Proposed Hunterston Multi-Fuel Power Station

Non-Technical Summary of Environmental Statement
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NOTE ON THE ENVIRONMENTAL STATEMENT

This note explains the content of and the relationship between, the Section 36 application documents submitted for the proposed multi-fuel power station application at Hunterston.

The Documents

The application is made up of the following documents:

- **The Non-Technical Summary (NTS)**
  
  ...is a summary of the Environmental Statement and covers all aspects of the Environmental Impact Assessment (EIA) and Section 36 application process as well as providing a summary of the predicted effects of the development. The information provided within the NTS has been supported where possible by relevant and appropriate illustrations, figures and plans. It is recommended that readers start with this summary to gain an overall understanding of the proposed development.

- **Volume 1: The Section 36 application, ES and Supporting Documents**

  ...there are no formal planning application forms for a Section 36 application; instead the application is accompanied by a covering letter containing the pertinent information. The covering letter for this proposed development contains information on the applicant, the application, the location, size and scale of the proposed development and is supported by two figures showing the Site Location and Site Layout. It confirms the number of copies that are being submitted, the consultees that will be sent a copy and the locations where the general public can go and view the application. In accordance with the relevant guidance, it also confirms which papers the advertisement will be placed in and for how long.

  ...the ES reports on the findings of the EIA. It includes a description of the proposed development, including information on the existing site, design and size of the project. It also provides an outline of the main alternatives studied by the developer and an indication of the main reasons for their choice, explaining the environmental effects that have been considered throughout this process.

The ES sets out the baseline data that has been used to identify and assess the main effects. It confirms the scope of each impact assessment, the consultation
undertaken to derive this and the methodology adopted to predict the effects that
the development is likely to have on the environment. Finally it summarises the
recommended measures envisaged to avoid, reduce and if possible remedy any
identified significant effects.

The Environmental Statement contains impact assessment chapters under the
following headings:
- Landscape and Visual Impact Assessment;
- Noise and Vibration;
- Air Quality;
- Hydrology, Geology, Soils, Hydrogeology and Ground Contamination;
- Coastal Processes;
- Marine Water Quality;
- Terrestrial Ecology;
- Marine Ecology;
- Archaeology and Cultural Heritage;
- Traffic and Transport; and
- Socio Economic.

...the Supporting Documents for the Section 36 application comprise a number of key
elements including a Planning Supporting Statement (setting out how the proposed
development is compliant with International, National, Strategic and Local legislative
and policy requirements) and the Statement of Community Involvement (setting out
the level and nature of consultation undertaken by the applicant throughout the pre-
application stage). Due to the requirements upon new Thermal Power Stations, this
application also includes a Carbon Capture Readiness Report (demonstrating that the
development is in accordance with the more recent guidance and can be deemed to
be Carbon Capture Ready) and a Waste Heat Study report (demonstrating that the
applicant has considered in detail how waste heat from the development might be
utilised for industrial and domestic purposes).

- Volume 2: Environmental Statement Technical Appendices Part 1...

... to minimise the size of the Environmental Statement and to make it more user
friendly, additional information that supports the various impact assessments is
provided within the Technical Appendices. Due to the nationally significant nature of
this development, this information has had to be split over two volumes. This volume
provides detailed assessment reports and supporting information to the Environmental Statement Chapters numbers 1 – 9.

- **Volume 3: Environmental Statement Technical Appendices Part 2...**
  ...to minimise the size of the Environmental Statement and to make it more user friendly, additional information that supports the various impact assessments is provided within the Technical Appendices. Due to the nationally significant nature of this development, this information has had to be split over two volumes. This volume provides detailed assessment reports and supporting information to the Environmental Statement Chapters numbers 10 – 21.

- **Volume 4: Environmental Statement Plans and Figures...**
  ...a number of the Environmental Statement Chapters are supported by plans and figures, depicting a wide range of information including site location, site layout, survey areas, the location of sensitive receptors, graphical representations of the proposed development and points of interest with regards to each individual assessment. All supporting plans and figures for the Environmental Statement are included within this volume at A3 size for optimal viewing, therefore please note that the scale on some plans should be adjusted accordingly. Plans can be provided at larger scale if required.

- **Volume 5: Site Analysis and Design Statement...**
  ...this volume provides an analysis of the site and surrounding context, identifying the opportunities for the development from an architectural standpoint with regards to the layout of the site and its landscape and buildings. It also incorporates an assessment of the visual impact on the surrounding environment, using the results from this to influence the composition of the buildings and volumes and their facades.
An organogram that demonstrates the relationship between the volumes and the key documents is provided below.
1. INTRODUCTION

Ayrshire Power Ltd. (APL) wish to apply for planning permission under Section 36 of the Electricity Act 1989 to construct and operate a multi-fuel power station, The Hunterston Multi–Fuel Power Station (hereafter referred to as the Proposed Development), on a site between the existing operational Clydeport coal handling facility at the Hunterston Terminal and the Hunterston B nuclear power station, near Fairlie in North Ayrshire.

The proposals are submitted in the form of a formal application for:

- Consent under Section 36 of the Electricity Act 1989; and
- Deemed planning permission under section 57 of the Town and Country Planning (Scotland) Act 1997

Some further consent, licenses or permissions maybe required in due course, once sufficient information becomes available to support them, including:

- Pollution Prevention and Control Act 1999;
- Pollution Prevention and Control (Scotland) Regulations 2000;
- Licences under the Food and Environment Protection Act 1985 (for construction and deposition of material for all works relating to the power station below MHWS);
- Consent under Section 34 of the Coast Protection Act 1949 (for all construction works below the level of MHWS);
- Consent under the Water Environment (Controlled Activities) (Scotland) Regulations 2005 (CAR);
- Consent under the Harbours Act 1964;
- Hazardous Substances Consent under the Town and Country Planning (Hazardous Substances) (Scotland) Regulations 1993 (in connection with CCS plant); and

APL are not applying for the grid connection or the CO₂ pipeline within this consent, these will be applied for under separate applications.

The power station has been designed by Dong Energy, APL's Design Partner. The site has been safeguarded by the Secretary of State since 1971 and has been reserved for large scale trading and industrial development of significant national importance that requires deep water access which will create or protect employment and provide a major benefit to the Scottish economy.
This importance is reflected by the inclusion of the Hunterston site as a national development in the recent National Planning Framework 2 for Scotland (January 2009). The key facts about the Proposed Development are:

- The power station would take an estimated 4 years to construct, and a further 2 years to commission with a peak of up to 1600 jobs being created during this 6 year period;

- The Proposed Development would burn both coal and biomass, and use highly efficient modern technology with strict emissions control to produce up to 1,852 mega watts (MW) of electricity (gross output);

- In line with the latest Scottish Government policy regarding Carbon Capture and Storage (CCS), the Proposed Development includes commercial scale demonstration CCS infrastructure. This means that about 25% of the Carbon Dioxide (CO₂) would be removed from the start of operations. This CCS unit is part of the phased implementation of CCS in line with the latest Scottish Government guidance (March 2010), and APL is committed to the installation of full CCS, and the guidance indicates that this will happen within 5 years of the technology being independently judged as technically and commercially proven;

- Once full CCS is installed at the Proposed Development at Hunterston, the power station would produce around 90% less CO₂ emissions than a similar sizes conventional coal plant and 75% less than a typical gas fired power station, thereby helping the UK and Scotland to achieve their stated emissions targets in 2030 and beyond;

- The Proposed Development would feed electricity into the National Grid and help to supply the base load required across the UK. It is estimated it would meet the needs of up to 3 million households;

- When fully operational, the power station will provide permanent jobs for around 160 people;

- The proposed development site will be about 104.2Ha in extent, and will require the infilling of 25.6Ha of the existing intertidal area of Southannan Sands to create a development platform. Following consultation responses and a review of the site footprint requirements, the site design has been minimised, reducing its impact on the associated Site of Specified Scientific
Interest (SSI). Whilst loss of a part of the SSSI will be inevitable as a result of this proposal, appropriate mitigation and compensation measures are proposed to minimise the environmental impact as far as possible;

- It is intended that the Proposed Development will make full use of the Hunterston port’s existing sea and rail connections, this being one of the key drivers in selecting this site. Coal and biomass fuel would be delivered to the existing Clydeport coal handling facility by large bulk carrier vessels. By-products of the generation process will be transported from the site by rail.

SKM Enviros was commissioned by Ayrshire Power Ltd to lead the Environmental Impact Assessment (EIA) to evaluate the potential effects of the Proposed Development and to prepare an Environmental Statement (ES) to be submitted in support of the planning application.

Consultation and engagement has been central to the development of APL’s proposals for a new multi-fuel power station at Hunterston. Following the initial announcement APL outlined its commitment to encouraging public involvement in the development of its proposals and its aim of maintaining an open relationship throughout the project’s lifetime to ensure that the views of the local community and key stakeholders are taken into consideration throughout the pre and post planning process. A summary of the consultation responses is set out in Chapter 6 of the Environmental Statement.

APL has consulted key stakeholders and the wider community in preparing the development proposals and is committed to ongoing engagement with stakeholders throughout the planning process and, if successful, during the construction and operational phases. APL’s approach has been to ensure that:

- Arrangements for participation are inclusive, open and transparent;
- A wide range of stakeholders are encouraged to offer their views;
- Information is made available at key stages of the project;
- Communications are disseminated using a range of methods; and
- All feedback is fully considered.

This Non-technical Summary (NTS) forms part of the ES and presents an overview of the development and the main findings of the EIA.
Site Context

Proposed Site Boundary
THE DEVELOPER

The Applicant is Ayrshire Power Ltd, a company owned by Peel Energy Ltd.

www.ayrshirepower.co.uk

Peel Energy has supported low-carbon energy projects over the last 20 years, and this is currently manifested in a balanced portfolio of more than 3 GW in generation or development, comprising wind, tidal power, biomass projects, including the Multi-Fuel Power Station development proposed for Hunterston.

Peel Energy has been supported by Dong Energy as a design partner. Dong Energy has international experience in the energy industry including the design, construction, commissioning and operation of multi-fuel power stations. Dong Energy is an industry leader in carbon capture and storage technology having created one of the worlds largest carbon capture facilities on coal-fired power station flue gases at its Esbjerg plant in Denmark, which is the company headquarters.

THE PROPOSED DEVELOPMENT

The Proposed Development will consist of the following main components:

- Infill and creation of a development platform;
- Construction of a cooling water inlet and outlet into the Firth of Clyde;
- Two operating power units 926MW each;
- Coal, biomass and bulk material storage facilities;
- Conveyor systems to carry fuel into the power station and by-products back to storage areas;
- A demonstration Carbon Capture unit and associated gas transfer plant;
- Amendments to the existing railway line to include additional sidings;
- Upgrade of the current access road from the A78;
- Offices, security centre, car park and visitors centre.
2. THE ENVIRONMENTAL IMPACT ASSESSMENT

ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000 specify that all non-nuclear generating stations with an output in excess of 300 megawatts will require an EIA. These Regulations set out the requirements for the Environmental Impact Assessment to be undertaken for a Section 36 application.

The Environmental Statement (ES) records the results of the EIA which has examined the effects of the Proposed Development on a wide range of environmental topics which were agreed with Scottish Government and all Statutory Consultees through a formal scoping process, and the issuing of a formal Scoping Opinion by the Government. The conclusions of the assessment for each topic are summarised in this Non Technical Summary.

In carrying out the EIA, SKM Enviros has utilised a number of experienced specialist consultants to assist in the assessment process in addition to in-house specialists, including EnviroCentre Ltd. (all ecology and water related topics), Dougall Baillie (traffic), RMJM (architecture and design) and Headland Archaeology (archaeology).

Mitigation is an important aspect of EIA, and comprises the measures proposed through the consideration of alternatives, physical design, project management or operation to avoid, reduce or compensate any significant adverse effects on people and the environment resulting from the Proposed Development. The project team has considered mitigation as an integral part of the overall project design process throughout the EIA and the design and development of the power station.
3. THE SITE

DESCRIPTION OF THE EXISTING SITE AND THE LOCAL ENVIRONMENT

The application site area lies within the Hunterston Terminal and includes a disused coal storage yard, intertidal areas and the marine construction yard as shown below in the aerial photograph of the site. The disused yard was part of the platform completed in 1979 as part of the Hunterston Terminal. This was created to extend the land below the high water mark by deposition of material, and as such, this part of the site comprises extensive areas of in-filled and reclaimed land.

The Marine Construction Yard was built by infilling onto Hunterston and Southannan Sands in 1983 to provide a facility for the construction of oil platforms, and was last used in 1996.

Part of the proposed development will involve the deposition of infill material on part of Southannan Sands, in order to extend the existing platform to the west. This will occupy part of the Portencross SSSI, designated due to the nationally important intertidal sandflats. This area is made up of marine deposits generally within the intertidal zone. Steps have been taken to minimise the impact on the SSSI and appropriate mitigation/compensation measures are proposed to minimise the environmental impact.

The site forms part of a wider zone designated for industrial development in the North Ayrshire local plan and will not impact on future development plans within the remaining parts of this designated area.
The site is located in the district of Fairlie and has boundaries with: the existing Clydeport coal handling facility to the north; the A78, Glenside, Glentane Hill and Whiteside Hill to the east; Hunterston A and B Nuclear Power Stations, Hunterston House, Castle and Farm to the south and the Islands of Great and Little Cumbrae to the west across the Fairlie Roads sea channel as shown in the "Aerial Photograph of the Site" provided overleaf.

The existing coal handling facility includes a large jetty with two large cranes at 72m in height, a control tower, elevated conveyors, several large coal loaders, a coal storage area and a rail freight loading area which is connected to the storage area by a covered conveyor that crosses the A78. The facility has an average throughput of about 9,400,000 tonnes per year\(^1\) and this generates an average of 52 vessels of various sizes using the jetty over a year. The number of vessels docking in any year depends upon the mix of vessel sizes employed. Also within the wider Hunterston Terminal 'Ferguson's Yard' is a coal processing operation that bags coal before importing and exporting to its clients. The coal is imported from the Clydeport facility and exported via trucks.

The site is located in the district of Fairlie within the administrative boundary of North Ayrshire Council and under the site specific designation within the North Ayrshire Local Plan (IND4 Industrial Policy).

In terms of nearby residential properties there are a small number of isolated dwellings within 0.5km of the site.

A number of settlements lie within 5km of the site including the town of Largs (approximately 5km to the north), the town of Seamill and West Kilbride (approx 4.5km south), the village of Portencross (approx 4km to the south west), the hamlet of Crosbie (approx 3km to the south east) and the village of Fairlie (approx 1km north). The village of Millport is located on Great Cumbrae Island about 2km to the north west from the site.

Clyde Muirshiel Regional Park is identified as a 'special landscape area' in the North Ayrshire Local Plan and lies within 350m to the west the proposed development at its closest point to the east.

\(^1\) Based upon 2008/2009 figures
4. PROJECT NEED

NEW ELECTRICITY GENERATION CAPACITY

The need for the Proposed Development is presented in the context of international, European and national obligations/policy and initiatives associated with combating global warming, promoting sustainability and ensuring the security of energy supply.

Breakdown of Great Britain generation capacity\(^1\) in 2009 (GW)

- **Coal**: 28.0
- **Gas (CCGT)**: 23.8
- **Oil**: 4.5
- **Renewables and Pumped Storage**: 7.6
- **Nuclear**: 11.0
- **CHP**: 6.0

Around 90% of the UK’s existing energy needs are met by oil, gas and coal. Renewables and other low carbon technologies will play an increasingly important role in our energy mix over the longer term; however, fossil fuels will continue to be the predominant source of energy for decades to come\(^2\), hence the need for a development based on a multi-fuel approach.

Although the development is in Scotland, the generation needs for Britain as a whole must be considered, rather than Scotland in isolation. Since 2005, Scotland has been part of the British wholesale market, BETTA. In recent years, there has existed an overall high voltage transmission constraint between Scotland and England of around 2 GW of power. National Grid’s plans for network investment, supported by an increased capital expenditure approval from Ofgem (Office of the Gas and Electricity Markets) as part of the fourth transmission price control review, would alleviate this constraint by the time the project is commissioned, allowing unconstrained export flows from Scotland to demand centres in England.

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1. NB: these charts show a comparison of the total installed capacity (i.e. on a GW basis) of different technology types. A comparison of the actual generation (GWh) would show a significantly reduced contribution from renewable generators.
Both the 2007 Energy White Paper ‘Meeting the Energy Challenge’³ and the 2009 Ofgem consultation report ‘Project Discovery – Energy Market Scenarios’⁴ identify the need to build new power stations to replace plant being retired and to meet additional demand. Most of the upcoming retirements of UK power stations are driven by EU legislation such as the Large Combustion Plant Directive (LCPD)⁵ and Industrial Emissions Directive (IED)⁶ and will therefore affect coal and oil fired stations.

Analysis contained in the 2007 Energy White Paper shows that an anticipated 22.5 Giga Watts (GW) of existing power stations may close by 2020, of which 8.5 GW is likely to be coal-fired capacity. In order to maintain levels of electricity generation, around 20-25 GW of new power stations need to be approved and built in good time to replace this retired plant.

Based on recent calculations, the electricity demand growth in Britain, known plans for the decommissioning of existing power stations, and the lack of new stations under construction, means that there will be a shortage of capacity after 2015 unless new thermal projects are constructed. By 2025, this gap is estimated to be 15 GW without new build, and this issue is addressed in a specific report⁷ submitted alongside the Section 36 planning application for the Proposed Development.

Projected demand and available generation capacity⁷ in GB (Central scenario) assuming no new thermal plant commissioned after 2009 (January business days)
The UK Government position is that, while policies for increased energy efficiency and distributed generation will help reduce the demand on the national grid, demand modelling for electricity suggests an additional 10 GW of generation capacity will still be required by 2030.

The Climate Change (Scotland) Act 2009 also introduces a long-term national statutory framework for climate change policies in Scotland with the target of reducing greenhouse gas emissions by at least 80 per cent by 2050.

The Climate Change Delivery Plan sets out the high level measures required in each sector to meet Scotland’s statutory climate change targets, to 2020 and in the long term.

One of the four transformational outcomes is to move towards a largely de-carbonised electricity generation sector by 2030, primarily using renewable sources for electricity generation with other electricity generation from fossil fuelled plants utilising carbon capture and storage.

**ENSURING SECURITY OF SUPPLY FOR SCOTLAND**

There are advantages in having a diverse electricity generation mix as it helps avoid exposure to the risks associated with heavy dependency on a single fuel or technology. A diverse mix also provides a system flexible enough to accommodate variations in demand at different times of the day and season and one that can respond to changes in relative fossil fuel prices. A high percentage of plant due to be retired is coal-fired and therefore to maintain a balance between fuel sources, it is important to build additional high efficiency coal-fired plant equipped with CCS.
A key driver of UK coal investment is demand from coal-fired generators in the UK. Plans for new coal-fired power stations will use state-of-the-art cleaner coal technology in the form of carbon capture and storage equipment. This will be as demonstration units in the first instance, and full scale CCS units when the technology is technically and commercially proven.

In terms of current trends nearly all of Britain’s natural gas requirements will be imported by 2030. Coal CCS would enhance Britain’s security by reducing the dependence of the generation fleet on imported gas. Furthermore, to meet the environmental targets set out in the Climate Change Act, will require the deployment of a small number of sources of low carbon generation (renewables, nuclear and CCS). Coal CCS contributes to the diversity of solutions. This is likely to be particularly important in Scotland if the current opposition to nuclear power continues in the future, in order to meet Scotland’s own target for CO₂ emissions reduction.

THE ROLE OF CLEANER COAL

The UK Energy White Paper (2007) describes three main methods for reducing the carbon emissions from coal fired power stations;

- Improving coal-fired power station efficiency;
- Co-firing coal with biomass; and
- Carbon capture and storage (CCS).

Co-firing coal with biomass can help power stations reduce carbon emissions by around 10%, according to the UK Energy White Paper.

The Climate Change Act 2008 and Climate Change (Scotland) Act 2009 specify reductions of greenhouse gas emissions, in the United Kingdom and Scotland respectively, of 80% by 2050 against a 1990 baseline. To achieve these targets, the Committee on Climate Change estimates that CO₂ emissions in the power sector will need to be reduced by approximately 85% from current levels as early as 2030. This de-carbonisation of the power sector will require large scale deployment of low carbon technologies, specifically nuclear, renewables and Carbon Capture and Storage (CCS).
Once full CCS is installed at the Proposed Development at Hunterston, the power station would produce around 90% less CO₂ emissions than a conventional coal plant and 75% less than a gas fired Closed Cycle Gas Turbine (CCGT), thereby helping the UK and Scotland to achieve their emissions targets in 2030 and beyond.

ELECTRICITY GENERATION IN SCOTLAND

Coal was the main source of electricity generation in Scotland in 2007, accounting for 29% of the total 48,216 GWh of electricity generated. The electricity generated by nuclear fell by 34% between 2005 and 2007 and is now at the lowest level in the period 2000 – 2007, accounting for around 26%. Over the next two decades, Scotland will also have to deal with ageing coal fired and nuclear plants. Hunterston B nuclear power station is due to close in 2016 and Torness in 2021 unless a life extension is granted.

In Scotland, the issue of diversification is potentially more significant than in Britain as a whole, because of the current Scottish opposition to the development of nuclear power. This opposition does not create a particular shortage of generation capacity in Scotland per se, because of the likely high investment in Scottish renewables and also in transmission capacity between Scotland and England, coupled with low Scottish demand growth. It is expected in fact that Scotland will be a net exporter of electricity to England throughout the timeframe to 2030. However, given that Scotland has its own environmental target of an 80% reduction in greenhouse gases by 2050, the opposition to nuclear means that renewables and CCS will have to contribute to a large share of total Scottish generation (the exact amount depending on the level of exports, Scottish demand and CO₂ emissions associated with heat and transport). CCS development will be important, to complement wind power in meeting the Scottish target.

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The Scottish Government recognises this challenge and included the following statement within the National Planning Framework 2\textsuperscript{9}.

“Tackling climate change and reducing dependence on finite fossil fuels are two of the major global challenges of our time. More than two thirds of the world’s Carbon Dioxide (CO\textsubscript{2}) emissions are the product of current patterns of energy production and consumption. Growing demand in the expanding Asian economies is raising concerns about the implications for future energy prices and long-term security of supply. Addressing these challenges will demand profound changes in the way we produce, distribute and use energy over the coming decades.

The European Union has committed its members to deriving 20% of the energy it uses from renewable sources by 2020. The Scottish Government supports this objective and has in place its own, higher target for electricity generated from renewable sources. In addition, it also wants to see continued improvements in energy efficiency; the development of technologies which derive clean energy from fossil fuels; and the harnessing of renewable sources of heat; and decentralised energy production, including local heat and power schemes and micro-generation.”

WHY DOES SCOTLAND NEED A MULTI-FUELED POWER STATION?

There is clearly a future supply gap in UK electricity generation and an anticipated increase in demand.

- Although Energy policy is a reserved matter for the UK Parliament under the terms of the Scotland Act 1998, planning is devolved and therefore the Scottish Government has the ability to shape the direction of energy generation in Scotland through the projects that are consented. Given the position of the Scottish Parliament on new nuclear power facilities, this option is currently off the agenda for Scotland, narrowing the focus onto fossil fuels and renewables.

- Even with the planned rapid development of renewable generation capacity, significant new controllable generation capacity (including fossil fuel) will be required. The UK Renewable Energy Strategy Consultation Document published by BERR in 2008 presented a potential scenario where 15% of UK generating capacity in 2020 will be coal fired\(^\text{10}\).

- Over-dependence on imported gas could produce issues of security of supply. An Ofgem report suggested that in some scenarios dependency on gas imports could be exacerbated by growth in gas-fired power generation replacing nuclear and coal-fired capacity, with the greatest risk appearing to be maintaining gas supplies through severe winters. In addition, recent events such as the Russia-Ukraine gas crisis raised concerns about security and price of gas supplies.

- The above factors, combined with the ready availability of coal from the existing terminal facilities at Hunterston, make coal firing an obvious choice for this proposal. To maximise the renewable element of the proposal, biomass will be co-fired with coal, although the proportions are limited by technical and practical constraints.

- The higher efficiency, combined with the existing coal supply infrastructure, will ensure that the proposed power station will be able to supply electricity at a lower cost than much of the current generating capacity, i.e. it will be cheaper to produce each unit of electricity.

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5. SITE SELECTION AND DESIGN

WHY HUNTERSTON?

Hunterston was selected based upon the following key attributes;

- Its proximity to and suitability of connection to the existing electricity supply network;
- The National Safeguarding designation for large industrial projects;
- Proximity to the deep water port that will allow transportation of large power station components by sea, minimising distribution to the national road/rail network;
- Proximity to the deep water port providing undersea pipeline and sea vessel transport opportunities for the captured carbon;
- Proximity to the existing coal loading terminal providing an easily accessible route for the required fuel; and
- Its favourable topography, geology and hydrogeology and access to water for the water inlet and cooling water outlet required for such a development.

The process of examining appropriate sites within the UK started in 2006 with a three phase study of potential sites for a clean coal power station in England and Wales by Peel and Dong Energy. This was followed in 2007 by a further report, which looked at a number of Peel-owned sites in the UK (including Hunterston, which emerged as the best potential site from those examined). In addition, an assessment of potential alternative sites was completed in early 2009, this focused upon available sites within Scotland.

These reports looked at a combined number of over 44 sites throughout the UK and these were assessed against a number of key criteria including:

- Site Availability;
- Available Grid Connection;
- Potential for Jetty/Dock Facility;
- Potential for One Through Cooling (Cooling Water supply); and
- Planning and Environmental Issues.

The conclusions of these reports are varied based upon the sites that were assessed within each, however a list of preferred sites was developed, and from these, three were clearly identified as having the least constraints, these being Ince, Hinkley Point
There were a number of constraints and potential difficulties identified with each site. The requirement for a deep port facility identified sites that were close to international and nationally designated coastal areas, creating potential barriers for the planning process. A number of these sites were also distanced from the grid connection and transport infrastructure. The lack of constraints present at Hunterston confirmed it to be a suitable location for such a development.

**SITE LAYOUT AND DESIGN**

Once the Hunterston site was selected, an initial power station layout was developed using technical and economic criteria and based on understanding of environmental constraints at the time, this was then used for the EIA scoping (consultation) exercise conducted through the Scottish Government. Based on the Scoping Opinion received from the Scottish Government a number of alternative site layouts were then considered, leading to the current layout proposed for the Section 36 Application which is shown below.

Ayrshire Power Limited’s objective was to minimise the potential direct and indirect impact upon the intertidal sands element of the Portencross SSSI and optimise the use of the site area. Following scoping a detailed design process was undertaken to to minimise the potential direct and indirect impact upon the Portencross SSSI and optimise the use of site area. This process resulted in the land take upon the SSSI being reduced from 30.5 Ha to 22.5 Ha. It also generated opportunities for potential mitigation through the creation of additional intertidal habitat on Hunterston Sands. Once the configuration of the site was fixed with respect to the SSSI, the evolution of the layout design is outlined below; this demonstrates that the site has significant constraints in terms of available space for a development of this scale.

Initially the overall design of the buildings has been largely engineering led with regards to the position, scale and orientation of buildings. However following a design review with Architectural Design Scotland and feedback received from them on improving the appearance of the power station, the layout has, where possible, taken opportunities to influence the modelling of some of the larger volumes, and has merged buildings to achieve a lower number of independent buildings and a more rational layout. The
treatment of the proposed buildings (texture, colour, materials etc) is an area that can influence the overall impact of the development and its potential to assimilate into the surrounding area, therefore a comprehensive assessment of the materials available for such a development was undertaken by RMJM architects, with input from SKM Enviros Landscape Architect.

Indicative Cross Section

The review looked at a number of options. These were assessed based upon their visibility from the surrounding settlements and areas of interest, the impact of the colour and its link to the surrounding area and with regard to their durability in terms of the sites coastal location. The results of this assessment are provided within a specific stand alone Design Statement prepared for the Proposed Development, with details of all options considered and the reasoning behind the preferred option.

A qualitative Best Available Technology (BAT) assessment has been undertaken to determine the most suitable technologies for this site and this has also been submitted as an appendix to the ES.

Indicative Visualisations
6. PROPOSED DEVELOPMENT

OUTLINE OF PLANT

The Proposed Development involves the provision of a multi-fuel (coal and biomass) power station to supply electricity to the National Grid and contribute to the base load energy requirements across Scotland and the UK. The plant would use highly efficient modern and proven technology with strict emissions control to produce up to 1852 MW of electric power (gross output). The proposed Section 36 application boundary has already been shown in the “Site Boundary” plan; this also defines the proposed operational site boundary and covers an area of 104.2ha.

The project will involve the development of a series of buildings, facilities and generation infrastructure. The power plant will consist of two power island units, each with a maximum 926 MW gross output, a supercritical boiler and steam turbine which will be placed in separate buildings.

The power island units are expected to be located in a side by side configuration with the common stack at the rear end and with space reserved behind the stack for the full Carbon Capture and Storage (CCS) plant. The buildings will be significant in size, with the highest buildings (the two boiler houses) proposed at 115 meters and the stack at 155 metres high.

The recent guidance states that the CCS demonstration infrastructure must capture the equivalent of 300MW net output of CO₂ and the Section 36 application proposes a plant of this scale. The site has also allocated space for development of full CCS, which would happen within 5 years of the power station being commissioned if technically and economically viable.

The full CCS comprises 3 elements - capture, transportation and storage of CO₂, however - this Section 36 application is only for the onsite equipment associated with the capture of CO₂ from the power station flue gas and its preparation before being transported to the storage location. The remaining elements of the CCS chain are outside of the remit of this Section 36 application and will be the subject of future applications.
The development will therefore consist of the following key components, which are shown in the “Indicative Site Design” plan overleaf:

- Coal storage yard;
- Site Drainage lagoons;
- Two biomass silos;
- Two oil storage tanks;
- Two boiler houses;
- Two coal silo buildings;
- Two turbine houses;
- Common cooling water house;
- Two electrostatic precipitators;
- Two fluegas scrubbers;
- Common stack;
- Demonstration Carbon Capture Unit and Gas Compression Elements
- Ammonia tank area;
- Bottom ash storage;
- Two fly ash silos;
- Three ash silos;
- Gypsum storage;
- Limestone storage and mill;
- Light fuel oil storage tank; and
- Ancillary equipment such as:
  - Waste water plant
  - Air compressors
  - Waste water treatment plant for gypsum dewatering
  - Container area for solid waste
  - Administration/office/workshop/Storage for spare parts
  - Covered conveyor systems to and from the power lines with coal, biomass, bottom ash and gypsum.

To ensure that the Proposed Development is fully carbon capture ready (CCR), space has been allowed within the site layout plan for the following buildings:

- Three CO$_2$ separation units (each of 60m x 36m x 55m)
- Compressor house (40m x 49m x 8m)
- CO$_2$ absorbent chemical storage (40m x 49m x 8m)

**FUEL SUPPLY**

The proposed site is adjacent to the deep water jetty and coal storage at the Clydeport coal handling facility, which is advantageous to the handling and the fuel cost for a fossil fired power plant.

The power station will be designed for operating up to 100% on world market coal. Clydeport will be responsible for sourcing and supplying the coal and biomass to
The design for the proposed development features:

1. Administration and office accommodation
2a. A coal and 2b. biomass storage facility
3. Two boiler houses
4. Two turbine houses
5. Condensers
6a. A cooling water intake and 6b. outlet
7. A water pump house
8. A water treatment facility
9. A chimney
10. An electrostatic precipitator
11. Lime silos
12. A desulphurisation plant and ancillary equipment areas for ash and gypsum handling
13. An oil storage tank
14. A demonstration CCS

The remaining parts of the site would be taken up by conveyors, pipework, rail tracks, roads, parking areas, and landscaped areas.

Indicative Site Design
Ayrshire Power Ltd. The coal will be sourced from a variety of locations including South Africa, Columbia, Russia and the USA.

The deep water jetty has the capacity to receive coal directly from destinations such as South Africa and Columbia via Cape size vessels with a storage capacity of 150,000 to 180,000 tonnes. If the coal is transported from the USA, it is anticipated that this will arrive via Panamax vessels, with approximately half the capacity of 65,000 to 75,000 tonnes. Under agreement with Ayrshire Power Ltd. the coal will be supplied from the existing coal yard in the Clydeport coal handling facility to an agreed delivery point inside the new coal storage yard of the Proposed Development.

For the purposes of this application it has been assumed that all of the coal to be used in the proposed facility will be imported to the site via ship under Clydeport’s existing permissions, however the use of UK coal sources has not been ruled out. In the event that UK coal could be used as part of the fuel supply, this material would be brought to site by road or rail. Given the assumption that all coal will be imported by ship, the effects of bringing UK coal to the site have not been assessed.

The expected maximum coal consumption of the power station will be around 4.6 million tonnes per year to the stockyard that will have a storage capability of approximately 0.95 million tonnes. It is therefore anticipated that the coal and biomass requirements for the operation of the Proposed Development will potentially result in an increase of up to 75 shipping movements per annum to the Clydeport coal handling facility based upon the anticipated mix of Cape and Panamax size vessels.

To limit the amount of by-products and emissions the design will be limited to coal with a maximum blended sulphur content of 1.5% and to a maximum content of ash of 18%.

It is proposed to co-fire the power station with biomass in the form of wood pellets. When co-firing, the amount of coal required to fuel the plant will be reduced therefore also reducing the associated CO$_2$ emissions.

For start up of the units, the boilers are equipped with burners for heavy oil as fuel. Heavy oil has been selected in this instance as there is no readily available gas supply for the site.
POWER STATION FEED

**Coal**
The coal will be mixed to a suitable quality within the coal storage yard. The coal will be reclaimed from this area and conveyed to hoppers via enclosed conveyor belts. It is then removed from the hoppers as required and transported to the mills, where it is ground into a fine powder. From the mills, the coal dust is mixed with the combustion air and sent to the burners of the supercritical boiler in each power unit.

The coal powder and combustion air mixture is blown into the boiler through the burners and combusted. The boiler produces steam at high pressure (typically around 300bar) and high temperature (typically around 600°C), which feeds into the turbine to make the turbine blades rotate. The turbine is connected to the generator, and the rotation of the turbine blades causes a shaft to turn inside the generator, which produces electricity. A simplified "Flow Diagram of a Typical Power Station" overleaf shows the power generation process.

**Biomass**
The wood pellets will be transported to the agreed delivery point within the Ayrshire Power site boundary. The pellets would then be transported by conveyor to the dedicated storage silos. From here the pellets will be transported to the power station via a bridged conveyor, that will lead them to a discharge chute and then onto the two Power Island Units using the same conveyor as the coal.

EMISSION CONTROL

As a multi-fuel power station, the plant has been designed to accept heavy fuel oil, bituminous coal from all over the globe and biomass. The fuel will be mixed in many combinations which increases the demand for high performance air pollution control systems. The flue gases are drawn from the boiler by the induced draft fan and pass through:

- a DeNOx plant to remove Nitrous Oxides (NOx);
- an electrostatic precipitator to remove fine particles, including fly ash; and
- a desulphurisation plant to remove sulphur dioxide (SOx).
In the first instance carbon dioxide will be captured from a proportion of the flue gases equivalent to 400 MW of gross electrical power generation. Once proven, carbon dioxide will be removed from all the flue gases.

The techniques for removal of NOx, SOx and dust emissions are considered to be the most up to date and recognised methods available at this time. The preferred technology is also compatible with the process associated with post combustion carbon capture and storage.

Flow Diagram of a Typical Power Station

**COOLING WATER**

Each power unit will require cooling water systems, the water will be abstracted and discharged to the Firth of Clyde through an open channel inlet and outlet. In order to secure a safe and constant cooling water supply the start of the inlet and outlet channels will be situated at a water depth of around 4m. Close to land the channels will cross shallow areas (Hunterston/Southannan Sands) that are more or less dry at Low Water (LW).

The approximately 1320 metres long and 20 metres wide concrete inlet channel will run immediately to the south of the existing marine construction yard. The cooling water pump house will be located at the end of the inlet channel and will ensure that the required flow rate is available for each power unit.
The cooling water will be discharged into the Clyde through a separate open channel, approximately 900 metres long and 16 metres wide and routed along the western and northern boundary of the marine construction yard. This channel will increase in width at the end to approximately 40 metres, to reduce the final velocity to avoid erosion to the existing coast. While Hunterston B is potentially being decommissioned in 2016 or shortly after, the likelihood of interaction of the two developments is limited, however a cumulative assessment of both has been carried out and has not predicted any impacts upon Hunterston B cooling water.

Cooling water would be re-circulated into the estuary, amounting to approximately 7,000,000m³/day. The main cooling water system will pump the water back to the estuary.

The water will be discharged at a higher temperature than it was abstracted, with a maximum increase of 10°C in temperature. The variation in the sea water temperatures is constantly measured at Millport and the average monthly mean shows a minimum of 5.8°C and a maximum of 16.2°C. With a maximum increase of 10°C the maximum outlet temperature into the Firth of Clyde will therefore be 26.2°C.

**BULK MATERIALS AND BY-PRODUCTS**

The burning of coal in the proposed power station will result in the generation of significant quantities of fly ash, otherwise known as pulverised fuel ash (PFA), and of bottom ash, otherwise known as furnace bottom ash (FBA), both of which will require onward management and eventual transport off site. Furthermore, limestone, along with several other auxiliary products, is required for the flue gas desulphurisation (FGD) process. Such materials will need to be imported onto the site, whilst the output from FGD, synthetic gypsum, again requires onward management.

The ES provides an analysis of arisings, market, transport and technical parameters relating to the management of the bulk materials required for successful operation of the power station.

It is intended that the PFA, FBA and Gypsum would be sold as high quality products to relevant concrete, cement, block-making and plasterboard manufacturers. Any material which is not purchased for manufacturing processes is likely either to be supplied for grouting, land remediation projects, or sent to landfill.
In the longer term, further market alternatives exist in the form of the development of ash separation plants or joint ventures with block makers or plasterboard manufacturers, who could use significant tonnages of PFA, FBA or gypsum. If co-located with the Proposed Development at Hunterston, such facilities could also be supplied with steam to drive reductions in CO$_2$ emissions.

**ACCESS AND TRANSPORT**

The materials to be brought on site for use within the combustion process and the by-products that will need to be taken off-site on a regular basis have been described above. The site location provides various transport options including road, rail and shipping.

It is predicted that the total maximum tonnage of bulk materials to be managed is 130,000 tonnes per month. The number of trains which would be required to move the maximum tonnage of bulk materials in and out of the site is 122 per month. The existing railhead has capacity for 750 trains per month, and existing movements are 310-360 per month. The analysis undertaken for the EIA, therefore, shows that the railhead does have sufficient capacity to accommodate these additional movements and in terms of additional infrastructure, an extension of the line by around 900 metres (to the end of the three sidings) will be sufficient for handling and loading of bulk materials on the power station site.
CARBON CAPTURE AND STORAGE

Carbon Capture and Storage (CCS) technology has evolved and it is considered that, within the near future, it will be possible to install large-scale CCS facilities based on commercially available technologies.

This technology, along with stringent emissions standards, is the basis of ‘clean coal’ power generation. CCS works by capturing \( \text{CO}_2 \) at source rather than releasing it into the atmosphere. The \( \text{CO}_2 \) is extracted from the flue gases and is then compressed into a dense liquid-like state.

A pipeline or tanker (similar to Liquefied Natural Gas tankers) then transports the \( \text{CO}_2 \) to an offshore facility where it is injected into geological formations such as depleted oil and gas fields below the seabed. This part of the CCS chain is not included in the Section 36 Application for the Proposed Development.

The technology has the potential to capture up to 90% of the \( \text{CO}_2 \) emissions generated when burning fossil fuels. CCS is currently the only option for significantly cutting global emissions from fossil fuel power stations. The International Energy Agency suggests that these technologies could contribute up to 28% of global \( \text{CO}_2 \) mitigation by 2050.

The UK Government and European Council are aiming for all new fossil fuel power stations built after 2020 to be equipped with CCS technology, subject to the technology being technically and economically proven.

1. \( \text{CO}_2 \) is captured at the power plant
2. \( \text{CO}_2 \) is processed and compressed
3. \( \text{CO}_2 \) is piped or shipped offshore to a former gas or oil field
4. \( \text{CO}_2 \) is injected under pressure into the storage site
SITE OPERATION

It is intended the Proposed Development will operate continuously (8760 hours per year) and will directly create approximately 160 full time equivalent posts, with a number created elsewhere within the broader supplier network. It is estimated that for every single person directly employed by the power station, an additional one/possibly two jobs would be supported in the region through providing services to the plant.

The proposed development is predicted to have an operational life of 40 years.

The site will be constructed with a security boundary fence to prevent public access to any of the working areas. Security vehicles will patrol the site on a 24 hr basis during the construction and operation of the power station.

HEALTH & SAFETY

It is expected that the Proposed Development site will be categorised as being one of the top-tier Control of Major Accident Hazards (COMAH) sites. The site would therefore require Hazardous Substances Consent.

A full COMAH Safety Report would be required; the first report would be required within a reasonable period of time prior to the start of construction. Ayrshire Power Limited would undertake a programme of consultation with the Competent Authority, the Health and Safety Executive and Scottish Environmental Protection Agency (SEPA) on this matter.

CONSTRUCTION

A four year construction programme is proposed. During the peak of activities it is anticipated that around 1600 construction workers will be required at the site. The exact number of workers will depend upon the amount and type of contractors that are appointed by Ayrshire Power Ltd.
In general, an area approximately equal to that of the final development will be necessary for the purposes of fabrication, storage and site facilities such as contractors’ accommodation, etc. during the construction period. All of the required land is included within the Section 36 boundary.

Subject to the granting of all relevant consents and licences for the construction of the proposed power station and CCS plant, the earliest date expected for initial construction works to commence on site would be in 2012. It is proposed that the power station could commence commissioning of the first power island unit by early 2017.

A development platform will be constructed, part of which will be made up by infilling part of the intertidal area of Southannan Sands. The calculated requirement for suitable fill is around 1Mm$^3$ and this is to be sourced either from movement of existing available material within the site, or the import of material from sources such as Clydeport maintenance dredging or a Licensed Dredging facility such as Heysham. Construction of the inlet and outlet channels is anticipated to take place at the same time as infill of the platform. Once the development platform was complete there would be a phased programme of site preparation, foundation construction, and erection of the various buildings and structures.

The working times will vary over the life of the construction phase of the project and may be adjusted according to seasonal variation in weather and daylight time. The contractor’s hours of working are proposed as:

- 07:30 - 19:30 Monday to Friday;
- 07:30 - 17:00 Saturday; and
- 08:00 – 16:00 Sundays (intermittent) – (note: work on Sundays will only be undertaken when responses to programme commitments are necessary).

It is expected that Commissioning of the power units and the rest of the plant would take up to 22 months after construction is complete.
COMMUNITY LIAISON GROUP

To ensure that the local community are given the opportunity to voice any concerns or complaints when the power station is operating, the applicant will set up a Community Liaison Group with the aim of ensuring open lines of communication between the operator and those that live nearby. It is envisaged at this time that the members of this group would include a representative(s) from, the operator, local community councils, North Ayrshire Council and other interested parties. The details of the group will be provided following the completion of the planning stage.

ENVIRONMENTAL MANAGEMENT PLAN

An Environmental Management Plan will be prepared and implemented for the construction, operation and decommissioning phases of the Proposed Development, to ensure that all planning conditions are adhered to.
7. CONSULTATION

STAKEHOLDER CONSULTATIONS

In progressing the Proposed Development through EIA, advanced design and Section 36 consent application, APL and the EIA project team have undertaken scoping and consultations with the Scottish Government, the statutory consultees and a number of other stakeholders. This scoping exercise was viewed as the initial opening of lines of communication on EIA and planning with consultees. APL has looked to adopt as transparent an approach as possible to scoping, with the objective of addressing potential effects at the early project design stage when they can most easily be accommodated.

These consultations have included the request for a formal Scoping Opinion under the EIA Regulations, the Scoping Option received from the Scottish Government and supplemental consultations with non-statutory stakeholders to obtain a wide spectrum of views.

Consultation with the public was undertaken from the outset of the project and again once the preferred site layout had been identified.

The consultation has been led by Peel Energy and was carried out by the wider project team based upon the various specialist areas and has taken a variety of forms depending on need and best practice.

A series of Public Exhibitions were undertaken on Friday 2nd, Saturday 3rd, Monday 5th and Tuesday 6th of October 2009. The purpose of the exhibitions was to provide the local community with an opportunity to view information and comment on the proposed development. The Public Exhibitions were advertised through newspaper adverts, editorial coverage in local papers and via posters in key local community outlets. It was decided to hold the exhibition at four separate locations to increase its accessibility, the locations selected were West Kilbride, Largs, Millport and Fairlie, the largest settlements close to the site. The feedback from each of the exhibitions has been taken into account in our assessments and when preparing the ES.

A project website (www.ayrshirepower.co.uk) has been created to provide information on the proposed development for the general public and any stakeholder groups.
involved. Information on the Proposed Development is presented on this website along with electronic copies of the information made available at the public exhibitions, to enable further viewing.

A summary of the consultation undertaken was submitted to the Scottish Government and all consultees listed above on the 21 August 2009. Under the Town and Country Planning (Scotland) Act 1997 as amended by the Planning etc. (Scotland) Act 2006, all National developments, as designated within the revised National Planning Framework, require a formal Proposal of Application Notice to be submitted to the relevant planning authority. However, this new legislation does not apply to developments that are applying for consent to construct under the Section 36 of the Electricity Act 1989, as will be the case for the Proposed Development.

Given the scale and nature of the development, Ayrshire Power Limited considered that, although the formal procedure did not apply, that the submission of the equivalent of a Proposal of Application Notice would assist in the communication of their proposals to the Scottish Government and other key stakeholders.

APL must publicise the submission of the Section 36 Consent application by placing a notice in those newspapers available in the locality of the development and within a national newspaper, thereby ensuring that members of the public and other stakeholders are made aware of the development and are informed as to where they may obtain information on its environmental effects. Members of the public may make representations on the application to the Secretary of State within 28 days from the date that the notice last appeared in the newspapers.

Throughout the Section 36 determination period, Ayrshire Power Limited will continue to consult with stakeholders to address any queries which they have, and to assist in the on-going detailed design of the project. Ayrshire Power Limited will also publish on a regular basis a community newsletter outlining the progress of the development and future planned activities.
8. SUMMARY OF ENVIRONMENTAL IMPACTS

LANDSCAPE AND VISUAL AMENITY

The landscape and visual impacts of the Proposed Development have been assessed within a 30km radius study area from the centre of the application site, which is currently disused industrial land set within a landscape of diverse character. The assessment established the current baseline conditions and then, through visibility mapping and viewpoint assessment, assessed the likely impacts of the Proposed Development.

Baseline
The Proposed Development would be located within the Raised Beach Coast Landscape Character Type (LCT) identified in the Ayrshire Landscape Assessment. The landscape of Raised Beach Coast is diverse in character with industrial land uses at the Hunterston Terminal and a landscape of rural character and small hills between West Kilbride and Fairlie. There are long distance views to the west across the Firth of Clyde to Arran.

North Arran National Scenic Area (NSA) and Kyle of Bute NSA lie within 18.5km and 25km respectively of the Proposed Development site. Loch Lomond and Trossachs National Park lies within 28.5km of the Proposed Development site and there are 9 Registered Historic Parks and Gardens within the 30km radius study area. The Proposed Development would be located within 1.5km of the western boundary of the Clyde Muirshiel Regional Park and within 1.4km of Sensitive Landscape Character Areas identified in the North Ayrshire Local Plan (2005) and within 8km of Areas of Panoramic Quality identified in the Argyll and Bute Local Plan (2006). Millport Conservation Area and West Kilbride Conservation Area lie within 3km and 4km respectively of the Proposed Development site.

During baseline studies a number of potential viewpoint locations were identified with a total of 23 viewpoints being used in the assessment of visual impacts. The final viewpoints were selected in consultation with Scottish Natural Heritage and North Ayrshire Council. The viewpoints are scattered throughout the 30km radius study area and representative of a range of different types of viewer depending upon the
activity they would be undertaking e.g., vehicle/ferry travellers, residents, recreational users.

Predicted Visibility
Computer generated Zone of Theoretical Visibility (ZTV) mapping indicates that visibility of the Proposal would be concentrated to the west and along the settled coastal strip aligned north-south.

There would be limited visibility of the Proposed Development from land to the east due to the shielding effect of steep hills that rise from the edge of the coastal shelf. A large proportion of the study area is open sea, such that instances of visibility coincide with islands and peninsulas in and around the Firth of Clyde.

The main areas of visibility are:
- The Ayrshire Coast from West Kilbride in the south to Wemyss Bay in the north;
- The islands of Great and Little Cumbrae and the southern part of the Island of Bute;
- The north eastern seaboard of Arran and the summits of the hills in the Goatfell Massif; and
- The eastern Cowal Peninsulas.

Elsewhere within the study area theoretical visibility of the Proposed Development would be fragmented with instances of visibility occurring at the following locations:

- The Island of Bute north and west of Rothesay;
- The western Cowal Peninsula;
- The Kintyre Peninsula at Mealdarroch National Nature Reserve; and
- The south of Arran.

The assessment has concluded there will not be significant effects upon the National Park, either of the NSAs, or any Registered Historic Parks and Garden. Nor will there be significant impacts upon Areas of Panoramic Quality or Conservation Areas. There will be significant effects upon a limited area of Clyde Muirshiel Regional Park and significant effects upon Sensitive Landscape Character Areas.

There will be significant effects upon the following landscape character types: Raised Beach Coast, Coastal Fringe with Agriculture and a limited area of Rugged Moorland Hills and Valleys.
Effects on Visual Amenity

The study included an assessment of the impacts of the Proposed Development and Plume upon settlements, transport corridors and viewpoints representative of a range of receptors within the study area. The effects on visual amenity afforded from 10 settlements within the study area were assessed. Of these, it was considered that there would be significant effects upon the visual amenity afforded from Fairlie, Kingarth, Largs and Millport, all of which are located within 10km of the study area. There has also been an appraisal of the potential change to selected night-time views. There would be significant effects upon the visual amenity afforded from a short stretch of the Largs Branch railway line, from the A78, the B896 and from the West Island Way on the Island of Bute and from the Ayrshire Coastal Path.

Throughout the Design Process, consideration has been given to minimise were possible the visual impacts of the development. During the design process a materials assessment and a layout optimization exercise has been completed in partnership with RMJM, the Architects for the development. Following completion of the impact assessment, a suite of mitigation measures has also been recommended that will further reduce the predicted impact upon visual amenity. The effect of the proposed development upon the visual amenity afforded from 23 viewpoints was assessed. The assessment concluded that there would be significant effects upon the visual amenity afforded from the viewpoints listed below. For those viewpoints highlighted in bold the impacts of the buildings and infrastructure associated with the Proposed Development would not be significant but the addition of the water vapour plume, which is predicted to occur less than 5% of the time, would result in significant impacts.

- Hunterston House;
- Fairlie, Bay Street;
- **Fairlie, Picnic Site**;
- Great Cumbrae, Millport;
- Great Cumbrae, The Lion;
- Largs, Broomfield Place;
- Largs, Haylie Brae;
- A78 Northbound Lay-by;
- B7048, West Kilbride;
- Dalry Moor Road;
- Fairlie, Pier Road;
- **Fairlie, Highfield Terrace**;
- Largs to Great Cumbrae Ferry;
- **Great Cumbrae, Glaid Stone Hill**;
- Largs, Bankhead Farm
Conclusions
In regard to landscape and visual amenity, the impacts would result from the scale of the Proposed Development and its coastal location where there are a number of small settlements and a main transport corridor with unobstructed views of the Proposed Development site.

The design of the scheme has undergone an iterative process which has included the use of selected viewpoints within a 10km radius to assess the differing impacts of building massing, shape and the colour and texture of finished surfaces. The final design has sought to minimise the impacts although it is acknowledged that significant residual impacts will remain.

NOISE

There is the potential for noise from the Proposed Development to affect sensitive receptors around the site, during the construction, operational and decommissioning stages.

With regards to the construction and decommissioning stages, detailed prediction of noise levels depends on specific work methodology and plant type to be used and so depends on the final detailed design for the plant. It is proposed that once the detailed design has been completed, noise emissions during construction and decommissioning can be calculated to predict the impact on nearby sensitive receptors. It will be ensured that noise during these phases does not give rise to unacceptable impact through the use of formal agreements with the Local Planning Authority, North Ayrshire Council to control noise. Such agreements are most likely to be made under Section 61 of the Environmental Protection Act 1990.

The assessment of operational noise is based on a combination of measured noise levels and predictions based on factors that could influence noise generation. The calculations have been undertaken using a computational noise model (in this case LIMA, a German model). LIMA is widely used in the UK and mainland Europe to calculate noise levels using the relevant national methodologies for a variety of sources (roads, rail, industrial and construction sites).

The nearest noise-sensitive receptors in the vicinity were identified in consultation with SEPA and noise monitoring was undertaken at these locations. Environmental
Noise Criteria have been derived, based on these measurements, which will ensure that operational and construction noise from the Proposed Development should not give cause for complaint, and which are below the criteria recommended in relevant guidelines.

Noise levels were predicted on a generic, un-attenuated power station, highlighting that there was potential for exceedence of the Environmental Noise Criteria. The power station noise sources that had the potential to give rise to the exceedence were identified from the modelling process, and a package of mitigation measures that could be used to reduce noise levels has been identified. The implementation of this package, or an alternative package that will reduce overall levels by a similar level, will result in noise levels below the Environmental Noise Criteria. The predicted ecological impacts from increased noise at the site and in the surrounding area have been addressed within the ecology section of this NTS.

AIR QUALITY

The potential effects of atmospheric emissions from the proposed power station and associated traffic movements were assessed as part of the EIA. The assessment took account of the substances which would be emitted from the Proposed Development, background air quality, air quality standards and guidelines, potential health effects, effects on internationally and nationally designated conservation sites, dust generation, and climate change.

A baseline survey of current air quality was carried out and the current air quality conditions within the area around the Proposed Development site where established.

The power station will have a stack height of 155m, based on the appropriate stack height calculations carried out as part of the assessment.

The potential effects of emissions of the proposed power station were assessed using computer based atmospheric dispersion modelling techniques where appropriate, and other applicable approaches. The study used worst case assumptions and took existing pollution levels into account. In view of the process and emission controls integral to the design and operation of the facility, it was forecast that all relevant air quality standards and guidelines will be achieved.
As well as considering air quality standards and guidelines, the health risks associated with the residual emissions from the proposed facility were evaluated and found to be extremely small by comparison against a Government benchmark for insignificant level of risk. On this basis, it is concluded that there will be no significant adverse effects on human health as a result of emissions from the proposed development.

There are 13 nationally designated habitat sites, including four European designated habitats within approximately 15 km of the proposed power station. The dispersion modelling, deposition assessment and national deposition modelling show that the proposed facility would have a relatively small effect on the designated habitat sites.

The potential effects of emissions from traffic associated with the proposed development were evaluated using an appropriate screening tool. The levels of pollutants due to traffic associated with the proposed power station were found not to result in any air quality standards being exceeded. It is concluded that traffic associated with the proposed development will have no significant air quality effects.

Provided the proposed dust management measures are properly designed and implemented at both the Proposed Development and the Clydeport coal handling facility, dust generated should be controlled to an acceptable level. Dust deposition monitoring will be carried out throughout the construction and operational phase of the power station to assess the levels of dust in the local area. A quarterly liaison group will also be set up and will meet regularly to discuss any aspects of the construction and operation of the power station.

It is concluded that emissions to air will have no significant adverse effects on air quality, or the health of local people.

**TERRESTRIAL HYDROLOGY**

In order to understand the potential impacts any development may have on the hydrology within the site, it is first necessary to identify and understand the hydrological processes operating within the site and how those processes will be altered and affected by the changes in land use resulting from the Proposed Development. Water acts as both a pathway and a receptor for pollution. Within a burn, impacts can be transmitted both downstream of a site (e.g. pollution) and upstream of a site (e.g. flooding).
Water is also a medium for sustaining life and habitats, therefore any impacts on the water environment will have indirect and cumulative impacts on associated water dependant environments should changes occur.

The main surface water feature within the site is the Burn Gill, which flows from south to north through the site. The channels and ditches that make-up the Burn Gill catchment have been altered significantly over the past 100 years, mainly for agricultural purposes, which can be seen in the angular nature of the watercourses within the catchment. The layout of the Proposed Development will require the realignment of a short section of the downstream reach of the Burn Gill, which has already been altered from its original course by the previous infilling for the existing Hunterston Teminal development.

During construction, there will be a risk of pollution arising from the erosion of materials from exposed soils, excavations and stockpiles. There are also potential pollution risks associated with accidental spillages of fuel and chemicals during construction. Proven control measures are available and will be implemented during construction to mitigate against these pollution risks.

The construction of the power station will permanently increase the impermeable surfaces covering the site. Rainwater draining from the new paved areas will be directed to a Sustainable Drainage System (SuDS) and treated to the appropriate level before being discharged into the Firth of Clyde to protect the Firth from the discharge of pollutants.

Due to the interrelationship between the surface water, groundwater and coastal processes within the site, the mitigation measures required for both the construction and operational phase will be common to all activities.

The impacts and mitigation measures for hydrology can be summarised as falling into two main areas; surface water flow alterations and water quality.

Sympathetic design of the realigned reach of the Burn Gill, along with installation of adequate drainage and maintenance programmes to mitigate increased flow rates that could lead to channel erosion and impact on flood risk both within and upstream of the site, will be used to mitigate impacts from the surface water flow alterations during the construction and operational phases of the Proposed Development.
Water quality will be monitored throughout each phase of the development to ensure that the drainage systems are of sufficient size to convey and treat flows, while chemicals will be kept and used in accordance with the relevant best practice and guidance and vehicles are regularly cleaned and maintained to keep contaminant potential to a minimum.

The Proposed Development site is not considered to be at risk from fluvial flooding as culverts upstream limit flows entering the site to the 1 in 200 year flood event, which will be contained within the realigned Burn Gill.

An accident management plan will be implemented for both construction and operational phases to ensure that contingency measures are in place that are relevant to the risks posed by each phase of the development.

The work for the Proposed Development will be constructed and operated in strict accordance with any licences issued by the regulatory authorities. All relevant pollution prevention guidance will be followed.

If the appropriate mitigation measures are undertaken the residual impact on the hydrology of the site from the Proposed Development will be minor or negligible for both the construction and operational Phases of the development.

**HYDROGEOLOGY, GEOLOGY & SOILS**

The geological environment and hydrogeology of the site were considered in conjunction with the potential for the presence of ground contamination at the Proposed Development site.

The consultation process highlighted a number of matters that were specifically to be addressed within the chapter. These were as follows:

- Monitoring is to be detailed particularly with regard to the water environment (this relates to the potential impact to groundwater itself and the potential for risks to surface waters through migration of contaminated groundwater);
- Information on radiological monitoring and historic uses of the Clydeport train loading facility should inform the assessments of potential land contamination; and
- Groundwater levels and effects of development on the levels should be considered.
Desk based research established the general site conditions and indicated that
the site is primarily underlain by sand deposits, with bedrock consisting generally
of sandstone. Soils are limited in extent within the site area and generally confined
to the southern margins of the existing land area. Published information indicated
that groundwater was likely to be present within superficial (drift) deposits but only
expected to form a local aquifer of limited potential and the bedrock aquifer would be
one where groundwater flow is predominantly in fractures and fissures.

The baseline conditions were then confirmed by site walkovers and an intrusive
investigation. The key physical findings of the walkovers and site investigation were as
follows:
• Areas of historic infill at the construction yard are consistent with a dredged
  sand source;
• Groundwater was not generally encountered within trial pits; and
• The site is underlain predominantly by sands with local areas of gravels and
  broken rock.

In terms of chemical character the site investigation also included chemical analysis,
and analytical information within reports published by CEFAS (in conjunction with
SEPA) characterise the site in radiological terms. The key findings of these information
sources are as follows:
• No contamination was found which exceeded the criteria adopted to protect
  human health for a commercial/industrial use;
• Building materials selection for water pipes and concrete would be required to
  address certain contaminant levels;
• Limited contamination was found in perched groundwater at the site;
• No leachable contamination was found which exceeded the Marine
  Environmental Quality Standards; and
• Radioactivity levels in the site and surrounds are acceptable.

Possible impacts which should be considered were therefore identified as follows:
• Presence of Contamination and Potential Leaching of Contaminants to
  groundwater or the sea;
• Quality Control of Imported Materials;
• Presence or Release of Radiological Contamination;
• Physical Effects on Groundwater and Aquifers; and
• Potential Loss of Soils and Mineral Resource.
The impact assessment carried out concluded that only quality control of imported materials and possible releases of contaminated perched groundwater were considered significant. Mitigation adopted including testing and pre-treatment of contaminated perched waters prior to discharge, and industry standard licensing and testing for any imported materials to the site to address the predicted significant impacts.

On the basis of the impact assessment carried out and mitigation proposed the predicted residual impacts of the development are considered Minor to Negligible. The development is therefore not predicted to result in any unacceptable effects on geology, soils, hydrogeology and ground contamination.

**COASTAL PROCESSES**

The potential effects arising from the Proposed Development on the coastal regime were considered and assessed within the following scope (established through consultation):

- Identify any potential physical changes to the coastal landscape and any implications for coastal protection;
- Consider and potential long term effects of sea level rise;
- Identify any potential changes in extent, stability or quality of physical habitats;
- Consider any potential changes on wider geomorphology;
- Understand coastal water circulation; and
- In addition to long term potential changes, consider effects of construction stage.

Baseline conditions were established through review of published information including historic cartography, consultation and field investigations including seabed mapping, sampling and process observations.

The baseline data allowed a robust conceptual model of coastal processes to be formed. In addition to the baseline data, mathematical modelling and simulation allowed further testing of the conceptual hydrodynamic model.
The conceptual model comprised specifically consideration of the following key attributes:

- Bathymetry;
- Tides and Energy;
- River Flows, Currents and Wave Action;
- Seabed Sediment distribution and behaviour (bedload transport and suspended sediment);

Following testing and documenting of the conceptual model the impact assessment considered the following identified potential elements of the development which may have an effect on coastal processes:

- Infilling of Southannan Sands;
- Diversion of Burn Gill;
- Effect of Cooling Water Inlet and Outlet Channels; and
- Potential turbidity effects of Construction.

The impact assessment did not highlight any significant impacts on the wider coastal environment and predicted only local effects particularly around the inlet cooling water channel. However mitigation proposed consists of:

- Sympathetic design of reinstated areas of Hunterston Sands and new northern boundary on Southannan Sands;
- Engineered feature for Burn Gill discharge to encourage ‘sheet flow’ and prevent scour;
- Engineering detail design of outlet channel to avoid scour; and
- Rock armouring to reduce wave refraction.

Through the implementation of the proposed mitigation no significant effects on coastal processes are predicted through construction or operational phases.
The proposed development would be located in a fully marine coastal area of the Firth of Clyde which is considered to have moderate water quality status. The main existing pressure on the water body is considered to be point sources of sewage and diffuse inputs of agricultural effluent. There are two statutory bathing waters, at Largs and Millport, Great Cumbrae, and designated shell fish water at Fairlie. Pacific Oysters are grown within this area.

Two small streams flow into the coastal area within the Fairlie Roads, the Glen Burn, which flows into the area of the proposed development and the Fairlie Burn. There are two sewage outfalls in the general area, one of these an emergency outfall from Fairlie sewage treatment works into the Fairlie Burn.

The coastal waters are fully saline but salinity is reduced in area adjacent to fresh water outflow, most importantly the Burn Gill which flows out over Southannan Sands. The freshwater does not form creeks in the intertidal area but flows towards the sea as a sheet. There is also evidence that groundwater wells up to the surface and this reduces the subsurface salinity.

Water temperature in the Hunterston Channel naturally varies between approximately 5 and 16 °C throughout the year. Southannan Sands at low tide the surface water can be heated significantly and can reach 30 °C on hot sunny days. This hot water flows out with the tide past the dry dock area. Although there is some influence of the Hunterston B thermal discharge on Hunterston Sands the SOLAR heating of water at low tide on Southannan Sands is the most significant thermal effect in the study area at present.

Turbidity is generally low in the area with some instances of higher turbidity due to fine material being disturbed by wave action on the beaches. There are no sources of contamination from toxic materials in the vicinity of the study area.

The most significant potential sources of impact from the construction phase are the release of suspended solids from site surface water drainage and release of sewage from the construction staff accommodation area. These sources of contamination may adversely affect the water quality objectives of the shell fishery at Fairlie but will
be controlled and treated to an acceptable standard.

During operation the main effect on water quality will be impact of the thermal discharge. This will increase water temperature to up to 10 °C near the outfall. Temperature increases will occur over Southannan Sands and the shallow sublittoral areas adjacent to the discharge. This will have localised effects on the ecology of the Portencross SSSI and as a consequence affect the status of the water body in terms of the Water Framework Directive. These effects will be local to the site. The construction of the intake structure will divert heated water from the Hunterston B discharge onto Hunterston Sands but the predicted temperature rise is low estimated at around 1 °C and is not predicted to have any consequences for Water Quality Framework ecological status.

There is also a risk of oil contamination from an accidental release of diesel during construction but more specifically during operations due to the storage of large volumes of heavy fuel oil on the site. The likelihood of such an event is very low.

**TERRESTRIAL ECOLOGY**

The assessment of impacts on terrestrial ecology took into account all relevant European and UK legislation and nature conservation policy and guidance.

The matters addressed were identified through desk study, field work and the EIA Scoping Opinion received from the Scottish Government. Survey and assessment was completed for the following: Habitats (Phase 1 Habitat Survey); Breeding and Wintering Birds; Fish and Freshwater Invertebrates (Burn Gill); Terrestrial Invertebrates; Amphibians and Reptiles; Bats; and Otters.

The Proposed Development site is partially located in Portencross Site of Special Scientific Interest (SSSI). The land is industrial, being part of the existing Hunterston Terminal, and largely hard standing with scrub and weedy vegetation where there has been less intrusive use of the site; edged by coastal grassland and woodland in the southern section. Burn Gill runs through the woodland and there is a narrow strip of saltmarsh on Southannan Sands. There are ancient and long established woodlands and other SSSI’s in the local area but none close enough to be directly affected by the development.
Notable plant and invertebrate species were recorded, including: Seaside Centaury; Orchids; Cuckoo Bee; Ground beetles (Cillenus lateralis, Amara similata, Harparlus rubripes); and Grayling butterfly.

Evidence of Otter and Sea Trout was found in the Burn Gill, a small costal burn with low to moderate water quality. Otter is a European Protected species but the Burn is regarded as a small part of the otter territory and of Local value only. The otter must be protected and any work affecting otters will require to be licensed by Scottish Government.

Four Red Listed birds were recorded as confirmed or suspected breeding at the site, Lapwing, Song Thrush, Starling and Linnet, however none in nationally important numbers.

Southannan Sands supported the largest number of wintering wader and waterfowl and Hunterston, Southannan and Fairlie sands all provided roosting habitat for Oystercatcher and Curlew.

The site is of Local value apart from the wintering birds and the limited amount of coastal grassland which supports notable species; these have Regional value.

The main potential impacts during construction and operation are direct habitat loss, severance, loss of life, disturbance, pollution, changes to hydrology, dust effects and changes to sensitive habitats outside the site resulting from air emissions. After initial assessment, mitigation was identified which would avoid, reduce or compensate these impacts. This involves careful planning and timing of works and ecological preparation prior to start of works. An Ecological Clerk of Works would assist with managing mitigation.

Residual adverse effects after mitigation are predicted for valued plants, notable ground beetles and Grayling butterfly and some breeding and wintering birds which may have a less favourable status at the site.

**MARINE ECOLOGY**

The environmental assessment addressed potential effects on marine habitats and species, including intertidal areas affected by the Proposed Development.
The subtidal habitats (i.e. below low water) include mixed sediment with brown and red algae in the shallower areas and fine sands with worms, bivalves and burrowing anemones in the deeper areas. Further off into the Fairlie roads there are deeper sediments with a varied fauna reflecting the mixed sediment. Beds of horse mussels and Norway lobster are found in these areas and there is a small fishery for the latter based in Largs. Some of the sublittoral habitats are listed in the UK Biodiversity Action Plan and Scottish Biodiversity Action Plan Lists although none are considered to be nationally rare.

The fish species found in the area are typical of marine fish from the Clyde. There are small runs of salmon and seatrout in local rivers although not the Burn Gill. Salmon and seatrout are likely to migrate past the site along the coast to rivers further up the Clyde.

Although dolphins and porpoises have been sighted adjacent to the site, this area is not regarded as being of specific sensitivity for these species. Basking sharks have been observed in nearby waters but not in the vicinity of the site. All whales and dolphins and basking sharks are protected. In addition although seals have not been observed within the vicinity of the site, they have been considered within the assessment.

The main potential impacts of the proposals will arise from the reclamation of the foreshore at Southannan Sands to form part of the development platform of the power station which will result in a loss of part of the SSSI including an area of seagrass. While this will represent a loss of valuable habitat, the overall integrity of the SSSI will be maintained as Hunterston Sands will not be significantly affected by the project footprint, and the remaining areas of Southannan Sands will not experience significant indirect effects. To provide some compensatory habitat for that lost to infill, a redundant area of the present marine construction yard will be reclaimed and reverted to intertidal habitat so that it is suitable for colonisation by seagrass. Measures will be taken to encourage the seagrass to establish.

During construction discharge of sewage and site run-off will be controlled and will not affect the ecology of the marine habitats, the local oyster farm or fishing interests.

Underwater noise during construction and construction related vessel traffic may affect cetaceans and basking sharks but the probability of affects are low as the area
close to the development area is not important for these animals although if they are sighted near to the site then mitigation measures will be implemented to limit harm.

During operation the main effect will be the discharge of cooling water. There will be effects to Southannan Sands where species that prefer cooler water will be disadvantaged and warmer water species advantaged. Overall these thermal effects will make further changes to the ecology of Southannan Sands although they are likely to be localised in extent. There is no evidence that the thermal outfall will affect fish migration through the Hunterston Channel.

Fish, mainly juveniles and including salmon and sea trout are likely to become entrained in the inflow to an extent. Entrapment is approximately correlated to the flow rate of the abstraction. Evidence from the existing intake at Hunterston B Nuclear Power Station indicates that fish entrapment is less than may be expected. However the entrapment effects from the development and Hunterston will cumulative. Entrapment mainly effects juvenile fish as adults will be able to resist the flow of the intake in addition the influence of the intake flow will be relatively localised. So, significant adverse effects on salmon and seatrout are not anticipated.

During operation there will be large volumes of heavy fuel oil stored on the site. If there is an accidental, such oil is very unlikely to reach the sea due to the mitigation incorporated into the design.

ARCHAEOLOGY AND CULTURAL HERITAGE

The potential impacts of the Proposed Development on archaeological and cultural heritage features within the site boundary and the surrounding area have been considered. Both physical impacts and impacts upon setting have been considered.

A baseline study and walkover survey was carried out to inform the cultural heritage assessment. The Proposed Development is to be constructed across an area that comprises intertidal sandflats superimposed by a coal yard and marine construction yard.

The baseline study identified five cultural heritage features within the proposed
development area: the coal yard, marine construction yard, a prehistoric find spot and two groups of curvilinear features identified from aerial photographs. Due to the number, type and disposition of cultural heritage features recorded in the surrounding area it is considered that there is moderate potential for features, such as structures, deposits and finds to survive unrecorded within the proposed development area. There is also potential for significant palaeo-environmental deposits to be present.

Of the five sites identified within the boundary of the Proposed Development, one will be subject to construction impacts of moderate significance. Any previously unrecorded features present within the development area are likely to be disturbed during construction. These impacts will be mitigated through an appropriate programme of archaeological works. The residual impact of the construction on previously unrecorded cultural heritage features and previously recorded features within the proposed development area will be of negligible significance.

The potential impact upon the setting of cultural heritage features in the surrounding area has been considered. A full setting impact assessment carried out for five cultural heritage features; Hunterston House and its designed landscape, Kaim Hill Homestead, the Old Lighthouse on Little Cumbrae, Little Cumbrae Castle and Hunterston Castle. Of these, two were considered to be subject to a significant impact on their setting in terms of EIA (Scotland) Regulations 1999; Hunterston Castle, a Category A listed building, and Hunterston House, a Category B listed building. The impact on these features cannot be mitigated due to the proximity of the proposed Ayrshire Power Plant to these sites.

**TRAFFIC AND TRANSPORT**

It is intended that the Proposed Development will make full use of the Hunterston port’s existing sea and rail connections and their associated permissions and consents – this being one of the key drivers in selecting this site. Road movements will be kept to a minimum during construction, operation and decommissioning to minimise the potential impact upon the road network and local communities.

**Shipping**

The proposed power station will require an average annual fuel input of 4.6million tonnes of coal and 0.80million tonnes of biomass, which will be imported by an estimated 75 additional ship movements per year and sourced from existing suppliers. The actual number of vessels required will depend on the final mix of vessel sizes
employed. The use of ships will reduce the requirement for road or rail transport. Confirmation has been received from the Harbour Master that there is sufficient capacity at the Hunterston Port facility to accommodate these movements within their existing permissions.

**Rail**
The rail traffic predicted to arise from the site has been assessed against current and future rail operations for a Study Area defined by Network Rail. The power station will operate 7 days per week all year round. The bulk materials study has been written with the assumption that rail transport will also be a 7-day operation. There will be intermediate storage on site for the bulk materials, which will add flexibility to manage the rail transport schedule as required.

As a result of the proposed development, this assessment has predicted that the number of trains, which would be required to move the maximum tonnage of materials, would increase by around 5 per day, or 125 per month. The number of trains required for conveyance of materials and by-products cannot in any way be considered as exceeding the capacity of the network. Therefore no upgrades are proposed to the existing rail network as part of this proposed development.

**Road**
It is intended that the Proposed Development will make full use of the existing sea and rail connections to the Hunterston Terminal – this being one of the key drivers in selecting this site. Road movements will be kept to a minimum during construction, operation and decommissioning to minimise the potential impact upon the road network and local communities.

While the transport of materials by sea and rail will be employed as far as is practicable, there will be a residual requirement to transport relatively small quantities of other raw materials by road. It is estimated that the power station would require 2 HGV deliveries of raw materials per day.

Staffing levels of the operational development would see an estimated 160 staff divided between day working staff and three 8 hour shifts. Day working staff would work typical office hours and would equate to some 78 staff.
Given the relatively lightly trafficked road network, operational traffic will have a minimal impact on network operation. Construction traffic generation will be greater than operational phase traffic generation, with a predicted peak workforce of around 1600 construction workers on-site for 4 months during the total 70 month construction and commissioning stages. Construction worker traffic, during the peak construction period, is estimated to account for some 415 two-way trips during peak hours. During the remainder of the construction period, the total workers on site will vary from 40 up to 1200 depending on the works required within each phase.

In mitigation, on-site accommodation areas have been identified capable of providing facilities for some 750 workers or 47% of the anticipated peak workforce and thus reducing the need for construction workers to travel to and from the site each day.

Existing sea and rail connections will allow bulk construction materials to be delivered without the need to extensively utilise road transport. It is estimated that HGV traffic would be limited to 4 HGV trips per hour.

Analysis carried out as part of the Transportation Assessment indicates that the existing road network can accommodate the additional construction phase traffic flows. Therefore apart from the proposed upgrade to the A78 roundabout, no further improvements are proposed to the road network.

**SOCIO-ECONOMIC**

The socio-economic chapter provides an assessment of the potential social and economic impacts associated with the proposed development. A focused socio-economic assessment has examined how the Proposed Development will impact upon the existing community and future communities and local / regional economies and this should inform the design and decision-making processes accordingly.

The main positive socio-economic impacts of the Proposed Development are the employment opportunities, improved security, reduced health and safety risks on site and a wider minor positive effect on the economy through indirect business e.g. accommodation and consumables for construction workers.
The potential negative impacts include the poor perception of the development and its impact upon the environment and local residents during the construction and operational phases as well as the impacts upon the visual amenity and sense of relative remoteness in the surrounding area.

The assessment has recommended suitable mitigation measures to minimise these impacts. The key to the success of this mitigation will be heavily dependent on public consultation and retaining a good relationship with local residents and community groups throughout the process. Positive aspects of the project including the commitment to improve the land use from a vacant space to a full-time security staffed facility should be underlined.

Tourism is an important component of the local economy, and the visual impact of the Proposed Development together with the risks of increased levels of dust and noise could have negative consequences for tourism activity, including sailing. However, the experience with the existing industrial uses suggests that most visitors are not likely to be deterred by the sight of a large power station at a location currently in industrial use, but it will be important to minimise dust and noise so far as possible.

Ongoing monitoring of the site and implementation of the mitigation measures should provide further neutral or positive impacts of the Proposed Development over time. Regular communication with the stakeholders should be maintained to ensure early identification of any further issues regarding the facility and to mitigate these as appropriate.
9. COMMENTING ON THE PLANNING APPLICATION

COMMENTING ON THE ENVIRONMENTAL STATEMENT

The Environmental Statement and supporting documentation, is available to view at the following locations during the consultation process.

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>ADDRESS</th>
<th>OPENING HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scottish Government Library</td>
<td>Saughton House Broomhouse Drive&lt;br&gt;Edinburgh&lt;br&gt;EH11 3XD</td>
<td>Monday to Friday: 9.00am to 5.30pm</td>
</tr>
<tr>
<td>Energy Consents Team, Scottish Government</td>
<td>Energy Consents Unit, 5 Atlantic Quay, 150 Broomielaw, Glasgow, G2 8LU</td>
<td>Monday to Friday: 9.00am to 5.30pm</td>
</tr>
<tr>
<td>North Ayrshire Council Offices</td>
<td>Perceton House, North Ayrshire Council, Irvine, KA11 2AL&lt;br&gt;Cunninghame House, Irvine, KA12 8EE</td>
<td>Monday to Friday: 8.30am to 5.30pm&lt;br&gt;Monday to Friday: 8.30am to 5.30pm</td>
</tr>
<tr>
<td>Fairlie Library</td>
<td>Main Road, Fairlie, Largs, Ayrshire, KA29 0AD</td>
<td>Tuesday: 2.30pm - 5pm; 5.30pm - 7.30pm&lt;br&gt;Friday: 2.30pm - 5pm; 5.30pm - 7.30pm</td>
</tr>
<tr>
<td>Largs Library</td>
<td>26 Allanpark Street, Largs, KA30 9AG</td>
<td>Monday: 9am - 7.30pm&lt;br&gt;Tuesday: 9am - 7.30pm&lt;br&gt;Thursday: 9am - 7.30pm&lt;br&gt;Friday: 9am - 7.30pm&lt;br&gt;Saturday: 10am - 5pm</td>
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<tr>
<td>West Kilbride Branch Library</td>
<td>Halfway Street, West Kilbride, Ayrshire, KA23 9EQ</td>
<td>Monday: 1pm - 5pm; 6pm - 7.30pm&lt;br&gt;Tuesday: 10am - 1pm; 2pm - 5.30pm&lt;br&gt;Thursday: 1pm - 5pm; 6pm - 7.30pm&lt;br&gt;Friday: 10am - 1pm; 2pm - 5.30pm&lt;br&gt;Saturday: 10am - 1pm; 2pm - 5pm</td>
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<tr>
<td>Millport Library</td>
<td>Lesser Town Hall, Clifton Street, Millport, KA28 0AZ</td>
<td>Tuesday: 1.45pm - 5pm; 5.30pm - 7.15pm&lt;br&gt;Thursday: 3.30pm - 5pm; 5.30pm - 7.30pm&lt;br&gt;Friday: 10am - 1pm; 2pm - 5pm&lt;br&gt;Saturday: 10am - 12pm</td>
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<tr>
<td>Ardrossan Library</td>
<td>Ardrossan Library, Princes Street, Ardrossan KA22 8BT</td>
<td>Mon&amp;Thu: 1pm - 5pm; 6pm-7.30pm&lt;br&gt;Tue&amp;Fri: 10am - 1pm; 2pm - 5.30pm&lt;br&gt;Saturday: 10am - 1pm; 2pm - 5pm</td>
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<tr>
<td>Dalry Library</td>
<td>14-16 The Cross, Dalry KA24 5AW</td>
<td>Mon&amp;Thu: 1pm - 5pm; 6pm-7.30pm&lt;br&gt;Tue&amp;Fri: 10am - 1pm; 2pm - 5.30pm&lt;br&gt;Saturday: 10am - 1pm; 2pm - 5pm</td>
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<td>Library Name</td>
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<td>Kilbirnie Library</td>
<td>Kilbirnie Library, Avils Place, Kilbirnie KA25 6BL</td>
<td>Mon &amp; Thu: 1pm - 5pm; 6pm - 7.30pm</td>
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<td>Tue &amp; Fri: 10am - 1pm; 2pm - 5.30pm</td>
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<td>Saturday: 10am - 1pm; 2pm - 5pm</td>
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<tr>
<td>Rothesay Library</td>
<td>Moat Centre, Stuart Street, Rothesay, Isle of Bute PA20 0BX</td>
<td>Tuesday: 10am - 1pm, 2pm - 7pm</td>
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<td>Wed, Fri &amp; Sat: 10am - 1pm, 2pm - 5pm</td>
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<td>Thursday: 10am - 1pm, 2pm - 7pm</td>
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<tr>
<td>Skelmorlie Library</td>
<td>Skelmorlie Community Centre</td>
<td>Mon: 1pm - 5pm &amp; 6pm - 7.30pm</td>
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<td></td>
<td>Skelmorlie Castle Road</td>
<td>Thurs: 9pm - 1pm</td>
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<td></td>
<td>Skelmorlie Ayrshire PA17 6AH</td>
<td>Fri: 1pm - 5pm &amp; 6pm - 7.30pm</td>
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<tr>
<td>Saltcoats Branch Library</td>
<td>Springvale Place Saltcoats Saltcoats KA21 5LS</td>
<td>Monday: 9am - 7.30pm</td>
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<td>Tuesday: 9am - 7.30pm</td>
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<td>Saturday: 10am - 5pm</td>
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</table>

**MAKING REPRESENTATION TO THE SCOTTISH GOVERNMENT**

Any representations to the application should be made by completing the online representation form on The Scottish Government, Energy Consents website at:


OR

by email to The Scottish Government, Energy Consents Unit mailbox at:

Hunterston@scotland.gsi.gov.uk

OR

by post to The Scottish Government, Energy Consents Unit, 4th floor, 5 Atlantic Quay, 150 Broomielaw, Glasgow G2 8LU, identifying the proposal and specifying the grounds for representation, not later than 15th July 2010.
Representation should be dated and should clearly state the name (in block capitals) and full return email or postal address of those making representation. All representations to Scottish Government will be copied in full to the planning authority, and made available to the public on request, unless individuals request otherwise.

During consideration of the proposal, materially relevant additional information, such as the comments from statutory consultees, may also be generated. Scottish Ministers may also formally request further information from the Company to supplement the Environmental Statement. If this happens, further public notices will give advice on how this information may be viewed by members of the public, and how representations may be made to Scottish Ministers on this material.

This Non-technical Summary of the full Environmental Statement, in additional to supplemental project information, is available to download from the following internet address:

http://www.ayrshirepower.co.uk

Alternatively, the Non-technical Summary is available free of charge from:

Monday to Friday: 9.00am to 5.30pm
SKM Enviros OneSixty
160 Dundee Street, Edinburgh, EH11 1DQ

A CD of the Section 36 Application Documents including the Non-Technical Summary, the full Environmental Statement with Technical Appendices, Figures and Plans and all supporting Documentation is available free at the address shown above.

Paper copies of the full Environmental Statement are available from the address above for a charge of £400.00 inclusive of VAT and UK delivery.

Cheques should be made payable to SKM Enviros. Cash should not be forwarded by mail.
<table>
<thead>
<tr>
<th>Column</th>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Applicant</td>
<td>the company who is filing the application.</td>
</tr>
<tr>
<td></td>
<td>Aquifer</td>
<td>an underground geological formation able to store and yield water.</td>
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<tr>
<td>B</td>
<td>Background air quality</td>
<td>levels of air pollutants that are present in the absence of the source being modelled. Background air quality results from other sources including industrial, residential, agricultural activities, traffic and natural sources.</td>
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<td></td>
<td>Baseline</td>
<td>the state of the environment, both current and future without the proposed project.</td>
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<td></td>
<td>Base load</td>
<td>the minimum amount of power that a utility or distribution company must make available to its customers, or the amount of power required to meet minimum demands based on reasonable expectations of customer requirements.</td>
</tr>
<tr>
<td></td>
<td>Base load plant</td>
<td>an energy plant devoted to the production of base load supply. Base load plants are production facilities used to meet some or all of a given region's continuous energy demand, and produce energy at a constant rate, usually at a low cost relative to other production facilities available to the system.</td>
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<td></td>
<td>Biomass</td>
<td>biological material derived from living, or recently living organisms that is used as an energy source. Examples include wood paste, plant material and alcohol fuels.</td>
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<tr>
<td></td>
<td>Bottom ash</td>
<td>the non-combustible constituents of coal.</td>
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<td>C</td>
<td>CAR</td>
<td>Controlled Activities Regulations</td>
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<tr>
<td></td>
<td>CCR</td>
<td>Carbon Capture Ready</td>
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<tr>
<td></td>
<td>Carbon Capture and Storage (CCS)</td>
<td>a means of mitigating the contribution of fossil fuel emissions to global warming, based on capturing carbon dioxide from large point sources such as fossil fuel power plants, and store it away from atmosphere by different means. Storage of CO₂ is envisaged either in deep geological formations, in deep ocean masses, or in the form of mineral carbonates.</td>
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<td></td>
<td>Cleaner coal</td>
<td>a term used to describe technologies being developed that aim to reduce the environmental impact of coal energy generation.</td>
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<td>CO₂</td>
<td>carbon dioxide; a greenhouse gas that is released from the complete combustion of hydrocarbons. Carbon dioxide is also a key element of the natural carbon cycle, where decomposition of recently living material releases CO₂ that is taken up by plants through photosynthesis.</td>
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<td>Cumulative Impacts</td>
<td>impacts that result from incremental changes caused by current or reasonably foreseeable future developments or activities that interact with the study project.</td>
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<td>D</td>
<td>DECC</td>
<td>Department of Energy and Climate Change. Set up in October 2008 to bring together energy policy (previously the remit of the Department of Business, Innovation and Skills) and climate change mitigation policy (previously the Department of Environment, Food and Rural Affairs).</td>
</tr>
<tr>
<td>F</td>
<td>Fly ash</td>
<td>one of the residues generated in the combustion of coal. Fly ash is generally captured from the chimney of coal-fired power plants, and is one of two types of ash that jointly are known as coal ash.</td>
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<tr>
<td>G</td>
<td>Groundwater</td>
<td>water found in the spaces between soil particles and cracks in rocks underground. Groundwater is a natural resource that is used for drinking, recreation, industry and growing crops.</td>
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<td>GW</td>
<td>gigawatts, equivalent to a billion watts; a unit of power.</td>
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| H | ha - hectare, equal to 10,000m² or 2.471 acres; a unit of area  
**Heavy fuel oil** - remains of crude oil after gasoline and the distillate fuel oils are extracted through distillation |
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<td>I</td>
<td><strong>Intertidal</strong> - the area that is exposed to the air at low tide and underwater at high tide</td>
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</table>
| L | **LCT** - Landscape Character Type  
**LWM** - Low Water Mark |
| M | **Mitigation** - measures proposed through the consideration of alternatives, physical design, project management or operation to avoid, reduce or remedy any significant adverse effects on people and the environment resulting from the proposed development.  
**MW** - megawatts, equal to 1 million watts; a unit of power. |
| N | **NOx** - a number of nitrogen compounds including NO, NO₂ and N₂O (nitrous oxide), are formed in the combustion processes when nitrogen in air or fuel combines with oxygen. These compounds can add to the natural acidity of rainfall and are irritant. |
| O | **Ofgem** - Office of the Gas and Electricity Markets; responsible for regulating the electricity and gas markets in Great Britain. |
| P | **Plume** - trail of hot gases from the chimney or warm water from discharge point |
| R | **Residual impacts** - those impacts that remain after mitigation measures have been taken. |
| S | **Scoping** - the process in which key issues are identified from a broad range of potential concerns for inclusion in an EIA, the areas affected and the level to which they should be studied.  
**SEPA** - Scottish Environmental Protection Agency; Scotland’s environmental regulator, a non-departmental public body, accountable through Scottish Ministers to the Scottish Parliament.  
**SSSI** - a natural conservation designation denoting a protected area in the United Kingdom. SSSIs are ‘building blocks’ of nature conservation legislation, and most other legal nature/geological conservation designations are based upon them.  
**Stakeholder** - person, group or organisation with an interest in a project, or who are likely to be affected by a project.  
**SOx** - collective term of sulphur oxides, the emission of which is associated with industrial processes.  
**SUDs** - Sustainable Drainage Systems. |
| T | **Turbidity** - being turbid, stirred up, mudiness. |
| V | **Visual amenity** - the value of a particular area or view in terms of what is seen |
| Z | **ZTV** - Zone of Theoretical Visibility |