building adjoining the Europa Business Centre and ISGS situated in HM Naval Base) need to be replaced by 2011 due to a combination of their age, condition and environmental concerns as the generators are very old and are close to residential areas.



Waterport Power Station

There is a growth in the demand for electrical energy from existing users in Gibraltar. There are also several large scale developments planned from which the energy demand is predicted to outstrip the current supply.

ALTERNATIVES



Gibraltar is constrained by the limited amount of land available for building a new power station. This is due to the small size of the country, the sheer landscape of the Rock, protected wildlife and its high density of population. Additionally Gibraltar needs a sustained and secure supply of energy.

In developing the proposals for the new power station, a number of alternatives were considered:

A 'Do-Nothing' Scenario

Delays to the planned retirement of the 3 existing power stations could not be sustained for long and would result in increasing unreliability and potential for unplanned power outages, and greater emissions to the environment as demand increases. Future energy demands have also 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 satisfy the predicted demand on their own, and based on current technology would not provide a secure and sustained supply.

Renewable sources will be phased into the overall Gibraltar power supply strategy to add to the main supply. Gibraltar is investigating the use of wind turbines, energy from burning waste, marine current generators and purchasing renewable energy from sources from outside Gibraltar. By 2032 Gibraltar will provide at least 12 per cent of its energy demand from renewable sources.

Alternative Fuels

The available fuels for the proposed new power station are diesel oil, natural gas, liquefied natural gas and biodiesel.

Low sulphur diesel oil is currently used in Gibraltar as the only fuel for power generation and so is already widely available and can be stored readily. It does not pose a particularly high explosion or fire risk as it is not flammable.

Natural gas is not currently available in Gibraltar and would need to be piped in from another country, which could lead to significant political and transboundary issues. If risks were considered acceptable, it would take several years to organise and construct a pipeline connection and it would not be available in time for start-up of the new power station in 2011.

Liquefied natural gas is natural gas that has been converted to liquid form for ease of storage or transport. It is not considered practical or safe to site a receiving terminal in Gibraltar, which rules out its potential use.

Biodiesel is an organic chemical produced by the chemical reaction of a vegetable oil or animal fat with an alcohol such as methanol. It can be used as a substitute for petroleum diesel. The

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use of biodiesel has already been considered in Gibraltar but it has been difficult to find a cost effective supply source that is from a guaranteed renewable source. If a suitable source is located it will be possible to use this, blended with diesel oil in the new power station and attain part of Gibraltar's commitment to renewables.

Alternative Technologies

High, medium and low speed diesel engines, gas turbines and steam turbines have been considered for power generation. Medium speed diesel engine units in the power output range 6.5 to 8 Megawatts (MW) are deemed as appropriate because all of the units can be located within the available space and units of this size can be operated satisfactorily at minimum loads in order to follow Gibraltar's varying electricity demand.

Alternative Locations

Once the type of fuel and technology had been considered, the area of land required for the power station could be calculated. This narrowed

down the possible location of the power station to several sites that could accommodate the power station infrastructure requirements. The location options were:

- Governor's Cottage;
- Lathbury Barracks;
- NATO Distillery;
- Tunnels at Arrow Street and Powers Drive/Beefsteak Magazine;
- Western Beach Area – New Reclamation;
- Windmill Hill Flats;
- Europa Point; and
- Aerial Farm.

Space available at Governor's Cottage, NATO Distillery, Tunnels at Arrow Street and Tunnels at Powers Drive were deemed too restricted and inadequate to house a power station, therefore these sites have been removed from the alternative site assessment.

The remaining sites have been assessed for practical and logistical suitability, environmental and planning constraints and the impact of the

sites on project costs and schedule.

The site at Europa Point is not available for transfer from the MoD, and also has the highest estimated costs, and would require a change in use of the area from residential/recreational to industrial. Use of this site, if it did become available, will potentially result in significant visual, air quality and noise effects on the surroundings. Due to these constraints it is considered unlikely that this site can be developed within the required timescale.

The site at Windmill Hill Flats has been discounted as it does not provide enough area for the required power station. Other constraints include its ongoing use by the MoD for training, its unknown geology, its location within a European protected wildlife site and potential use as a wind farm site, along with the second highest of the capital costs. This site was not considered to be viable within the required timescale.

The potential site at Western Beach would



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be situated very close to the airport runway, residential properties and the land frontier. In order to build a power station at this site, land would need to be reclaimed from the sea for which a more detailed EIA would be required as well as the undertaking of a project specific Aeronautical Study. Past aeronautical studies for reclamation at this location have identified potential impacts on airport safety which may take time to manage and remove. In addition, this site will be severely constrained with regards to the positioning and heights of the chimney stacks due to its close proximity to the runway. There are also planning issues such as the impact on the surrounding residential properties and visual impact effects at close proximity and the adjacent Airport, all of which may prove difficult to mitigate. A power station at this location will give rise to significant transboundary environmental effects relating to air quality, visual impact and water quality. This will require due consultation and the timescale for such consultation (and public participation) will affect the essential project timescales. It should be further stressed that the three existing

power stations are operating engines that have, or shortly will be, exceeding their design life and are therefore likely to be major contributors to the reduction in air quality in the area, as well as the fact that peak energy demand is rapidly approximating present generating capacity. There is therefore considerable pressure on the Government of Gibraltar to expedite the construction of the new power station and opting for this site would not, at the moment, provide any certainty of the programme to complete.

The Lathbury Barracks site will have slightly lower costs than the Western Beach site, but is more difficult to access. It is environmentally sensitive due its close proximity to a European protected wildlife site and also to new and proposed residential and public use areas. With appropriate assessment and strict application of mitigating measures, these issues were not considered to be insurmountable within the required timescale and this option has been considered in more detail.

Preferred Arrangement

Following the site selection process, it was considered that the Lathbury Barracks site offered the most suitable location for the new facility, as it has sufficient space for development and it is considered to have a lower degree of specific problems when compared with other sites.

The Lathbury Barracks site was considered to be the most viable site for Gibraltar's power station when the various planning and consenting issues were evaluated with the required project timescale.

Diesel oil is the only fuel that is likely to be available in time for commissioning in 2011. The future use of biodiesel could easily contribute to Gibraltar's renewable energy obligation and will be investigated further.



THE SITE AND ITS SURROUNDINGS

The site of the proposed diesel power station is situated towards the southern end of Gibraltar at the ex-MoD parade ground of Lathbury Barracks. The location has been selected on the basis of available land area sufficient to accommodate a diesel power station and associated infrastructure capable of meeting the predicted 72 MW peak demand in the future.



The area required for the development is approximately 1.9 ha and includes the extent of the tarmaced area of the parade ground up to the perimeter fencing on the south side. The site also includes an area of land to the east of the parade ground that has the remains of an ex-MoD turfed pipe range on it, and a vegetated terraced area to the north between the parade ground and the existing Retrenchment Block.



The parade ground is currently used for car parking, and general unofficial public use. Prior to this it has been used by the MoD as a parade ground, before which the area was open grassland.

The site lies immediately to the south of 'the Great Main Fault' between the Main Ridge of Gibraltar and the Southern Plateau. Cliffs and steep rock slopes bound the site to the east, with more gently inclined slopes to the west.



Approximate Site Area

THE NEW POWER STATION PROPOSALS



The following summarises the key aspects included in the concept design of the new power station at the Lathbury Barracks site.

Proposed New Power Station

The new power station will initially be based on the use of diesel engines each with a generating output of 6.5 to 8 MW. Sufficient numbers of engines will be provided such that the firm capacity (allowing for maintenance) will cover the 2010 peak demand of 42 MW. The installation of further diesel generators may need to be phased in over a number of years, depending on the growth in demand and the take-off of renewable energy options, failing which it is anticipated that a further three generating sets of similar size will need to be installed between 2012 and 2032. Spatial provision will be made in the power station design to house the additional future diesel generators.

Each generating unit consists of a single medium speed diesel engine with auxiliary equipment, an air

cooled generator, air intake and exhaust systems, and control and instrumentation equipment.

The exhausts from the diesel engines will discharge via multi-flued chimneys (stacks) with a separate flue for each engine. The stack heights will provide adequate dispersion of flue gases whilst minimising visual impact. The stacks will be approximately 40 m in height. There will initially be three stacks each with capacity for three flues, with a possible future further stack, if needed, to be installed at a later date.

Selective Catalytic Reduction (SCR) equipment will also be installed, which will use urea to reduce potentially polluting nitrogen oxides in the exhaust gases. This system will be complete with storage tanks, interconnecting pipework, off-loading facilities and pumping facilities for urea solution, prior to injection into the exhaust gas stream.

An off site urea solution receiving tank and pumping system will be installed at a suitable location accessible to road tanker deliveries. This would most probably

be located near the present incinerator.

Air blast radiators to cool the engine systems will be arranged horizontally outside the power station building.

The plant will be designed to have an operational life of 25 years.

The new power station will be licensed controlled, and operated under Integrated Pollution Prevention and Control laws that protect the environment.

Fuel Supply

The fuel supply system will consist of a new unloading line from the harbour on the boundary of the HM Naval Base and Cammell Laird Yard to allow discharge of diesel oil from coastal barges moored alongside the wharf. It will then be routed to the east side of Gibraltar via a new diesel oil line running in the Admiralty East-West (Comcen) tunnel and along Sir Herbert Miles Road. The

THE NEW POWER STATION PROPOSALS



pipeline will then connect to new storage tanks to be constructed inside the existing Admiralty Oil Reservoir No 4 on the east side (the East Side Tanks).

Fuel transfer pumps will transfer the diesel oil to service tank(s) located at the power station via a pipeline.

Interconnecting Transmission System

The existing electricity distribution system will be extended in order to tie in the existing and new facilities. It is envisaged that the distribution works will include the following:

- New 11 kilovolt (kV) cable circuits between the Lathbury Barracks power station and the existing Jumper's Bastion distribution centre;
- New 11 kV cable circuits between the Lathbury Barracks power station and the new Eastside Distribution Centre;

- New 11 kV cable circuits from the Eastside Distribution Centre to a new Waterport distribution centre;
- Replacement of the existing 11 kV switchgear at Jumper's Bastion distribution centre to allow for connection of the new cable circuits from Lathbury Barracks; and
- Provision of a new distribution centre to be located in the Mid Harbour area, to replace the existing Orange Bastion distribution centre, together with interconnecting cabling from Jumper's Bastion.

Enabling Works

It is envisaged that the following enabling works will be required to enable the passage of large and heavy loads to the power station site:

- Underpinning of the road and provision of steel plates to spread wheel loads on parts of Sir Herbert Miles Road;

- Temporary infilling at points of sharp changes of gradient within the Dudley Ward tunnel and at the base of the Hole in the Wall Road;
- Underpinning of the lower 25 – 30 metres of the Hole in the Wall Road to prevent collapse where the road is already showing signs of settlement; and
- Widening of some parts of the Hole in the Wall Road, although avoiding the listed heritage structure.

Landscaping

The site will be landscaped to include green areas with native planting to provide corridors for wildlife migration, and the administration office and store building will include a roof suitable for ecological enhancement (known as a 'brown roof').

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 and night working where absolutely necessary.

Earthworks will be carried out using conventional construction equipment such as excavators, bulldozers, compactors, dump trucks and tipper lorries.

The total volume of excavated material will be approximately 15,000 m³. As far as possible, this excavated material will be graded and used on site once foundations are complete.

Concrete may be produced on site using a small batching plant.

Prefabricated and sectional structures will be brought to site by lorries and erected using mobile cranes.

The diesel engines will be brought to site in component parts on heavy low loaders via Sir Herbert Miles Road and the Dudley Ward tunnel.

Welding equipment will be used for tank and pipe construction.



ASSESSING THE ENVIRONMENTAL EFFECTS OF THE PROPOSAL

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.

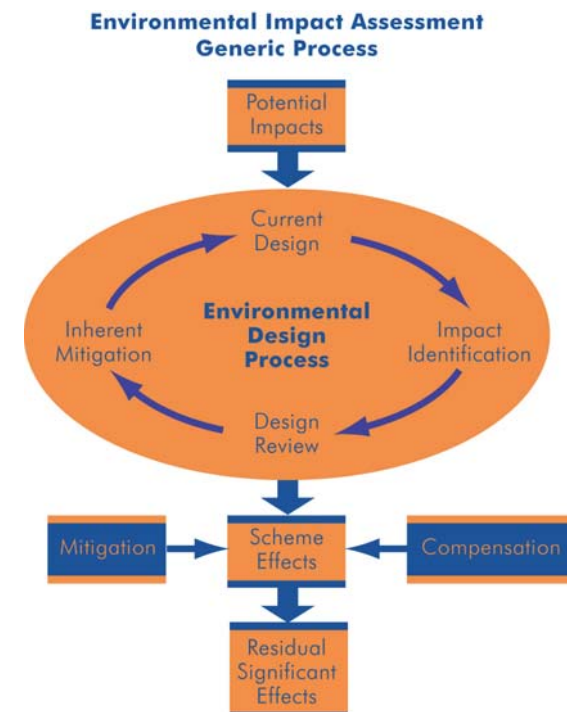
The assessment methodologies for each study were developed to reflect current best practice.

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

- Air Quality;
- Archaeology and Cultural Heritage;
- Ecology;
- Land Contamination;
- Landscape Character and Visual Amenity;
- Land Use;
- Noise and Vibration; and
- Socio-Economics.

Relevant statutory and non-statutory organisations (eg Ministry for the Environment, Environmental Agency, Gibraltar Ornithological and Natural History Society) 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 been developed to take account of these sensitivities and avoid negative effects wherever possible.



LIKELY SIGNIFICANT EFFECTS AND MITIGATION: Construction Practice and Detailed Design

The Construction Environmental Management Plan sets out the measures that will be undertaken by the Contractor (the organisation the 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, night time lighting, and works' traffic. The Government's chosen Contractor will develop a

detailed design and an Operational Environmental Management Plan that will manage, avoid, monitor and react to potential significant changes to the environment. In particular, this will monitor and control air emissions that may be harmful to sensitive vegetation and wildlife.



LIKELY SIGNIFICANT EFFECTS AND MITIGATION: Specific Mitigation Measures



The Government of Gibraltar is committed to and will ensure implementation of all necessary mitigation measures to avoid or reduce any significant environmental effects from the construction or operation of the new power station. The Government will conduct an additional environmental assessment should the new power station be decommissioned in the future.



Air Quality

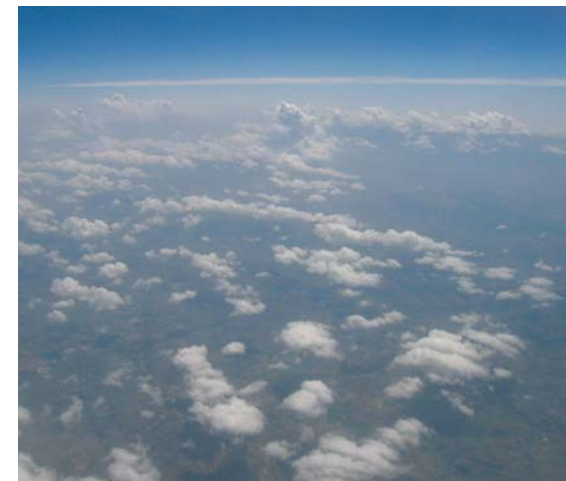
During the construction there is the potential for buildings and residents within the area to experience adverse effects from small particles of dust. These effects will be minimal because of effective site management as detailed in the Construction Environmental Management Plan.

Coinciding with the coming into operation of the new station, the three existing power stations at ISGS, OESCO and Waterport will be decommissioned. The impact of these existing power stations has been modelled, and it has been demonstrated that these facilities are currently contributing to poor air quality conditions in the vicinity of Rosia Road. The proposed new cleaner power station technology with the decommissioning of the older power stations will thus bring beneficial effects to these areas.

The operation of the new station may result in increases in sulphur dioxide, nitrogen dioxide and particulate emissions, in certain areas, leading to a degradation in the air quality of those areas.

These emissions would however not cause any of the health-based objectives to be exceeded due to the measures that have already been built into the design of the power station.

There may be increases in nitrogen deposition on European protected wildlife sites, which may have an effect on vegetation. A programme for monitoring nitrogen deposition will be established in order to monitor this and corrective action, eg by altering the level of removal of nitrous oxides or changing the stack heights.

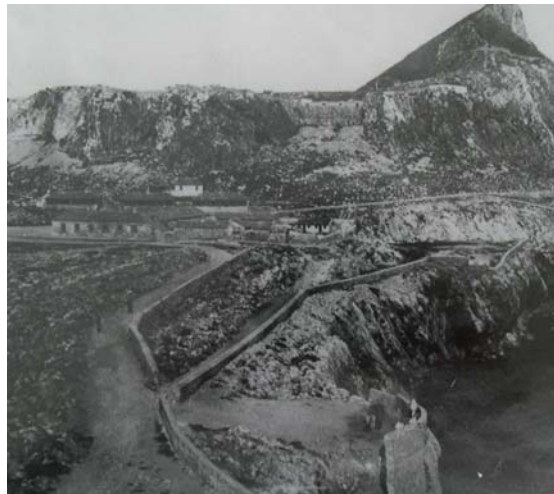


LIKELY SIGNIFICANT EFFECTS AND MITIGATION: Specific Mitigation Measures



Archaeology and Cultural Heritage

During the excavation and construction works, artefacts may be encountered lying beneath or within the ground. Any significant archaeological finds associated with the windmills, anti-aircraft emplacements or any other archaeology that is exposed will be recorded and dealt with by agreement with the relevant conservation authority.



Ecology

The ecological assessment has identified plants and animals of potential sensitivity in the area.

Good practice construction measures, such as dust suppression techniques and low spill lighting, to avoid possible effects to wildlife such as bats, birds and reptiles will be incorporated into the Construction Environmental Management Plan. Damage to or destruction of habitat or birds (including the protected Barbary partridge) will be avoided by undertaking potentially damaging works such as scrub removal outside of the bird breeding season.

During operation, an increase in nitrogen deposition may affect the integrity of European protected sites. Monitoring and management to maintain grassland species diversity under the influence of increased nitrogen deposition will be undertaken.

Landscaping using locally native vegetation will help reduce the amount of habitat loss, however there will still be a low significant effect after mitigation. Bats may be affected by a small area of habitat

loss, light pollution, disruption of movement and accidental fuel spillages. Although a number of mitigation measures will be applied, there will be a potential residual significant effect.

By retaining a 'corridor' of land from the north to the south side of the site, Barbary partridge, reptiles and invertebrates will be able to move between habitats either side of the power station.



LIKELY SIGNIFICANT EFFECTS AND MITIGATION: Specific Mitigation Measures



Land Contamination

There is a low risk of exposing contaminated soil 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 license 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.



Landscape Character and Visual Amenity

The magnitude of change to local and wider landscape character of the area is considered to be low to medium with the new power station.

The construction of the power station may affect viewpoints of the Lathbury Barracks area. Mitigation measures will be managed through the Construction Environmental Management Plan, including robust and attractive hoarding around the site and control of vehicle movements.

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. As the few clear views of the facility will be from the Upper Rock, it will be seen mainly against the background of the Lathbury military and industrial area. Colours will be generally buffs or light greys to fit with this landscape background. Operational controls to minimise the production of visible plume will also be implemented. Some views from the Mediterranean Steps Path, the view from Jew's Gate and some residences may experience residual significant visual effects even after mitigation has been included as part of the design.



LIKELY SIGNIFICANT EFFECTS AND MITIGATION: Specific Mitigation Measures

Land Use

A construction compound will be located on site, and secondary construction compounds will be located further from site as there is not enough room within the site boundary to store large components or quantities of materials. The Contractor will assess any environmental consequences and will avoid or reduce significant noise, disturbance, vibration, traffic, air quality, fragmentation of land and general pollution in the choice of available land.

The parade ground is currently owned by the MoD and is used as a storage area for a vehicle company. The Parade Ground is also occasionally used by the general public for general recreational activities. Although this is not an official designation, there is no possible mitigation for the permanent change in land use which will result in a low but adverse significant residual effect.



LIKELY SIGNIFICANT EFFECTS AND MITIGATION: Specific Mitigation Measures

Noise and Vibration

Construction noise at the nearby Firing Range Office (MoD) will be mitigated by erecting temporary hoardings of 2.5 m in height on the western boundary of the site, which will reduce noise levels sufficiently that the use of the building as an office will not be affected during the construction period.

In order to mitigate operational noise effects on adjoining areas, mitigation measures will be built into the design of the power station, including high efficiency silencers in the exhaust stacks, low noise cooling radiators and careful design in the acoustics of the engine hall. Supplementary noise monitoring will also be carried out to ensure that noise levels are at an acceptable level.



Socio Economic

If employment for construction of the power station is sourced in Gibraltar, it will be beneficial for the local economy, and therefore steps will be made to encourage this as far as practicable.

Communities immediately surrounding the new power station may experience a combination of effects from noise, visual changes, and air quality changes. Tourists visiting the area are likely to experience similar effects. These potentially significant effects will be managed through the Construction Environmental Management Plan and mitigation to the design of the power station.

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 only development considered to result in potential temporary significant effects during construction is that of the new prison facility, where combined lighting effects with the power station may have an impact on migratory birds. However with

mitigation applied, no cumulative significant adverse effects are anticipated.

The operation of the proposed new power station will allow decommissioning of the 3 existing power stations, which will improve air quality.

FURTHER INFORMATION

The Government of Gibraltar has submitted the Environmental Statement to the Development and Planning Commission to assist in its deliberations and in considering the project. The Environmental Statement has been submitted in accordance with the requirements of the Town Planning (Environmental Impact Assessment) Regulations, 2000 (the EIA Regulations) and EC EIA Directive 85/337/EEC (as amended by Directive 97/11/EC). Under the EIA Regulations the Government will seek to obtain an EIA Certificate for the project. The EIA follows industry recognised standards.

The Environmental Statement has been managed by Environmental Gain Ltd, on behalf of the Government of Gibraltar, with technical contributions from a team of engineers and consultants. Environmental Gain Ltd is an independent environmental assessor with experience of undertaking EIAs of similar redevelopment proposals internationally and within Gibraltar. The assessment team has been drawn from a highly experienced group of specialists that are practised in the techniques of environmental assessment for their subject area and dealing with projects of a similar nature and scale.

A copy of the full ES can be viewed at:

Gibraltar Town Planner's Office, Department of Trade, Industry and Communications, Suite 631, Europort, Gibraltar.

Further copies of the full Environmental Statement are available on request from Environmental Gain Ltd, Environmental Gain Ltd, The Old Church School, Butts Hill, Frome, Somerset, UK BA11 1HR,, email: info@engain.com. A charge will be made to cover the costs of reproduction: £150 will be charged for full paper copies and £50 will be charged for CD versions. Additional copies of this Non-Technical Summary are available on request at no additional charge via email.

Government of Gibraltar



This Environmental Statement has been produced by Environmental Gain Ltd on behalf of the 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.