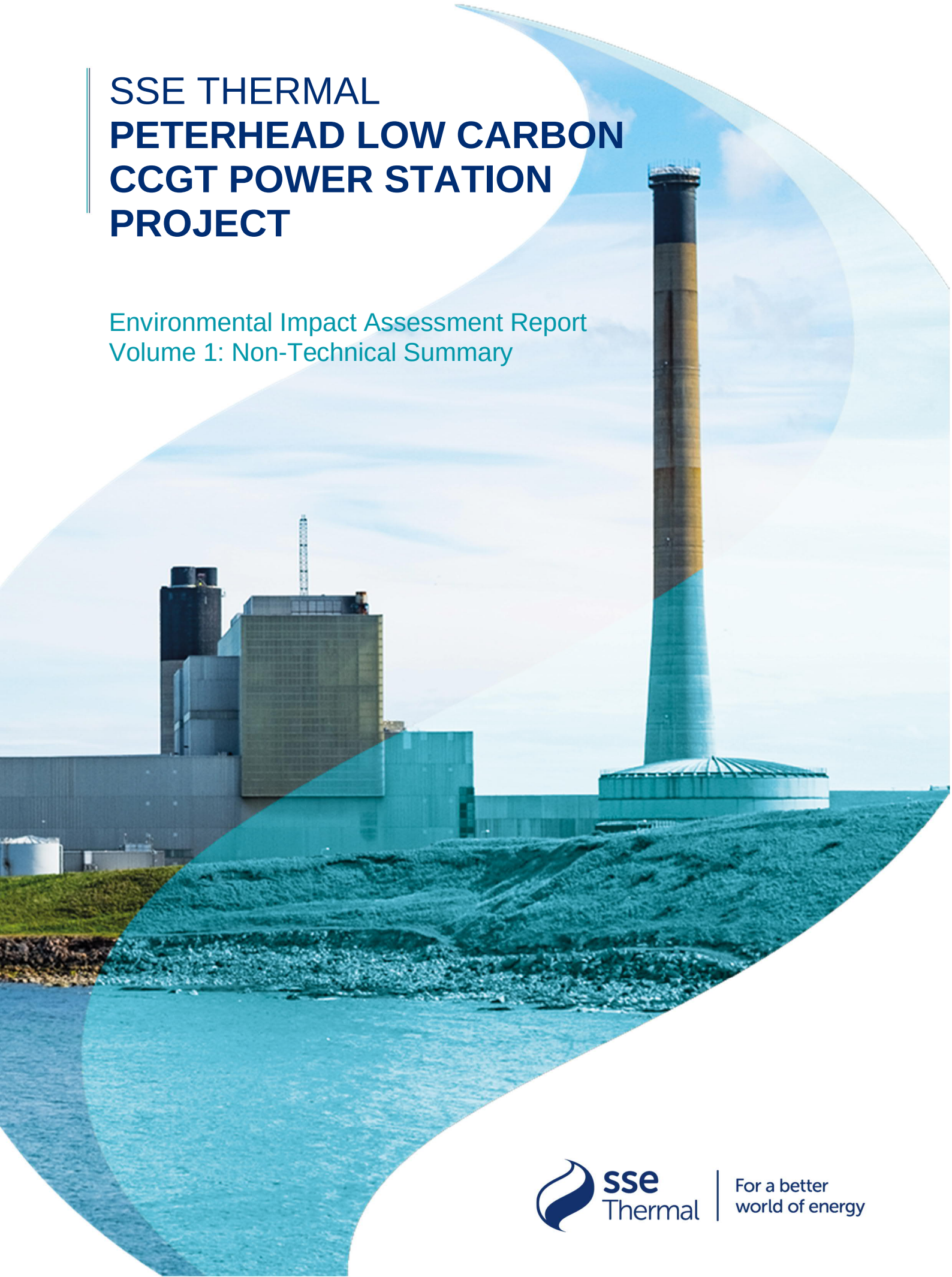
SSE THERMAL

PETERHEAD LOW CARBON CCGT POWER STATION PROJECT

Environmental Impact Assessment Report
Volume 1: Non-Technical Summary



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GLOSSARY

Abbreviation / Term	Description
AC	Aberdeenshire Council
AEP	Annual Exceedance Probability - in relation to flooding, the 100-year flood (a flood likely to occur once every 100 years) can be expressed as the 1% AEP flood, which has a 1% chance of being exceeded in any year.
AIL	Abnormal Indivisible Load - a load that cannot be broken down into smaller loads for transport without undue expense or risk of damage. It may also be a load that exceeds certain parameters for weight, length and width.
ALARP	As Low as Reasonably Practicable - a term often used in the regulation and management of safety-critical and safety- involved systems. The ALARP principle is that the residual risk shall be reduced as far as reasonably practicable.
AOD	Above Ordnance Datum - a spot height (an exact point on a map) with an elevation recorded beside it that represents its height above a given datum.
BAT	Best Available Techniques - the available techniques which are the best for preventing or minimising emissions and impacts on the environment BAT is required for operations involving the installation of a facility that carries out industrial processes. Techniques can include both the technology used and the way an installation is designed, built, maintained, operated, and decommissioned.
BNG	Biodiversity Net Gain
CAR	Controlled Activities Regulation
CCGT	Combined Cycle Gas Turbine - a highly efficient form of energy generation technology. An assembly of heat engines work in tandem using the same source of heat to convert it into mechanical energy which drives electrical generators and consequently generates electricity.
CCP	Carbon Capture Plant – plant used to capture carbon dioxide (CO2) emissions produced from the use of fossil fuels in electricity generation and industrial processes.
CCR	Climate Change Resilience- the resilience of a development to climate change including how a development would be adapted to take account of the projected impacts of climate change.
CCS	Carbon Capture and Storage
CCUS	Carbon Capture, Usage and Storage - group of technologies designed to reduce the amount of carbon dioxide (CO_2) released into the atmosphere from coal and gas power stations as well as heavy industry including cement and

Abbreviation / Term	Description
	steel production. Once captured, the CO_2 can be either re-used in various products, such as cement or plastics (usage), or stored in geological formations deep underground (storage).
CEMP	Construction Environmental Management Plan - a plan to outline how a construction project will avoid, minimise, or mitigate effects on the environment and surrounding area.
CIEEM	Chartered Institute of Ecology and Environmental Management - professional body for ecologists and environmental managers in the United Kingdom.
CO_2	Carbon Dioxide - an inorganic chemical compound with a wide range of commercial uses.
COMAH	Control of Major Accident Hazards - Regulations to ensure that businesses take all necessary measures to prevent major accidents involving dangerous substances.
CWTP	Construction Workers' Travel Plan - a plan managing and promoting how construction workers travel to a particular area or organisation. It aims at promoting greener, cleaner travel choices and reducing reliance on the private car
DEMP	Decommissioning Environmental Management Plan - a plan to outline how a decommissioning project will avoid, minimise or mitigate effects on the environment and surrounding area.
ECU	Energy Consents Unit
EIA	Environmental Impact Assessment - a term used for the assessment of environmental consequences (positive or negative) of a plan, policy, program or project prior to the decision to move forward with the proposed action.
EIA Regulations	A regulatory process used to assess the environmental consequences (positive or negative) of a plan, policy, program or project, and put in place mitigation or management to manage the consequences.
EIA Report	Environmental Impact Assessment Report - a report in which the process and results of an Environment Impact Assessment are documented.
EU	European Union
FRA	Flood Risk Assessment - an assessment of the flood risk from all sources of flooding for a development
GHG	Greenhouse Gases - atmospheric gases such as carbon dioxide, methane, chlorofluorocarbons, nitrous oxide, ozone, and water vapour that absorb and emit infrared radiation emitted by the Earth's surface, the atmosphere and clouds.

Abbreviation / Term	Description
GT	Gas Turbine - a combustion turbine plant fired by gas or liquid fuel.
HDD	HDD cabling
HGV	Heavy Goods Vehicle - vehicles with a gross weight in excess of 3.5 tonnes.
HRA	Habitats Regulation Appraisal
HRSG	Heat Recovery Steam Generator - an energy recovery heat exchanger that recovers heat from a hot gas stream. It produces steam that can be used in a process (cogeneration) or used to drive a steam turbine (combined cycle).
HSE	Health and Safety Executive - the body responsible for the encouragement, regulation and enforcement of workplace health, safety and welfare.
HVDC	High Voltage Direct Current
ICCI	In-Combination Climate Change Impact - the in-combination effects of a changing climate.
LBMEP	Landscaping and Biodiversity Management and Enhancement Plan
MA&D	Major Accidents and Disasters - the potentially significant effects of a development.
$MtCO_2$	Megatonnes of Carbon Dioxide
MW	Megawatt – 1 million watts (a unit of energy).
NRMM	Non-Road Mobile Machinery - machinery typically used off the road, such as construction machinery.
NSR	Noise Sensitive Receptor - locations or areas where dwelling units or other fixed, developed sites of frequent human use occur which may be sensitive to noise impacts.
NTS	Non-Technical Summary - a summary of the Environmental Statement written in non-technical language for ease of understanding.
NTS	National Grid Transmission System
PAC	Pre-Application Consultation
Photomontage/ photowires	Inserting an image of a proposed development onto a photograph for the purposes of creating an illustrative representation of potential changes to existing views.
PPC	Pollution Prevention and Control
PRoW	Public Right(s) of Way - a road where the public has the right of passage. Rights may exist for passage on foot only, or may also include passage by horse, cycle or motor vehicle (or a combination of those).

Abbreviation / Term	Description
PTP	Package Treatment Plant
Ramsar	Wetland sites that are of international importance, as designated under Article 2(1) of the Convention on Wetlands of International Importance.
Receptor	A defined individual environmental feature usually associated with population, fauna and flora that has potential to be affected by a project.
Residual Effect	The predicted consequential change on the environment from the impacts of a development after mitigation.
Resource	A defined and generally collective environmental feature usually associated with soil, water, air, climatic factors, landscape, material assets, including the architectural and archaeological heritage that has potential to be affected by a project.
SAC	Special Area of Conservation - high quality conservation sites that are protected under the European Union Habitats Directive, due to their contribution to conserving those habitat types that are considered to be most in need of conservation.
Scoping	The process of identifying the issues to be addressed by the Environmental Impact Assessment process. It is a method of ensuring that an assessment focuses on the important issues and avoids those that are considered to be not significant.
Scoping Opinion	The written opinion of the relevant authority, following a request from the applicant, as to the information to be provided in an Environmental Impact Assessment Report.
Scoping Report	A report which records the outcomes of the scoping process and is typically submitted as part of a formal request for a Scoping Opinion.
SCR	Selective Catalytic Reduction - the removal of nitrogen oxides from the flue gas.
Section 36 of the Electricity Act 1989	The section of the Electricity Act 1989 under which consent for construction and operation of a generating station is regulated. Applications under the section for Scottish onshore generating stations are submitted to the Energy Consents Unit (ECU) of the Scottish Government.
SEPA	Scottish Environmental Protection Agency – is the body responsible for the protection of the natural environment in Scotland.
SM	Scheduled Monument – an historic building or site that is of national or international importance and are protected under the Ancient Monuments and Archaeological Areas Act 1979 and the Historic Environment (Amendment) (Scotland) Act 2011.
SPA	Special Protection Area - strictly protected sites classified in accordance with article 4 of the EC birds' directive. Special Protection Areas are Natura sites

Abbreviation / Term	Description
	which are internationally important sites for the protection of threatened habitats and species.
SSE	Scottish and Southern Energy
SSEN	Scottish and Southern Electricity Network – the network of electricity electric lines and plant operated by SSE plc subsidiaries for the transmission and distribution of electricity.
SSSI	Site of Special Scientific Interest - nationally designated Sites of Special Scientific Interest, an area designated for protection under the Wildlife and Countryside Act 1981 (as amended), due to its value as a wildlife and/or geological site.
Stakeholder	An organisation or individual with a particular interest in a development project.
Study area	The area within which environmental effects which may be classed as significant are assessed (i.e. extending a distance from the project footprint).
SuDS	Sustainable Drainage Systems
SWMP	Site Waste Management Plan - a plan setting out how resources will be managed, and waste controlled at all stages during a construction project.
UK	United Kingdom
Visual Amenity	The enjoyment or benefit that people (individually or as a group) gain from a particular view that may change as a consequence of a proposed development during its construction, operation or decommissioning.
WFD	Water Framework Directive - European Union directive which commits member states to achieve good qualitative and quantitative status of all water bodies.
Worst-case assumption (or scenario)	An assumption adopted within an environmental impact assessment which identifies a scenario or parameter that would likely result in the maximum environmental effect (termed the worst-case). This is typically applied where uncertainty exists over the detail of a particular development component or approach to project delivery, for which a basis of assessment is needed.
ZTV	Zone of Theoretical Visibility - a computer generated tool to identify the likely (or theoretical) extent of visibility of a development.

CONTENTS

1. Non-Technical Summary

1.1. INTRODUCTION

This document presents a Non-Technical Summary (NTS) of the Environmental Impact Assessment Report (EIA Report) that has been prepared to accompany the Section 36 Application by SSE Thermal Generation (Scotland) Limited ('the Applicant') for a proposed new low carbon power station within the Peterhead Power Station site, at Boddam, Aberdeenshire. In this NTS, and throughout the EIA Report, this is referred to as the 'Proposed Development'.

Under Section 36 of the Electricity Act 1988 the Scottish Ministers' consent must be sought for the construction and operation of an electricity generating station located in Scotland. The Applicant has therefore submitted an application under Section 36 to the Energy Consents Unit (ECU) of the Scottish Ministers seeking consent for the Proposed Development. The Applicant has also requested that Scottish Ministers deem planning permission to be granted for the generating station and associated ancillary development, under section 57(2) of the Town and Country Planning (Scotland) Act 1997.

The Proposed Development will be a Combined Cycle Gas Turbine (CCGT) power station fitted with carbon capture plant (CCP) technology. It is anticipated that the station will adjust its energy output to respond to grid demand, i.e. it may 'switch on or off' or operate on reduced output. Depending on how often the Proposed Development runs, this will capture up to 2 million tonnes of carbon dioxide (CO_2) emissions per annum, that would otherwise be emitted to the atmosphere; equivalent to the annual energy use of over half a million homes in the UK. The Applicant would not build the CCGT without the CCP as the Applicant is committed to building a generating station which has a clear route to decarbonisation. The Proposed Development will therefore make a significant contribution towards Scotland reaching its Net Zero greenhouse gas emissions target by 2045 and the UK meeting its target by 2050.

It is intended that the Proposed Development will connect to the Acorn Project infrastructure to be delivered by Storegga with their partners Harbour Energy and Shell. This pipeline will connect the Proposed Development to transport carbon dioxide for offshore geological storage below the Central North Sea. These elements do not form part of this Application but are being progressed by third parties.

The UK Government published the Ten Point Plan for a Green Industrial Revolution in November 2020, this included commitment to deploy Carbon Capture, Usage and Storage (CCUS) in two industrial clusters by the mid-2020s (Track-1), and a further two clusters by 2030 (Track-2) with an ambition to capture 10 MtCO2 per year by 2030[1]. In October 2021 the Scottish Industrial Cluster, of which the Proposed Development is part, was announced as a reserve cluster for Track-1[2]. This means that the Proposed Development and the wider Scottish Cluster are expected to either receive funding support as part of Track-2, or brought forward to Track-1 should either of the other Track-1 clusters not be progressed according to Track-1 requirements.

The Applicant continues to engage with the UK Government on the importance of the Scottish Cluster and the need for all clusters across to the UK to be decarbonised to be able to reach the net zero target.

All of the land included within the Proposed Development is referred to as 'the Proposed Development Site' for the purposes of the EIA Report and this NTS and is described in Sections 3.0 and 4.0 of this NTS.

[1] https://www.gov.uk/government/publications/the-ten-point-plan-for-a-green-industrial-revolution/title
[2] https://www.gov.scot/publications/development-deployment-carbon-capture-utilisation-storage-scotland/

This document provides a summary of the EIA Report which has been prepared to accompany the consent application in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. The purpose of this NTS is to describe the Proposed Development and provide an overview of the key findings of the EIA Report.

1.2. THE APPLICANT

The Applicant, SSE Thermal Generation (Scotland) Ltd, is the owner of a large part of the Proposed Development Site and is part of the FTSE-listed SSE plc, one of the UK's largest and broadest-based energy companies, and the country's leading developer of renewable energy generation. Over the last 20 years, SSE plc has invested over £20bn to deliver industry-leading offshore wind, onshore wind, CCGT, energy from-waste, biomass, energy networks and gas storage projects. The Applicant owns and operates the Peterhead Power Station.

SSE has produced a 'Greenprint' document that sets out a clear commitment to investment in low carbon power infrastructure, working with government and other stakeholders to create a Net Zero power system by 2040[3]. This includes investment in flexible sources of electricity generation and storage for times of low renewable output which will complement other renewable generating sources, using low-carbon fuels and/ or capturing and storing carbon emissions. SSE is working with leading organisations across the UK to accelerate the development of carbon capture, usage and storage ('CCUS') clusters, including Equinor and National Grid Carbon.

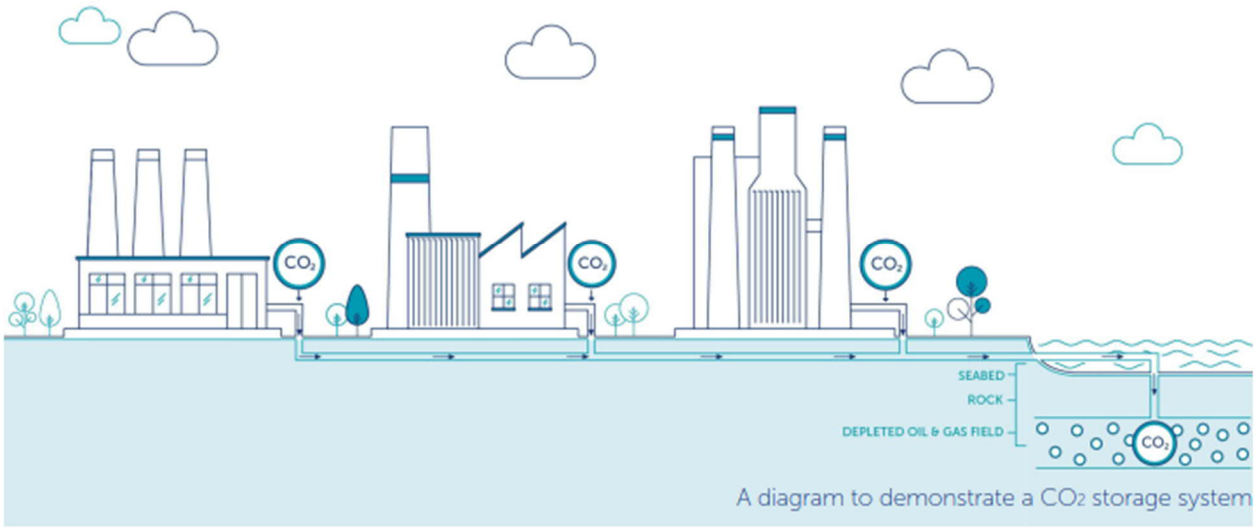
The design of the Proposed Development demonstrates this commitment. The Proposed Development will be built with a clear route to decarbonisation, being equipped with post-combustion carbon capture technology, consistent with SSE's commitment to reduce the carbon intensity of electricity generated by 60% by 2030, compared to 2018 levels.

1.3. WHAT IS CARBON CAPTURE, USAGE AND STORAGE?

CCUS is a process that removes carbon dioxide emissions at source, for example emissions from a power station or industrial installation, and then compresses the carbon dioxide so that it can be safely transported to secure underground geological storage sites. It is then injected into depleted oil or gas caverns or saline aquifers where the carbon dioxide is permanently stored, preventing it from being released into the atmosphere. CCUS is crucial to reducing carbon dioxide emissions - the UK Government has committed to achieving Net Zero in terms of greenhouse gas emissions by 2050, while the Scottish Government has went further and committed to Net Zero by 2045. **Figure NTS1** shows what is involved in the process.

[3] https://www.sse.com/media/l52kojcn/sse-a-greenprint-for-building-a-cleaner-more-resilient-economy.pdf

Figure NTS1 Illustration of the Carbon Capture, Usage and Storage (CCUS)



2. Assessment Methodology

2.1. ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

EIA is a process of environmental assessment to ensure that consenting decisions are made with knowledge of the likely significant effects of a future development. The EIA process presented in the Proposed Development's EIA Report (EIA Report Volume 2) follows a standard EIA methodology, described here.

EIA is undertaken to help to anticipate changes (or 'impacts') that may occur to the environment as a result of the Proposed Development and assesses key stages in the construction and operation (including maintenance and use) and where possible and relevant, decommissioning of developments. The changes are compared to the environmental conditions that would have occurred without the Proposed Development ('the baseline conditions').

The EIA process identifies potentially sensitive 'receptors' that may be affected by these changes (e.g. people living near the development, local flora and fauna) and assesses the extent to which these receptors may be affected by the predicted changes and whether or not the receptors are likely to experience a 'significant effect'.

Where possible, the EIA uses standard methodologies, based on legislation, defined standards and accepted industry criteria. This is set out in detail in each technical chapter of the EIA Report (EIA Report Volume 2). Effects on receptors can be adverse (negative), neutral (neither negative, nor positive) or beneficial (positive). They can also be temporary (e.g. noise during construction) or permanent (e.g. the views of the finished buildings).

For the purpose of the EIA Report, adverse and beneficial effects are described as 'significant' or 'not significant'. Where the EIA predicts a significant adverse effect on one or more receptors, mitigation measures are identified where possible to avoid or minimise the effect, or to reduce the likelihood of the effect happening. The use of such mitigation is proposed to be secured through Conditions included within the Section 36 consent, the deemed planning permission or through other legislation and consent/licensing regimes. Details of the EIA Methodology is provided within **Chapter 2: Assessment Methodology** (EIA Report Volume 2).

In general, the classification of an effect is based on the magnitude (scale) of the impact and sensitivity or value/ importance of the receptor, using the matrix shown in **Table 1**. Moderate and major effects are considered to be 'significant' for the purposes of the EIA Regulations in accordance with standard EIA practice.

Table 1: Classification of Effects

Magnitude of Impact	Sensitivity/Importance of Receptor			
	High	Medium	Low	Very Low
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Very Low	Minor	Negligible	Negligible	Negligible

2.2. EIA SCOPING

EIA Scoping is a process that is designed to identify relevant topics that should be included in the EIA and reported in the EIA Report. An EIA Scoping Report Scottish Ministers pursuant to Regulation 12 of the EIA Regulations on 15 May 2020 to allow them to comment on the extent and approach to the environmental assessments to be undertaken.

A Scoping Opinion was received from the Scottish Ministers on 29 July 2021 and is presented within Scoping Opinion. The EIA Report is based on the Scoping Opinion, taking account of any design evolution that has taken place, as well as feedback received during consultation and therefore includes assessments of the following environmental topics:

- Chapter 8: Air Quality;
- Chapter 9: Noise and Vibration;
- Chapter 10: Traffic and Transport;
- Chapter 11: Biodiversity and Nature Conservation;
- Chapter 12: Water Environment;
- Chapter 13: Flood Risk;
- Chapter 14: Geology, Hydrology and Land Contamination;
- Chapter 15: Landscape and Visual Amenity;
- Chapter 16: Cultural Heritage;
- Chapter 17: Socio-economics, Recreation and Tourism;
- Chapter 18: Climate Change and Sustainability;
- Chapter 19: Major Accidents and Disasters;
- Chapter 20: Combined Amenity Effects and Summary of Inter-Project Cumulative Effects; and
- Chapter 21: Summary of Likely Residual Effects.

Regulation 5(2) of the EIA Regulations describes the requirements of an EIA Report, which includes a description of the Proposed Development, its likely environmental effects, measures to avoid, prevent, reduce and offset likely significant adverse effects, a description of alternatives and reasons for the options chosen, and a NTS of the information. This document is the NTS of the EIA Report submitted with the Section 36 Application.

2.3. CONSULTATION

Consultation is important in the preparation of Section 36 Applications and in the EIA process. The Scottish Government encourages prospective applicants for Section 36 consent to carry out pre-application consultation on their proposals. The PAC Report to be submitted alongside the Section 36 application summarises how issues raised in the Scoping Opinion have been addressed in the EIA Report and includes a full consultation log.

Consultation with key stakeholders has been ongoing throughout the EIA process and comments raised have been addressed in the EIA Report, where applicable.

All the consultation responses received have been considered in the preparation of the Application and supporting documentation, as set out in the PAC Report.

2.4. ENVIRONMENTAL IMPACT ASSESSMENT REPORT

The format of the EIA Report is outlined in **Table 2**.

Table 2 EIA Report Contents

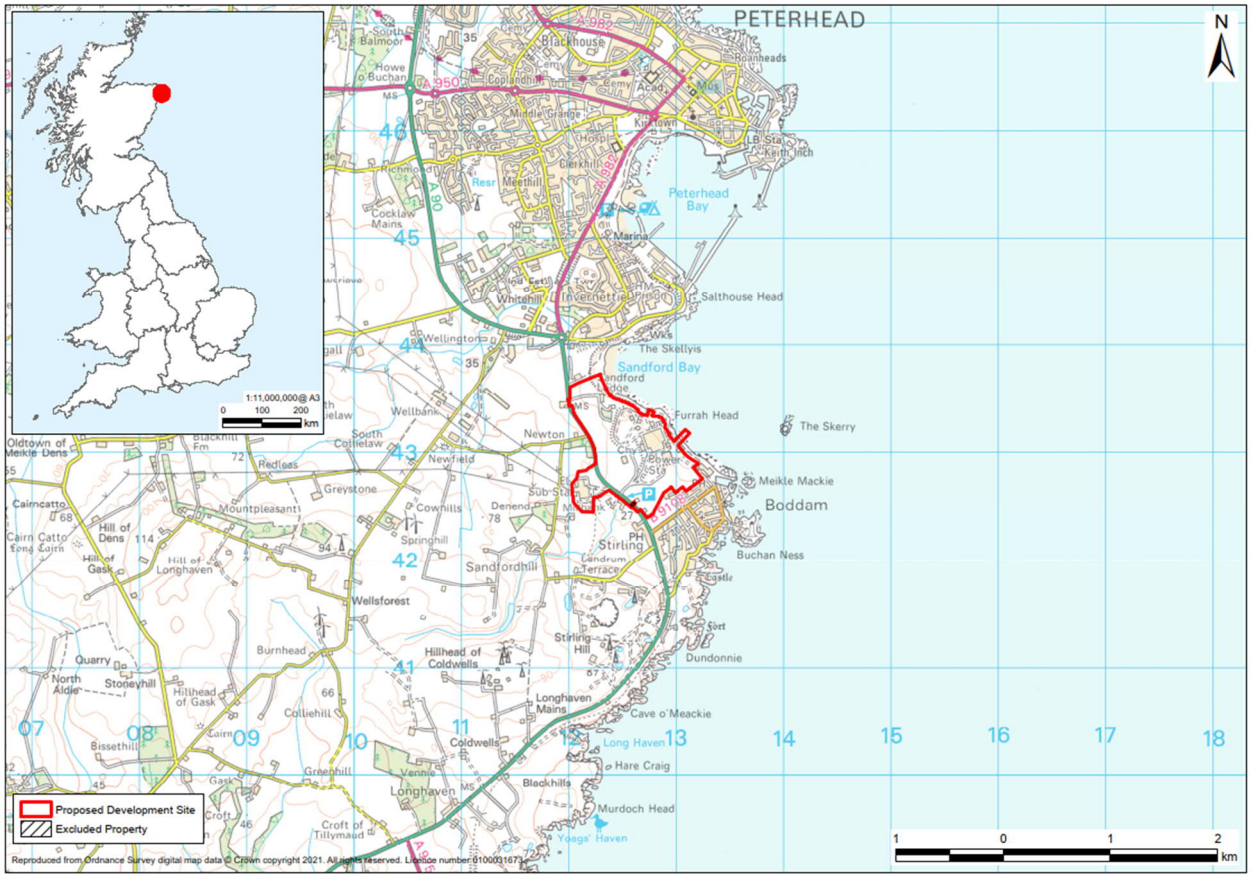
EIA Report Volume	Content
Volume 1: Non-Technical Summary	A stand-alone summary of the EIA Report volumes listed below in non-technical language.
Volume 2: EIA Main Text	Chapters 1 - 2 present an introduction to the project and EIA assessment methodology. Chapters 3 - 6 present a description of the Proposed Development Site and surrounding areas; components of the Proposed Development, their construction and decommissioning, programme and alternatives. Chapter 7 presents a summary of relevant legislation and planning policy. Chapters 8 – 19 present the findings of the environmental assessments, likely significant effects identified, and mitigation, monitoring and enhancement measures proposed. Chapter 20 provides an assessment of the potential combined amenity effects experienced by receptors within the vicinity of the Proposed Development; and a summary of the inter-project cumulative effects. Chapter 21 provides a summary of the likely significant residual environmental effects identified.
Volume 3: Figures	Presents figures that accompany EIA Report Volume 2 and 4.
Volume 4: Appendices	Presents additional information to support the environmental assessments in Volume 2.

3. Description of Existing Environment

3.1. THE SITE AND SURROUNDINGS

The Proposed Development Site is located within and near to the existing Peterhead Power Station site near Boddam Peterhead, as shown on **Figure NTS2**, and is centred on national grid reference 412750,843090.

Figure NTS2: Proposed Development Site Location Plan



The Peterhead Power Station site includes the existing Peterhead Power Station. It falls within the local government area of Aberdeenshire Council (AC).

Beyond the current Peterhead Power Station site, land use is predominantly arable land to the west with the town of Peterhead to the north and the village of Boddam to the south and the coast area of Boddam Harbour and Sandford Bay to the east. The immediate site is within an area of tenanted arable land, predominantly grassland with areas of scattered trees and small blocks of woodland.

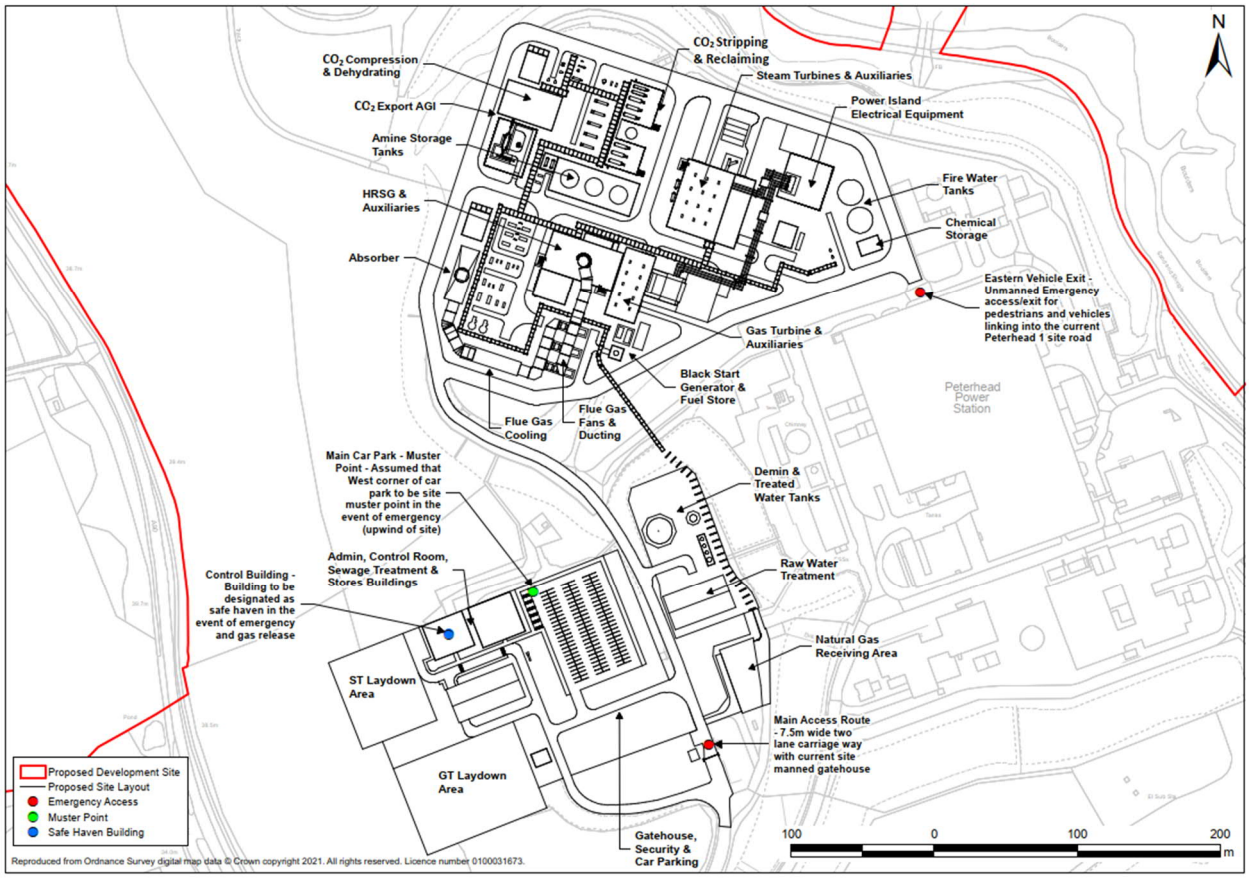
3.2. COMPONENTS OF THE PROPOSED DEVELOPMENT SITE

The Proposed Development Site covers an area of approximately 89 hectares (ha). Many components together make up the Proposed Development Site as shown in **Figure NTS3**, below, and for the purposes of the EIA Report, the following names (described in Section 4.0 of this NTS) are used to describe parts of the Proposed Development Site:

- CCGT and CCP area;

- Electrical Connection Area to the existing Scottish and Southern Electricity Network (SSEN) 275kV Substation;
- Gas Connection Corridor within the Peterhead power station site;
- Existing site access via Gatehouse Road to be used during construction phase by construction personnel and HGVs, and thereafter to be used during operation of the Proposed Development;
- New right hand turn on to Gatehouse Road from the A90 junction;
- Upgrade to Sandford Lodge access track to be used during construction and to become a permanent emergency access to the Proposed Development Site during operation;
- Land within the existing Peterhead Power Station site for the purposes of facilitating connections to the Proposed Development for natural gas supply, and other necessary infrastructure (including connection to the existing seawater cooling outfall and intake);
- Abnormal Indivisible Load (AIL) Route, to use the Sandford Lodge access;
- Construction Laydown Areas; and
- Landscaping, planting and Biodiversity enhancement measures and security fencing and boundary treatment.

Figure NTS3: Components of the Proposed Development Site Referred to in the EIA Report



The Proposed CCGT and CCP Site covers an area of around 5.9ha to the north west of the existing Peterhead Power Station (the 'CCGT and CCP area'). CCGT and CCP area was previously partially occupied by oil tanks associated with the existing Peterhead Power Station that have now been decommissioned. The area to the west includes a disused gas turbine building which will require demolition.

New electricity connections are proposed between the Proposed Development and the existing 275kV substation to the west of the Proposed Development Site. This would comprise cables laid into the ground via open trench and the use of Horizontal Directional Drilling (HDD) where the cables cross the A90. An intermediate electrical substation may be required between the Proposed Development and the substation. No new overhead lines are proposed as part of the works required for the Proposed Development.

The Proposed Development Site includes land required for electricity, water and other necessary connections to the Proposed Development as well as to provide temporary access during construction for abnormal load deliveries.

The Proposed Development will utilise the existing cooling water system used by the existing Peterhead Power Station. This would use the water intake at Boddam Harbour and the existing outfall at Sandford Bay. New pipework would be required to extend the connection to the Proposed Development Site and pumps would need to be replaced.

The Proposed Development Site will be sited to connect to the Acorn Project carbon dioxide pipeline.

It is anticipated that around 15ha of land will be required for construction laydown and so several construction laydown areas are included within the Proposed Development Site.

Additional land has also been included in the Proposed Development Site to provide landscaping and biodiversity enhancement areas.

3.3. POTENTIAL SENSITIVE RECEPTORS

Several environmental receptors have been identified within and outside the boundary of the Proposed Development Site and are described in more detail in Chapter 3: The Site and Surrounding Area (EIA Report Volume 2). Distances are provided as the shortest distance between the receptor and the closest point of the boundary of the Proposed Development Site and/ or the CCGT and CCP area.

Key receptors for each topic area have been identified as part of the assessment process and details are included in the relevant technical chapters (**Chapters 8 - 19** EIA Report Volume 2). A brief summary is also provided below.

3.3.1. RESIDENTIAL RECEPTORS

The nearest settlement is the village of Boddam which is located approximately 30m south-east from the Proposed Development Site at its closest point. Other settlements nearby include Burnhaven (850m) and Peterhead (1.5km) to the north of the Proposed Development Site and Stirling Village (250m) to the south.

Closer to the Proposed Development Site are a small number of individual residential properties. The closest residential and other sensitive receptors to the Proposed Development Site include:

- Individual residential property located to the east of the A90 adjacent to the boundary of the Proposed Development Site in the south western corner;
- Millbank Garage located approx. 30m west of the Proposed Development Site;
- VS Auto Services located approx. 30m west of the Proposed Development Site;
- Individual residential property located west of the A90 located approx. 90m west of the Proposed Development Site;
- Individual residential property located adjacent to the northern boundary of the Proposed Development Site;

- Sandford Garage located approx. 50m south of the Proposed Development Site;
- Residential properties located in Boddam located approximately 130m south of the Proposed Development Site; and
- Residential properties located west of the A90 at Station Road, Boddam approximately 200m south west of the Proposed Development Site.

3.3.2. ECOLOGICAL RECEPTORS

There are no statutory designated sites within the Proposed Development Site, although the existing cooling water intake and outfall are within the boundary of the Buchan Ness to Collieston Coast SPA which is located immediately to the east / north-east. The nationally designated Bullers of Buchan Coast SSSI is located 750m from the Proposed Development Site. There are several statutory nature conservation designations located beyond this within the 15km study area; these are presented in Table 3.1 of **Chapter 3: The Site and Surrounding Area** (EIA Report Volume 2)

There is one locally designated non-statutory conservation site within 2km of the Proposed Development. The Skelmuir Hill, Stirling Hill and Dudwick Local Nature Conservation Site (LNCS) is directly adjacent to the Proposed Development Site, on the west side of the A90 road, and south of the existing electricity substation. It is understood that this site is designated for its geological interest, and a review of aerial images suggests that much of the LNCS is covered by agricultural land which is likely to be of low ecological importance.

Due to the proximity of statutory designated sites, an assessment under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) (the 'Habitats Regulations') is also required. A Habitat Regulations Appraisal (HRA) is provided to accompany the consent Application. This document assesses the potential for adverse effects on the integrity of SACs and SPAs to be caused by the construction, operation or decommissioning of the Proposed Development.

3.3.3. LOCAL TRANSPORT RECEPTORS INCLUDING PUBLIC RIGHTS OF WAY

The Proposed Development site lies to the east of the A90 and can be accessed using Gatehouse Road, an access road which leads directly onto the A90. Gatehouse Road runs around the outside of Peterhead Power Station and facilitates the movement of traffic within the current power station site.

Access to the Proposed Development Site during construction for HGVs and AILs will be at the Sandford Lodge access track located to the north of the Proposed Development Site. Construction workers will use the existing Gatehouse Road access. During operation, the existing Gatehouse Road will be used to access the site.

Other roads in the vicinity of the Proposed Development Site are presented in the Transport Assessment (**Appendix 10A** EIA Report Volume 4).

Three core paths are located within and adjacent to the Proposed Development Site:

- Footpath ECPP-202-03: a path located along the road leading to Sandford Lodge located along the northern boundary of the Proposed Development Site. An application for this path to be temporarily diverted for the duration of the construction period to facilitate works to the Sandford Lodge access track as well as construction vehicle movements will be submitted to AC;
- The Aberdeenshire Coastal Path (ECPP-7LD-01-24) running from Boddam to Peterhead runs through the north eastern section of the Proposed Development Site and along the eastern boundary of the Proposed Development. An application for this section of path around the existing outfall to be temporarily diverted to facilitate works to the outfall structure will be submitted to AC;

- Footpath ECPP-215-04: a path located along the A90 immediately adjacent to the Proposed Development Site and within the Proposed Development Site to the west.

3.3.4. SURFACE WATER, GROUNDWATER AND FLOOD RISK

The Proposed Development Site is located between two river catchments, the River Ugie approximately 4km north and the Water of Cruden approximately 7km south.

Den of Boddam Burn flows from south west to north east and for approximately 3km before it reaches the boundary of Peterhead Power Station. Upstream of the Power Station and the A90 this watercourse enters a culvert and flows into the North Sea north of the existing cooling water outfall.

Areas in the centre and east of the Proposed Development Site, mainly comprising the existing Power Station together with the access route and the junction of the A90 into the site are identified by SEPA Flood Map (SEPA, 2020) as being at medium risk of river and surface water flooding. Medium risk is classified as having a 0.5% chance of flooding each year.

There are several surface water bodies within the Proposed Development Site and surrounding area which have been considered within the EIA Report, including: Sandford Bay, Invernettie Burn, Den of Boddam Burn, drains and ditches and various ponds.

Due to the coastal position of the Proposed Development Site, the predominant drainage trend is west to east towards the coast. A comprehensive drainage system exists at the current Peterhead Power Station providing separation of potentially contaminated from uncontaminated drainage.

3.3.5. CULTURAL HERITAGE

Within the Proposed Development Site there is one Category B listed building - Sandford Lodge - and one Category C listed building associated with Sandford Lodge comprising its Walled Garden. There are no other statutory designated sites e.g. World Heritage Sites, Scheduled Monuments, conservation areas, registered parks and gardens, registered battlefields or protected wreck sites within the Proposed Development Site.

There are several non-designated heritage assets within the Proposed Development Site which relate to the agricultural land use before the existing power station was constructed and are now demolished. The non-designated earthwork bank known as Den of Boddam also lies within the Proposed Development Site.

The nearest conservation area is the Boddam Conservation Area, which is 315m south east of the Proposed Development Site and provides the context for the Category A listed building Buchan Ness Lighthouse and several Category B and C listed buildings.

The closest scheduled monument is Boddam Castle which lies within 1km of the Proposed Development Site to the south of Boddam. A second scheduled monument - Boddam Den flint mining complex - is located 1.15km south west of the Proposed Development Site.

3.3.6. LANDSCAPE AND VISUAL RECEPTORS

Parts of the coastline to the north of Peterhead, and to the east and south of Boddam are within the North East Aberdeenshire Coast Special Landscape Area (SLA). This landscape is characterised as fragmented rocky coastline with dramatic coastal features, such as rugged cliffs and broken islets, and the steep rugged slopes which give way to coastal fields and grasslands.

The Proposed Development Site and its immediate surroundings are heavily influenced by the industrial structures of the existing Peterhead Power Station, the settlements of Peterhead and Boddam, the operational quarry at Boddam and the A90.

The extent of views available to receptors range from close proximity to long distance views. These include the nearby settlements of Peterhead to the north and Boddam to the south, and more distant settlements of Rora in the north and Hatton in the south, at scattered properties and on more distant higher ground, along recreational routes, including the coastal edge and vistas to places of interest such as Slains Castle ruins and Craigewan Links.

4. The Proposed Development

4.1. COMPONENTS OF THE PROPOSED DEVELOPMENT

The Proposed Development includes the construction, operation, maintenance and eventual decommissioning of a low carbon CCGT generating station with a capacity[4] of up to 910MW electrical output together with equipment required for the capture and compression of carbon dioxide emissions from the generating station.

The Proposed Development is described in detail in **Chapter 4: The Proposed Development** (EIA Report Volume 2).

In summary the Proposed Development comprises:

- A carbon capture equipped electricity generating station including a CCGT plant, cooling infrastructure, a carbon dioxide capture plant (CCP) including one or two absorption unit(s) and stack(s), conditioning and compression equipment, natural gas receiving facility and supporting activities, all located in the area referred to as the 'CCGT and CCP area';
- Natural gas pipeline to supply the power station including infrastructure to connect to National Grid Gas's apparatus;
- Electrical power export lines to the existing SSEN 275kV Substation to the west of the Proposed Development Site (the 'Electrical Connection Area to 275kV Substation');
- Water Connection Corridors to provide cooling and make-up water including:
  - works to and use of an existing outfall and associated pipework for the abstraction of cooling water from Sandford Bay;
  - Works to and use of an existing outfall and associated pipework for the discharge of return cooling water and treated wastewater to Sandford Bay; and
  - Existing foul drainage; public water connection;
- Chemical storage including road tanker unloading area and appropriate containment facilities;
- Upgraded access at the Sandford Lodge access track to facilitate heavy goods vehicle deliveries;
- Landscape and biodiversity enhancement measures and security fencing and boundary treatments.

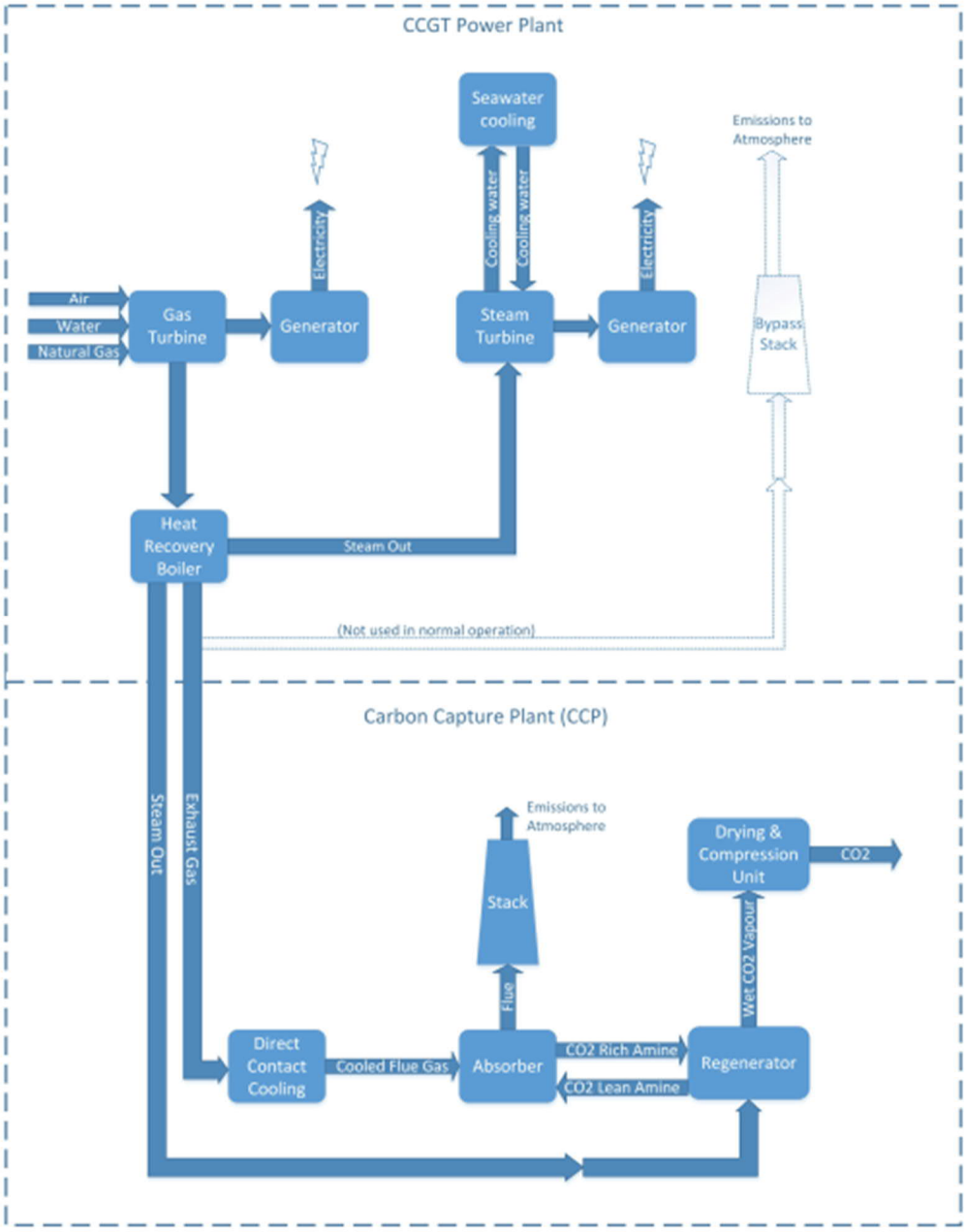
Various associated development that may be required in connection with the above works are detailed in **Chapter 4: The Proposed Development** (EIA Report Volume 4).

After a period of baseload operation, it is expected that the Proposed Development will generally operate in dispatchable mode i.e. be able to export electricity to match anticipated intermittency of renewable power in the future power market. The CCP has been assessed for the purpose of this EIA Report to be capable of capturing at least 90% of the carbon dioxide emitted from the power station, likely to be through the use of amine-based solvent. However, there is the potential that the capture rate could be higher. The captured carbon dioxide will be compressed for transport to offshore storage.

A schematic illustration of the Proposed Development is shown on **Figure NTS4**. A single high efficiency CCGT unit and associated CCP are to be developed. Natural gas that has been conditioned to the required temperature and pressure will be combusted in the CCGT.

[4] The electrical generation capacity will be lower under normal operations when the emissions of carbon dioxide from the CCGT are captured in the Carbon Capture Plant.

Figure NTS4 Schematic of Proposed Development



Following combustion in the gas turbine, the hot product gases will enter the gas turbine where they will expand across the blades of the turbine causing it to rotate and drive an electrical generator. The gas turbine exhaust gases are passed through the HRSG to recover the useful heat to produce steam (at various pressures) to generate further electricity via a separate steam turbine, and for heating of process streams within the CCP.

The flue gases will then be treated with Selective Catalytic Reduction (SCR) to further remove NOx to the required emissions limits. Although it will be possible to discharge exhaust gases through a dedicated stack above the HRSG building (for example during outages of the CCP), during normal operation, this will not happen and use of this is anticipated to be infrequent.

Instead, the hot flue gases will enter the integrated CCP as shown in **Figure NTS4**. Prior to introduction into the absorber column the flue gases are cooled using indirect cooling by the seawater cooling system. Once cooled, the flue gases from the generating station will be introduced to one or two absorber column(s) where they will be passed through a solvent that will remove the carbon dioxide from the gas stream. The solvent to be used is the subject of ongoing technical studies but is assumed for the purpose of the EIA Report to be an aqueous solution of amines, with alkaline properties that selectively absorb the carbon dioxide.

The captured carbon dioxide will be treated on Site in a gas conditioning facility. The carbon dioxide would be cooled, traces of water and oxygen would be removed, and the gas would be compressed to an appropriate pressure and exported into the Acorn Project Pipeline to be developed by Storegga and partners.

4.2. ROCHDALE ENVELOPE AND DESIGN PARAMETERS

The detailed design of the Proposed Development is not yet finalised and will be completed in the pre-construction phase. However, the final design will be within the maximum design parameters (in accordance with the Rochdale Envelope approach – see below) assessed within the EIA Report and presented in the Section 36 Application.

The Rochdale Envelope approach for the Proposed Development is based on assessing the potential impacts of a realistic worst-case scenario under which the assessment of the project is defined by an 'envelope' of theoretical constraints. For example, although the detailed design of the absorber or the absorber stack(s) cannot yet be specified, their 'envelopes' can be defined by a maximum footprint (including height); this would enable the design of the project to vary within these parameters without rendering the findings of the EIA invalid. The evolution of the Proposed Development to date is outlined in **Chapter 6: Consideration of Alternatives** (EIA Report Volume 2).

At this stage in the design of the Proposed Development, three potential plant layout options have been identified, depending on which contractor's technology is selected. Table 3 sets out the maximum dimensions (parameters) for the main components of the Proposed Development which have been used as the basis for the various technical assessments. These are the largest possible dimensions of any of the three layout options being considered. **Figure NTS5** shows the indicative elevations and section plans of the Proposed Development.

Figure NTS5 Indicative Elevations and Section Plans of the Main Site of the Proposed Development

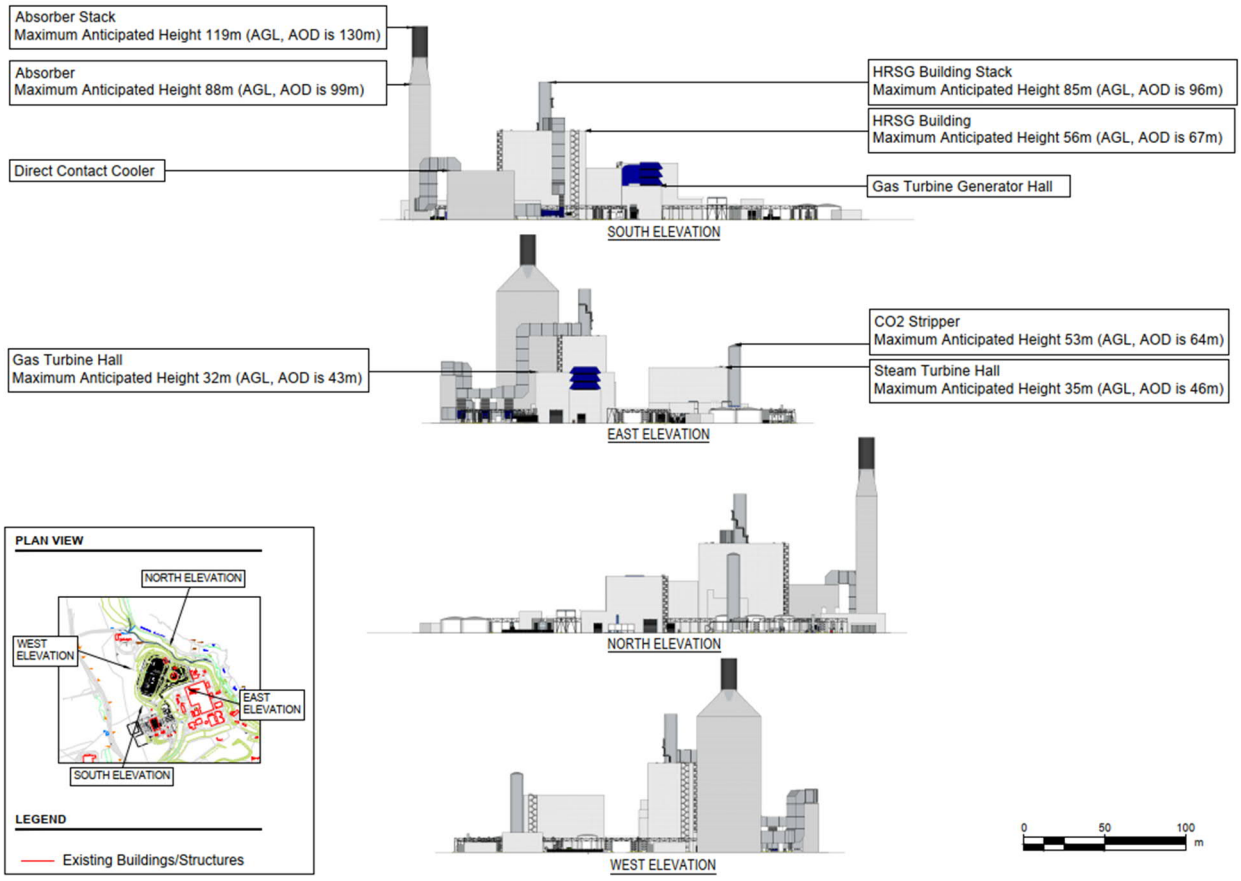


Table 3 Rochdale Envelope and Maximum Design Parameters

Component	Maximum Length (m)	Maximum Width (m)	Maximum Height (m) above ordnance datum (AOD)
Minimum design level (final ground height) within the Site for CCGT / CCP infrastructure and administration / control buildings			9
Maximum design level (final ground height) within the Site for CCGT / CCP infrastructure and administration / control buildings			11
Gas Turbine Hall	22	50	43
Steam Turbine Hall	50	40	46

Component	Maximum Length (m)	Maximum Width (m)	Maximum Height (m) above ordnance datum (AOD)
HRSG Building	28	50	67
HRSG Stack	Up to 8m diameter		96
Carbon Dioxide Stripper	Up to 15m diameter		64
*Single Absorber (Options 1 and 3 only)	16	43	99
*Single Absorber Stack (Options 1 and 3 only)	Up to 6.7m diameter		130
*Twin Absorber (Option 2 only)	Up to 19m diameter		77
*Twin Absorber Stacks (Option 2 only)	Up to 6.7m diameter		98

* For all options, the stack(s) would be constructed on top of the absorber – therefore, the maximum (m AOD) height shown for the stack(s) includes both the absorber and the stack(s) together.

Three indicative layout options have been considered as part of this EIA and are shown in **Figures 4.1-4.3** (EIA Report Volume 3). The worst case from these layouts has been assessed for each discipline in **Chapters 8-18** (EIA Report Volume 2). The exact positions of major equipment for both the CCP and CCGT, including the absorber stack, cannot be fixed until the detailed design stage as they will depend on the final layout chosen and plant optimisation. In determining the worst-case assumptions for the basis of assessment, consideration has been given to both a single large absorber stack (with a maximum height of 130m AOD – presented in Option 1 and Option 3 only) and the option of smaller twin absorber stacks (each with a maximum height of 98m AOD – presented in Option 2).

4.3. PROPOSED DEVELOPMENT CONSTRUCTION

Construction of the Proposed Development could (subject to the necessary consents being granted and an investment decision being made) potentially start as early as Quarter 4 2023. Construction activities are expected to be completed within three and a half years, followed by commissioning, however detailed phasing will be the responsibility of the appointed Contractors.

As described above, each environmental assessment topic within the EIA Report identifies and assesses the reasonable 'worst-case' construction scenario for that topic, where relevant. The Section 36 Application seeks consent for commencement of development up to seven years from the date of granting of consent. For this reason, a scenario where construction commences later in the programme, up to 2030 (i.e. assuming consent by Q4 2023) has also been assumed as a worst-case for some technical assessments.

The Applicant would appoint contractor(s) to undertake the construction phase of the Proposed Development. The Applicant would retain overall responsibility for the project and would ensure that the works would be undertaken in accordance with legal requirements.

An indicative construction programme is outlined in Table 4 below:

Table 4 Indicative Construction Programme

	Year One				Year Two				Year Three				Year Four			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Early Works including upgrades to Sandford Lodge access track and A90 Junction upgrade at Gatehouse Road																
Site enabling and preparation																
Groundworks																
Erection of main process equipment																
Gas and electrical connection																
Electrical and mechanical connections																
Above ground civil works																
Commissioning and testing																

Core construction working hours would be 07:00 and 19:00 Monday to Friday (except bank holidays) and 08:00 and 13:00 on Saturdays. However, is it likely that some construction activities may need to be undertaken outside of these core working hours, subject to agreement with the local planning authority.

A detailed Construction Environmental Management Plan (CEMP) will be prepared prior to construction. It is proposed the submission, approval, and implementation of this will be secured by a planning condition. The Framework CEMP (**Appendix 5A** EIA Report Volume 4) sets out the key measures anticipated to be employed during construction to control and minimise the impacts on the environment. It is proposed the final CEMP, which may differ from the Framework, would be approved by the local planning authority.

The site enabling and preparation period is anticipated to take just over a year and will include earthworks. Earthworks will be required in the first phase of construction to provide a suitable platform for the Proposed Development Site, import engineering fill material and/or remove surplus material or remediate any contaminated soils if found. Any excess spoil generated during construction will be managed through the Site Waste Management Plan (SWMP) that would form part of the final CEMP.

The demolition of the buildings which previously housed gas turbines (GTs) 3 and 4, the existing demineralised water tank and the existing oil pump house are required during the early works and enabling phase.

The Sandford Lodge access road will be widened and strengthened to allow for HGVs and other vehicles to utilise this access during construction. A right-hand turning lane is also proposed at the Gatehouse

Road junction with the A90 to allow for the increase in construction workers and the A90 will need to be widened here.

The contractor will prepare and level the CCGT and CCP area, followed by piling and excavation for main foundations of large structures. Plant and equipment will be prefabricated where practicable, however certain larger items of plant may need to be fabricated and erected on-site due to their anticipated size or weight.

Footpath ECPP-202-03 located along the Sandford Lodge access track will be the subject of an application to AC to be temporarily diverted to the north. This temporary diversion during construction will ensure pedestrian safety and continued access to the coastal path.

These early works will also include diverting the culverted watercourse Den of Boddam Burn that currently runs underneath the CCGT and CCP area.

The piling methodology and risk assessment would likely be secured under a planning condition.

To carry out plant installation it is anticipated that plant and equipment will be prefabricated off-site where practicable, however larger equipment may need to be fabricated and erected on site due to its large size.

Natural gas supplied from the St Fergus Gas terminal is received from the St Fergus pipeline and Peterhead's gas receiving facility. A new natural gas connection would link Peterhead Power Station's existing natural gas receiving infrastructure to the Proposed Development.

The Proposed Development will utilise the existing seawater intake located at Boddam Harbour south east of the Proposed Development. New pipework will be required to connect to the existing intake. A connection would also be made to the existing public water connection. The water discharge connection would utilise the existing outfall for Peterhead Power Station for the discharge of cooling water and treated effluent to Sandford Bay. The pipework for both the supply and discharge connections will primarily be below ground except in cases where it will cross existing outfall culverts where it will be routed above ground.

Other connections include the electrical connection between the Proposed Development and the SSEN 275kV Substation comprising up to 275kV cables to be installed below ground from the existing substation to the west of the A90. Underground construction will require the use of an 'open-cut' method, with a trench excavated, and the cables laid below ground. Where the electrical cabling crosses under the A90, HDD installation will be required. An intermediate electrical substation may also be required on Site.

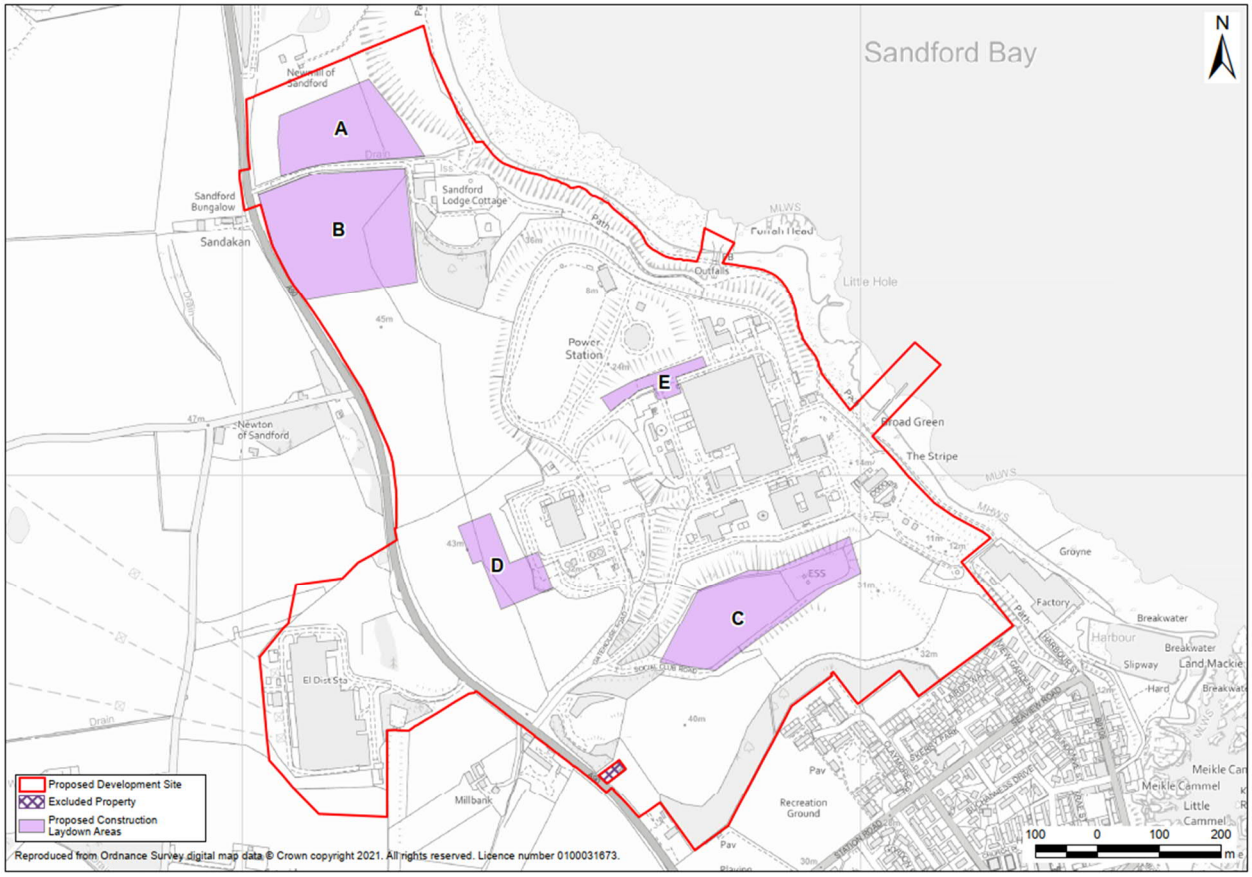
Access to the Proposed Development Site during construction for workers and for all HGVs would be via the new permanent access using the Sandford Lodge access track. It is estimated that there will be approximately 1,300 personnel contracted to work on the Proposed Development at the peak of construction. In order to manage travel to the Proposed Development Site, a framework Construction Traffic Worker's Plan (CWTP) (**Appendix 10C** EIA Report Volume 4) has been prepared, which provides further detail on traffic management measures to be employed.

HGV movements including deliveries and abnormal loads arriving at/ departing from the Proposed Development Site are outlined in the Framework Construction Traffic Management Plan (CTMP) (**Appendix 10B** EIA Report Volume 4). The Final CTMP will be prepared by the Contractor and secured through a planning condition associated with the Section 36 consent.

It is proposed that the largest abnormal loads will be received at Peterhead Port where they would be offloaded using mobile cranes. The components will then be transported to the Proposed Development Site on South Road and via the A90.

Temporary laydown will be positioned close to some access roads for the storage of construction plant and materials. Laydown areas and construction compounds are illustrated on **Figure NTS6**.

Figure NTS6 Construction Laydown Areas and Construction Compounds



Construction temporary site lighting is proposed to enable safe working on the construction site in the hours of darkness. Glare will be minimised outside of the construction site. Lighting will be designed so as not to cause a nuisance outside of the Proposed Development Site in relation to views from residential receptors or light disturbance to ecological receptors.

4.4. PROPOSED DEVELOPMENT OPERATION

The facility will be designed to operate 24 hours per day, 7 days per week, with programmed offline periods for maintenance.

Operation of the Proposed Development is anticipated to create around 50 full time operational roles. Temporary and contractor employees associated with maintenance activities would also be employed, as required.

The Proposed Development is designed to be able to operate in either baseload of in a flexible (dispatchable) mode in the future. The baseload mode refers to power generation that generally runs continuously throughout the year and dispatchable mode refers to highly flexible operating on demand and dispatched according to market conditions.

In the event of CCP outages it could be necessary to operate the Proposed Development for a short period of time without carbon capture, with exhaust gases from the CCGT being routed via the HRSG stack. These occurrences are expected to be infrequent.

The operation of the Proposed Development would be regulated through a variation to the current PPC Permit and Controlled Activities Regulation (CAR) licences. The PPC Permit will control emissions to air,

soil, surface water and groundwater, so that effects on the environment and human health will be avoided where possible but otherwise minimised so that there are no significant Residual Effects.

Permanent access to the Proposed Development Site during operation would be via the existing Gatehouse Road from the A90. The new permanent secondary access at the Sandford Lodge access road would be used as an emergency egress once operational.

4.5. PROPOSED DEVELOPMENT DECOMMISSIONING

The power generation and carbon capture elements of the Proposed Development would have a design life of around 25 years, therefore decommissioning activities would not commence until after 2053 at the earliest.

At the end of operation, it is expected that the Proposed Development will have some residual life remaining, and an investment decision would then be made based on the market conditions prevailing at that time. If the operating life were to be extended, the Proposed Development would be upgraded in line with legislative requirements at that time.

A Decommissioning Plan (including a Decommissioning Environmental Management Plan (DEMP)) will be produced within the period specified in the relevant legislation in force at the time of cessation of operations and agreed with the SEPA as part of the PPC Permit and site surrender process.

5. Consideration of Alternatives

5.1. INTRODUCTION

The EIA Regulations state that an EIA Report should include a description of reasonable and relevant alternatives studied by an applicant and the main reasons for selecting the chosen development, taking into account the environmental effects. **Chapter 6: Consideration of Alternatives** (EIA Report Volume 2) provides this information in respect of the Proposed Development.

The detailed design of the Proposed Development has not yet been completed but has continued to evolve up to the point of submission of the consent application in response to consultation feedback (explained in the PAC Report) and with reference to surveys and technical studies which are now complete.

5.2. ALTERNATIVES CONSIDERED

In summary, alternatives have been considered during the evolution of the Proposed Development including:

- Do nothing;
- Alternative technologies and fuels;
- Alternative sites;
- Alternative design options and design evolution; and
- Alternative layouts, designs and temporary construction laydown areas within the Proposed Development Site.

The environmental effects of these alternatives have been compared to inform the Proposed Development layout and design.

The Proposed Development includes an appropriate degree of flexibility in the dimensions of buildings and structures to allow for the selection of the preferred technology and contractors. To ensure a robust assessment, the EIA has considered the worst case to accommodate this necessary flexibility. For example, the landscape and visual impact assessment has assessed the largest massing of buildings and tallest structures that could be required.

The Proposed Development Site was identified as being the most suitable for the following key reasons:

- The Proposed Development Site is part of the Scottish Industrial Cluster as part of the UK Governments Carbon Capture, Usage and Storage (CCUS) programme. Discussions with Storegga and their Partners have determined that the proposed Acorn project carbon dioxide pipeline can directly connect into the Proposed Development Site to enable the transport of captured carbon dioxide from the Proposed Development to permanent geological storage in the Central North Sea.
- Previous studies looked at the feasibility of implementing carbon capture and storage (CCS) at Peterhead Power Station and have highlighted its suitability. In 2011, the UK Government selected Peterhead Power Station as a potential candidate for a pilot project of CCS in the UK. However, in 2015 the UK Government announced that the £1bn grant for developing new CCS technology was no longer available.
- The Proposed Development Site enables connections to be developed to existing infrastructure including electrical grid, water and gas (the existing 275kV substation facilitates the electricity connection of the CCGT to the Scottish and Southern Electricity Network (SSEN) transmission

system); water (given proximity to both the Boddam Harbour and Sandford Bay) and transport (A90 as well as waterborne options).

- The Proposed Development Site is a brownfield site which is considered more appropriate to redevelop for large scale power generation than a greenfield one.
- The Proposed Development Site is located within the boundary of the existing Peterhead Power Station site (and associated land within the ownership or control of the Applicant).
- The Proposed Development Site is in close proximity to the existing Peterhead Power Station), providing opportunities for synergies and efficiencies for the Proposed Development.

No other sites were considered for the location of the Proposed Development.

6. Summary of Environmental Effects

6.1. AIR QUALITY

Chapter 8: Air Quality (EIA Report Volume 2) considers potential impacts and effects from the Proposed Development on both human health and ecological receptors.

The air quality assessment uses screening tools and detailed computer models to predict the dispersion of air emissions from the Proposed Development including emissions associated with the construction of the Proposed Development and emissions from the proposed stack(s) (chimneys) of the operational development. These predict concentrations of pollutants in ambient air which are compared to national air quality standards where available, or other appropriate levels as agreed with regulators.

Emissions assessed include:

- Dust generation during construction;
- Emissions from road traffic and Non-Road Mobile Machinery (NRMM) during construction;
- Process emissions from the operational phase of the Proposed Development; and
- The potential effects of the eventual decommissioning of the Proposed Development.

Likely Impacts and Effects

Through the use of standard construction management measures, which reduce dust and emissions from site clearance and site preparation activities, emissions to air from construction activities are assessed to have no significant adverse effects on human or ecological receptors. Such measures would include standard best practice construction measures such as appropriate storage of materials, suppression of dust from soil movement and material storage, cleaning of vehicles and locating construction plant away from sensitive receptors; through control of emissions in the Final CEMP, effects of construction dust are assessed as not significant.

Based on expected vehicle movements, construction traffic air impacts are considered to be negligible at all human receptors and the effect is therefore assessed as not significant.

The environmental effects on air quality from construction of the Proposed Development have therefore been identified as not significant. No additional mitigation other than the use of the CEMP has been identified as necessary for the construction phase of the Proposed Development.

During operation, impacts could arise due to process emissions from the stack emissions.

An assessment of operational effects of the Proposed Development has been undertaken using atmospheric dispersion modelling and taking into account a number of conservative assumptions.

Predicted ground level concentrations of relevant air pollutants (principally nitrogen oxides, ammonia and amines) due to air emissions from the operation of the Proposed Development have been assessed. Effects from the Proposed Development at the identified human receptors are assessed as not significant.

The deposition of nutrient nitrogen on sensitive ecological receptors from the air emissions of nitrogen oxides and ammonia has also been calculated. Effects from Proposed Development emissions are assessed to be not significant.

Emissions from the Proposed Development during operation will be carefully controlled and regulated by the PPC Permit and in accordance with the use of Best Available Techniques (BAT). The Permit must be granted prior to operation of the Proposed Development.

In certain weather conditions, due to the initial water content of the emissions from the absorber stack and relatively low temperature of the release, there is potential for the plume released from the stack to be visible. An assessment of visible plume formation from the cooling plant has been undertaken which indicates that a plume of an average length of up to 200m will be visible for 86% of the time.

6.2. NOISE AND VIBRATION

A noise and vibration assessment has been undertaken and is presented in **Chapter 9: Noise and Vibration** (EIA Report Volume 2).

Key noise sensitive receptor (NSR) locations have been selected which are considered to be representative of the nearest and potentially most sensitive existing receptors in all directions around the Proposed Development. It is considered that if noise and vibration levels are suitably controlled at the NSR identified, then noise and vibration levels will be suitably controlled at other sensitive receptors in the surrounding area.

Noise levels during construction and operation of the Proposed Development have been predicted by computer modelling and the results compared with measured baseline noise levels at the identified receptors during the day, evening and night. National standards have been applied to determine whether there is the potential for significant effects without further mitigation measures being applied.

Given the distance between the Proposed Development Site and residential noise sensitive receptors (a minimum distance of approximately 325m), no significant vibration impacts are expected, and vibration was therefore scoped out of the assessment.

Likely Impacts and Effects

Noise is likely to be generated throughout the construction phase through works such as initial site preparation, earthworks and excavation, construction of buildings and infrastructure including piling, operation of temporary facilities, as well as from construction traffic on the local road network.

Construction noise effects at all residential NSR during construction of the Proposed Development within core working hours are predicted to be not significant due largely to the distances between the works and the NSR.

It may be necessary for some construction activities to take place continuously over day, evening and night periods during peak construction times of the Proposed Development, although the exact nature of the works is unknown at this stage. Construction activities taking place outside core working hours will therefore be planned, managed and controlled appropriately so they meet the BS 5228 ABC noise limits and follow the suggested mitigation, as provided in Section 9.5 in **Chapter 9: Noise and Vibration** (EIA Report Volume 2).

Without additional mitigation, night-time working at all representative receptors is predicted to result in significant adverse effects in the short-term during construction. This is largely due to the existing low levels of ambient noise at these receptors during the evening and night-time. Additional mitigation is therefore proposed and may include restrictions on the type of activities undertaken at night, use of a temporary acoustic barrier, enclosure or other measures. Additional mitigation would ensure any residual effect is reduced to not significant.

It is anticipated that there will be either no change or a very low change in road traffic noise due to traffic flows along the construction traffic routes of the Proposed Development. Therefore, noise effects due to construction traffic are predicted to be not significant.

During operation, the Proposed Development will include a CCGT and other plant and equipment, together with the CCP for capture of carbon dioxide emissions. Modelling software has been used to

assess the likely effects of operational noise at noise sensitive receptors using conservative assumptions to provide a worst-case assessment, based on the three indicative layouts. Without additional mitigation, there could potentially be significant effects at some properties, particularly at night when background noise levels are lower. Based on the mitigation proposed to be put in place, the predicted increase in operational noise levels would typically be just perceptible under normal environmental conditions.

Application of practical sound mitigation to reduce relevant noise at source within the Proposed Development Site will therefore be undertaken during detailed design once a preferred layout is chosen. Mitigating through detailed design to limits to be agreed with Aberdeenshire Council will result in effects that are classified as not significant. These measures would demonstrate use of Best Available Techniques (BAT) for the control of noise as required for the PPC Permit.

6.3. TRAFFIC AND TRANSPORT

An assessment has been undertaken which considers the potential effects of the construction, operation (including maintenance) and decommissioning of the Proposed Development on traffic and transport; this is presented within **Chapter 10: Traffic and Transport** (EIA Report Volume 2) and is supported by **Appendix 10A: Transport Assessment** (EIA Report Volume 4). This chapter is also supported by **Appendix 10B: Framework Construction Traffic Management Plan and Appendix 10C: Framework Construction Worker Travel Plan** (EIA Report Volume 4).

The assessment considers the predicted number of vehicle movements generated during the construction and operation of the Proposed Development, and the sensitivity (including pedestrian and cyclist safety) and capacity of the local road network. Public rights of way (PRoW), including footpaths and cycle route networks, that crossroads within the study area have also been considered and have helped define the sensitivity of the road links.

Likely Impacts and Effects

As baseline traffic flows on the road network are projected to increase year on year, to undertake a worst-case assessment, a future year for baseline traffic flows of 2026 has been modelled.

The additional traffic due to Proposed Development construction activities would result in temporary increases of traffic flows, including HGV, on the roads leading to the Proposed Development Site. The effects of construction traffic on pedestrian amenity, severance, fear and intimidation, highway safety, driver delay and hazardous loads have been assessed using relevant guidance. Effects at all road sections and junctions within the study area are anticipated to be not significant.

Several traffic management measures would be implemented during the Proposed Development construction phase to minimise traffic impacts upon the local road network. This would include both a CTMP and CWTP that the appointed contractors would need to adhere to – framework versions of these documents are included with the section 36 application.

During the operational phase up to 50 staff would be employed, working two shifts. Additionally, during planned maintenance and outages which may occur infrequently (once every two to five years) and be short-lived (approximately three months), approximately 200 additional staff could be on-site on any one day. Additional HGV traffic would also be generated by deliveries associated with operations and maintenance plant/ equipment. Traffic flows during operation would be considerably lower than those during construction. Overall, traffic effects during operation would be not significant.

6.4. BIODIVERSITY AND NATURE CONSERVATION

An assessment has been undertaken of the potential impacts and effects of the construction, operation (including maintenance) and decommissioning of the Proposed Development on biodiversity and nature conservation in **Chapter 11: Biodiversity and Nature Conservation** (EIA Report Volume 2).

The baseline information has been determined through a combination of desk studies and field surveys, detailed within **Appendices 11B to 11E** and **11G** (EIA Report Volume 4).

As described in Section 3.3.2 of this NTS, a HRA of the Proposed Development was carried out and is reported in the Statement to Inform Appropriate Assessment given as **Appendix 11F** (EIA report Volume 4). An Outline Landscape and Biodiversity Strategy has also been prepared and is provided in **Appendix 11H** (EIA Report Volume 4). This sets out the outline strategy for mitigating adverse landscape and long-term biodiversity effects, provides details of committed landscape and biodiversity enhancements, and a scheme for monitoring the effectiveness of these measures. The Outline Landscape and Biodiversity Strategy is shown in **Figure NTS7.**

Figure NTS7 Outline Landscape and Biodiversity Strategy

An assessment of impacts and effects on all relevant habitats and species was undertaken following baseline data gathering following industry-standard best practice guidelines published by the Chartered Institute of Ecology and Environmental Management (CIEEM)[5]

[5] https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-Sept-2019.pdf

Likely Impacts and Effects

Designated Sites

There are eleven statutory designated sites for nature conservation within 15km of the Proposed Development Site. Some of these designations have overlapping or entirely coincident boundaries. Of the eleven statutory designated sites, three are SPAs, one is an SAC, two are Ramsar sites and five are SSSIs. Buchan Ness to Collieston Coast SPA is immediately adjacent to the Proposed Development Site. As part of the HRA for the Proposed Development, the potential for likely significant effects on the qualifying features of any of these sites was investigated. It was determined through this exercise that likely significant effects from the following impacts could not readily be discounted without further detailed appraisal and were therefore the subject of the 'appropriate assessment' stage of the HRA:

- Waterborne pollution of European sites during construction;
- Airborne pollution of European sites during construction;
- Disturbance of qualifying species during construction; and
- Airborne pollution of European sites during operation.

Owing primarily to the limited numbers and distribution of qualifying species in the zone of influence of the Proposed Development, disturbance during construction was concluded to have no adverse effect on the integrity of any European site. Waterborne pollution during construction was concluded to be satisfactorily controlled by pollution controls set out in a CEMP (or DEMP for decommissioning). Airborne pollution during construction was found by modelling to be insignificant at European sites, and similarly airborne pollution during operation was also found by modelling to be insignificant at European sites, in both cases using worst-case predictions. For operational air quality, this included use of worst-case figures from modelling multiple operational stack positions and types. Therefore, it is expected that no conservation objectives of European sites will be compromised, and no adverse effects on site integrity were predicted.

An in-combination assessment found that there was no realistic probability of significant in-combination effects.

It was therefore concluded, in light of the best scientific knowledge and on the basis of objective information, that the Proposed Development will have no adverse effect on site integrity of any European site, either alone or in-combination with other plans or projects.

The EIA also concluded that there would be No or Negligible effects on nationally designated nature conservation sites (SSSIs) within the potential zone of influence of the Proposed Development.

Habitats

As described in Section 5.0, the design of the Proposed Development, including temporary laydown areas, has evolved to avoid significant effects. The most important habitat within the potential zone of influence of the Proposed Development (outside of designated sites) is the coastal habitats immediately to the north and east. There will be no works within this habitat, except for works to tie-in cooling water pipework to the existing cooling water outfall. This work will be at the inland end of the cooling water outfall and will result in the loss of a maximum 0.04ha of unimproved neutral grassland, which is considered to be Negligible. Air quality modelling suggests that the Proposed Development will also have Negligible effect on the habitat from airborne pollution.

Other habitats are all of low ecological importance and any losses will be of very low significance.

Species

The potential impacts and effects of the Proposed Development on the following protected / notable species were assessed:

- oysterplant;
- invasive non-native species of plant;
- bats;
- badger;
- water shrew;
- brown hare;
- hedgehog;
- barn owl;
- general breeding birds;
- non-breeding waterbirds, and
- grey seal.

The only species for which a significant effect may arise, in the absence of mitigation, is barn owl. A temporary Moderate adverse effect on this species could occur due to disturbance of nesting birds during the construction and/or decommissioning phases of the Proposed Development. However, this effect would only arise should this species breed in the outbuildings near to Sandford Lodge, which was not believed to have occurred at the time of carrying out baseline surveys in 2021. Furthermore, with the implementation of mitigation, involving the provision of two nest boxes prior to the commencement of construction, the impacts on barn owl from construction-related disturbance are expected to be reduced such that the residual effect will be Negligible.

For all other species, no significant adverse effects are predicted from the Proposed Development.

A range of mitigation measures will, however, be implemented to avoid any possible impacts on protected and/or notable species, as follows:

- Pre-construction surveys will be carried out to confirm that no protected species are present in working areas;
- Following completion of construction, all temporary construction laydown areas will be removed. As a minimum these will be restored to the same habitat that was present during baseline surveys. However, to deliver ecological enhancement, additional habitat improvements will also be made, as described in the Outline Landscape and Biodiversity Strategy (**Appendix 11H** EIA Report Volume 4);
- Biosecurity measures will be adopted to prevent the spread of invasive non-native plant species. Moreover, all identified sea buckthorn and Japanese rose within the Proposed Development Site will be eradicated;
- Construction phase lighting will be kept to a minimum and used only in locations where needed. Lighting will be direction and will use beam deflectors or similar to minimise light spill onto surrounding areas; and
- Operational phase, permanent lighting will be designed with cognisance of best practice guidelines to minimise illumination of retained semi-natural habitats (e.g. scrub, woodland and areas of pasture) and will not, where possible, exceed 1 lux.

An Outline Landscape and Biodiversity Strategy has been prepared in support of the Proposed Development (**Appendix 11H** EIA Report Volume 4), setting out a range of measures that will be implemented by the Proposed Development which exceed mitigation requirements and will ensure that

there is an overall ecological improvement provided by the project. This document is provided in **Appendix 11H Outline Landscape and Biodiversity Strategy** (EIA Report Volume 4). The following enhancement measures are included:

- The habitat in the field north of the Sandford Lodge access track will be enhanced to create an area suitable for breeding wader species. This will include the creation of small 'scrapes' (shallow depressions which hold some water for much of the year), and potentially a larger pond in an area where ground conditions are damp, with scattered rushes. Other habitat enhancements to be investigated and implemented where possible will include the creation of areas of marsh / swamp. The aim will be for this area to become floristically diverse, and suitable for breeding and non-breeding waders. To increase breeding success, it will be necessary for the area to be fenced to exclude larger mammals (e.g. badger, otter and fox Vulpes vulpes);
- Native scrub planting will be carried out on the inner embankment slope on the west side of the CCGT and CCP area. Species to be used may include gorse, blackthorn (in small amount) and hawthorn;
- Native woodland planting will be carried out around the western edge of the CCGT and CCP area at the top of the embankment slope;
- As stated above, the invasive non-native species sea buckthorn and Japanese rose present in landscape planting will be eradicated from the Proposed Development Site; and
- A total of five bat boxes will also be installed in suitable locations within the Proposed Development Site, including at least one which is suitable to support a maternity colony.

Although not mandatory in Scotland, an assessment of Biodiversity Net Gain (BNG) was carried out using Defra Metric 3.0. A description of the assessment is provided in **Appendix 11H** (EIA report Volume 4). For linear habitats, enhancement of the hedgerows along the track to Sandford Lodge gave a result in Metric 3.0 of +253% gain. It was concluded that for 'area habitats' there would be a loss of -5.58%. This constitutes a small net loss for area habitats (results above -5% and below +5% are considered no net loss, since Metric 3.0 is an estimating tool only).

However, the main purpose of the proposed ponds/scrapes at the northern-most construction laydown area is to benefit bird species such as waders. Faunal benefits such as this are not taken account of or quantified in habitat BNG calculations. Therefore, although the BNG calculation shows a small net loss of area habitats, when considered together with the gain for linear habitats through hedgerow enhancement and gain for wetland bird species through pond/scrape creation, it is considered reasonable to conclude an overall small biodiversity gain for the Proposed Development.

6.5. WATER ENVIRONMENT AND FLOOD RISK

An assessment has been undertaken which considers the potential effects of the Proposed Development on the water environment and flood risk, presented in **Chapter 12: Water Environment** and **Chapter 13: Flood Risk** (EIA Report Volume 2) and **Appendix 13A Flood Risk Assessment** (EIA Report Volume 4).

Key water bodies that may receive runoff or discharges either during construction or operation or be affected by temporary construction works have been identified, and the potential contamination risk to these water bodies has been assessed. The study area for surface water has been defined based on the potential for impacts to occur i.e. the surrounding 1km and includes those watercourses crossed by or close to the Proposed Development Site outlined in **Section 3** of this NTS as well as numerous ordinary watercourses in the study area.

The Den of Boddam Burn is culverted through the Proposed Development Site and discharges into Sandford Bay near Furrah Head. To accommodate the Proposed Development the culvert will be diverted from its existing route around the north of the Proposed Development and then tie-in with the existing discharge location at Sandford Bay.

Likely Impacts and Effects

It is proposed to discharge surface water runoff from the Proposed Development Site to Sandford Bay via the existing Peterhead power station outfall, following suitable pollution prevention measures, including a combination of filter drains, oil interceptors and a filtration system for removal of sediment and pollutants. Bunds will be used in areas where spillages are likely to occur. Surface water discharge would be restricted to the existing greenfield runoff rate and therefore the risk of flooding would not be exacerbated by the Proposed Development.

A Flood Risk Assessment was undertaken to assess the fluvial flood risk from the Den of Boddam Burn as well as assess the pluvial and coastal conditions. The Proposed Development Site is downslope from the A90; hardstanding areas will be drained, with discharge to the coast and away from the A90 and local properties. Therefore, there is not anticipated to be any change in flow away from the Proposed Development Site to adjacent areas. A Surface Water Maintenance and Management Plan will be prepared during the detailed design phase to describe the requirements for access and frequency for maintaining drainage infrastructure proposed on the Proposed Development Site. Flooding elsewhere, because of the Proposed Development is not anticipated to be significant.

Construction of a 9mAOD platform, is not indicated to lead to flooding of the Proposed Development from overland flow and the Den of Boddam Burn, however no freeboard above fluvial flood levels would be maintained and there is a risk of shallow but widespread flooding of the Proposed Development leading to a potential significant effect (major adverse). However, construction of the Proposed Development on a platform set at an elevation of 9.58mAOD would provide 600mm freeboard and would mitigate existing and future flood risk to the existing Power Station and the Proposed Development.

A detailed drainage strategy, which will have regard to the findings of the of the FRA, will be defined and prepared for the Proposed Development in consultation with the SEPA.

With these measures, the effects on surface water drainage and flood risk as a result of the Proposed Development are anticipated to be not significant.

Potential impacts on the Water Framework Directive status of the Proposed Development have been considered and are detailed in **Appendix 12A Water Framework Directive Assessment** (EIA Report Volume 4).

The WFD Assessment assesses compliance with the WFD by determining whether the Proposed Development has the potential to:

- Cause a deterioration of a waterbody from its current status or potential; and / or
- Prevent future attainment of good status or potential where not already achieved.

Construction activities such as earthworks, excavations, site preparation, levelling and grading operations can result in the disturbance of soils, and changes to groundwater and surface water runoff and flows which result in impacts upon groundwater and surface water resources. There is a risk that leaks and spillages of hazardous substances could pollute nearby surface watercourses if not carefully controlled and spillages enter existing waterbodies. Through the use of a CEMP and embedded mitigation, including water quality monitoring, no significant adverse effects are predicted for the water environment during construction. The effect on all waterbodies is considered not significant.

Given the low importance of the Den of Boddam Burn for morphology, and based on its already heavily modified nature, including the culvert beneath the existing power station and the straightened nature of the channel upstream of the Proposed Development Site, the impacts of diverting the Burn are assessed as having a neutral (not significant) effect.

Cooling water from the Proposed Development Site will discharge to the North Sea (Sandford Bay – the Ugie Estuary to Buchan Ness (Peterhead)) under a Pollution Prevention and Control Permit, regulated by SEPA and be subject to monitoring and limit values on chemical and thermal releases. The proposed volumes associated with the cooling water discharge and the minimal anticipated thermal uplift will fall within the existing permit limits, and any impacts of thermal discharges are therefore been assessed as having no impact on the temperature status of the North Sea. Further assessment of effluent quality and concentrations will be considered as part of the PPC Permit variation application.

No changes are likely to impact on Water Framework Directive classifications for the North Sea and Sandford Bay area.

No significant impacts are predicted to impact surface water quality because of suspended fine sediments or chemical spillages during construction. Additionally, no significant impacts are anticipated for existing groundwater resources.

Foul water from welfare facilities will be treated on site using a package treatment plant (PTP) and discharged to Sandford Bay via the existing Peterhead Power Station outfall to Sandford Bay. The impact of foul water discharge is therefore considered to be not significant. Furthermore, there are no significant impacts reported for water quality, potential surface water pollution, water course morphology, groundwater resources or demand for water as a result of the operation of the Proposed Development.

6.6. GROUND CONDITIONS

An assessment has been undertaken which considers the potential effects of the construction, operation (including maintenance) and decommissioning of the Proposed Development on geology, groundwater and land contamination and is presented in **Chapter 16: Geology, Hydrogeology and Land Contamination** (EIA Report Volume 2). A desk-based assessment of historical ground conditions and information from historical site investigations has been used to identify the potential effects associated with ground conditions using a source-pathway-receptor risk based approach. This is presented in **Appendix 16A Phase 1 Desk-based Assessment** (EIA Report Volume 4).

The bedrock geology beneath the Proposed Development Site is Peterhead Pluton, classified as a low productivity aquifer. The superficial deposits beneath the Proposed Development Site are Hatton Till, Blown Sand and Marine Beach Deposits. Bedrock is anticipated to be present at an approximate depth of 8-20m below ground level. The groundwater was indicated to be discontinuous and was encountered at highly variable depths beneath the Proposed Development Site, mostly within the superficial deposits. There are no records of surface water abstractions within the study area, with the exception of one private abstraction approximately 470m west.

Likely Impacts and Effects

The construction phase may introduce new sources of contamination due to leaks and spillages and could disturb and mobilise existing contamination within soils. Historical and current areas of potential contamination have been identified and areas of higher risk defined within **Appendix 14A: Phase 1 Desk Based Assessment** (EIA Report Volume 4) will be subject to further assessment before construction to inform the development of the detailed design and to validate assumptions made in the initial risk assessment.

Potential impacts during the construction phase include:

- Mobilising existing contamination in soil and groundwater as a result of ground disturbance and potential dewatering;
- Increasing the potential for contaminants in unsaturated soils to leach to groundwater in open excavations;
- Increasing the potential for contaminated surface run-off to migrate to surface water and groundwater receptors as a result of leaching from uncovered stockpiles;
- Introducing new sources of contamination, such as fuels and oils used in construction plant;
- Creating preferential pathways for the migration of soil contamination and gases, for example, along new below ground service routes, service ducts and as a result of potential dewatering; and
- Introducing new human health receptors such as site staff during and post construction.

Best practice measures would be adopted to minimise pollution risks including the adoption of working methods to manage contamination risk to soils, groundwater, surface water, implementation of appropriate pollution incident control plans and procedures and the safe storage of fuel, oils and equipment.

Impacts will be managed by appropriate construction mitigation measures (which will be outlined in the final CEMP) and as such adverse effects on geology, soils or groundwater are not anticipated and have been assessed as not significant.

Potential impacts to soil quality, groundwater and watercourses could potentially occur during construction and or operation because of accidental spills from the handling or leakage of fuels, lubricants, stored chemicals and process liquids. However, with appropriate management, housekeeping and preventative maintenance practices (such as appropriate storage of potentially contaminating chemicals), as required by the PPC Permit that will be needed for the operational Site, potential impacts to soil and groundwater will be minimised. As such, effects have been assessed as not significant.

6.7. LANDSCAPE AND VISUAL AMENITY

An assessment has been undertaken which considers the potential effects of the construction, operation (including maintenance) and decommissioning of the Proposed Development on landscape character and visual amenity and is presented in **Chapter 14: Landscape and Visual Amenity** (EIA Report Volume 2).

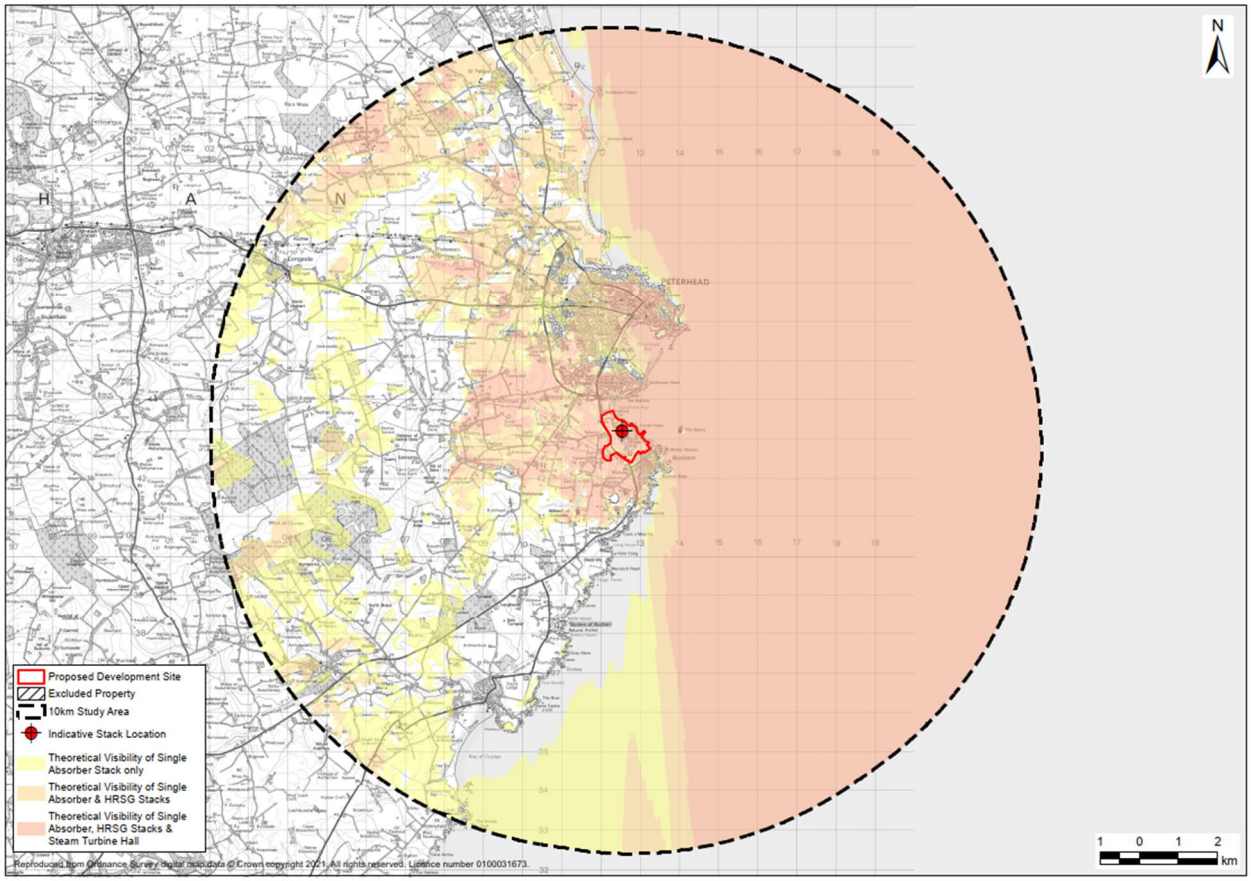
Baseline data has been gathered through desk study, review of aerial photography, consultation and site visits, including obtaining summer and winter photography from viewpoints.

The study area is relatively open and as such views tend to be expansive, particularly from higher ground and the coast. Topography tends to be gently undulated and generally falls from west to east towards the coast, although with local variation such as the series of low hills west of Boddam and south of Peterhead which results in localised restriction of views. Trees and woodland are relatively sparse, largely limited to around rural properties or forming geometric shelterbelts along field boundaries, with some larger woodland blocks inland to the east. There are frequent open and fragmented views towards the Proposed Development site, particularly from areas of higher ground to the west. The undulating topography in combination with existing buildings often limit more distant views, particularly from the south of Boddam and north of Peterhead. The existing Peterhead Power Station is a notable feature in views towards the Proposed Development Site.

The study area for landscape and visual effects includes areas where it is considered that there is potential for significant direct or indirect effects on landscape character or sensitive views due to the construction or operation of the Proposed Development. The area in which the Proposed Development is

likely to be visible has been defined using a computer model which shows the 'Zone of Theoretical Visibility' (ZTV) considering the largest possible dimensions for the Proposed Development and worst-case stack height up to a maximum of 130m above ordnance datum. The ZTV and 10km radius study area used to identify locations which have potential views of the Proposed Development and those where visibility would be unlikely is shown on **Figure NTS8.** Final viewpoints and sensitive receptors were identified through these methods and agreed with regulatory bodies.

Figure NTS8 Zone of Theoretical Visibility



The study area is not subject to any statutory or protected landscape designations and no national level landscape designations are present within the study area. However, parts of one local landscape designation, the North East Aberdeenshire Special Landscape Area, are located within the study area to the north and south of Peterhead.

The Proposed Development Site and immediate surrounding area is influenced by a variety of man-made elements, including wind energy, electrical infrastructure, and the existing Peterhead Power Station, as well as areas of residential dwellings. Beyond this to the west is a typical agricultural landscape containing few notable features.

Likely Impacts and Effects

The potential landscape impacts of the Proposed Development primarily relate to the visibility of proposed structures (temporary and permanent), including how this affects the overall landscape character of the area. The Proposed Development is assessed as likely to result in a moderate impact on the landscape, in terms of its physical elements during construction and operation because of the additional built elements and landscape changes such as landscaping and permanent diversion of the Den of Boddam Burn.

The effects on landscape character are not assessed as being significant.

Changes in views may give rise to adverse or beneficial visual effects, through obstruction in views, alteration of the parts of the view and the opening up of new views by removal of screening. To help to interpret the visual effects of the Proposed Development, several photomontages have been prepared which indicate existing baseline views and also representations of the Proposed Development.

using the maximum proposed heights of key elements in the Proposed Development. These are illustrated for one of the assessed viewpoints in **Figure NTS9 - Figure NTS11** below.

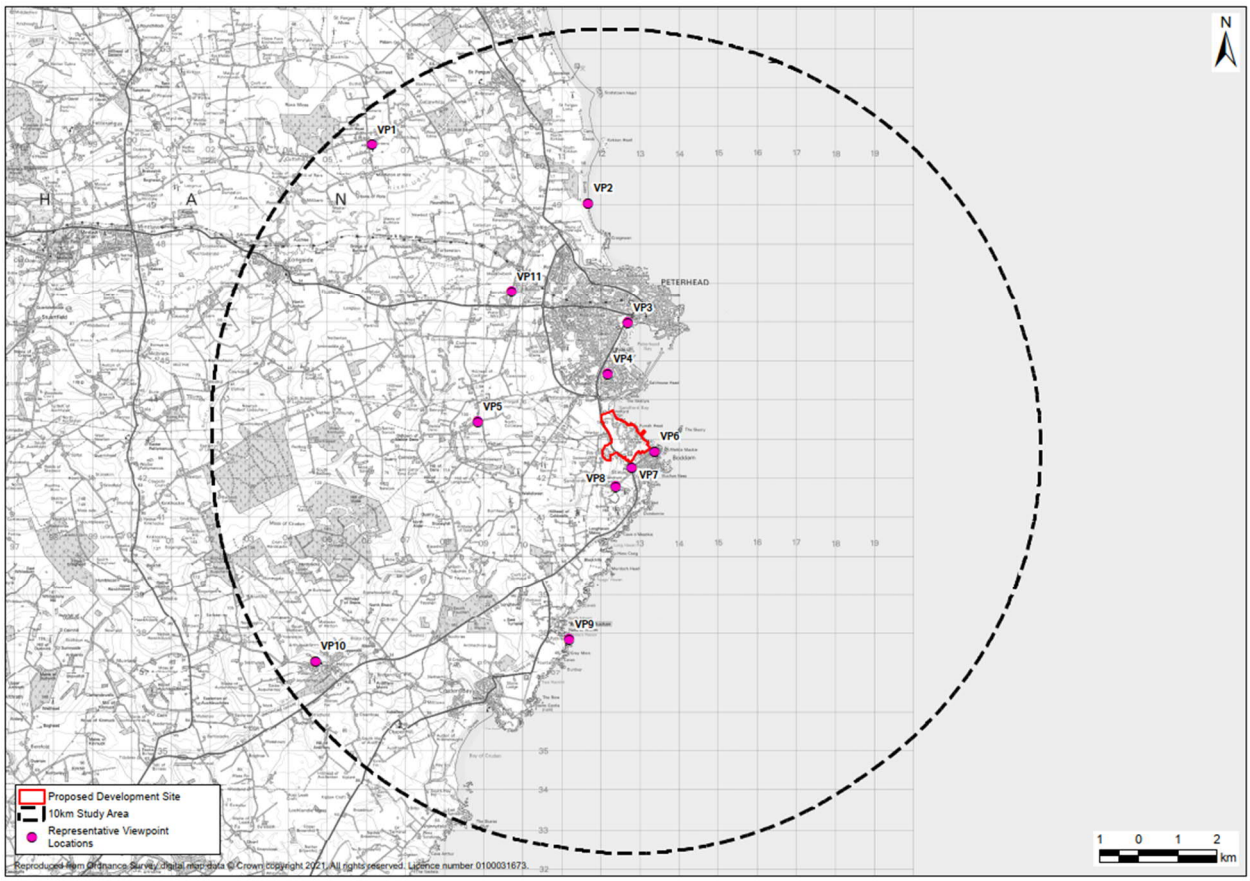
Figure NTS9 VP08 Stirling Village / Lendrum Terrace Existing

Figure NTS10 VP08 Stirling Village / Lendrum Terrace Proposed

Figure NTS11 VP08 Stirling Village / Lendrum Terrace Proposed 15 Year

A total of eleven representative viewpoints (**Figure NTS11**) have been assessed; the majority would experience visual amenity effects that are classified as adverse, but not significant during construction and operation of the Proposed Development. At two of the closest receptors at Viewpoint 4 (Reform Tower, Meet Hill, Peterhead) and Viewpoint 8 (Stirling Village / Lendrum Terrace), effects would be classified as significant due to the introduction of built structure against the skyline, making them more prominent and extending the amount of the view which includes large scale development. Additionally, there would be significant adverse effects during construction and operation experienced by residential receptors at Sandford Villa, Newmill of Sandford, Sandford Bungalow and Millbank Farm. Residential receptors at Bevailey and Millbank would experience significant adverse effects during the construction phase only. The remaining residential receptors would experience minor adverse effects, at most, during construction and operation.

Figure NTS12 Representative Viewpoints



A Landscaping and Biodiversity Management Plan (EIA Report Volume 4) has been produced which presents proposals for planting, although such planning would not reduce the significance of visual effects at these locations.

The Air Quality assessment (**Appendix 8B** EIA Report Volume 4) has identified the potential for the emissions from the proposed absorber stack to result in a visible plume. It is predicted that the average plume length is to be 200m, based on 2020 meteorological data. The plume is predicted to be visible for up to 86% of the time. Meteorological data indicates that the prevailing south westerly wind would push the plume from the Proposed Development offshore.

6.8. CULTURAL HERITAGE

This assessment addresses the potential effects of the Proposed Development on cultural heritage assets. It identifies the location, type and significance of cultural heritage assets and their setting, and reports on the predicted impacts of the Proposed Development on these resources. The assessment considers the likely significance of effects upon cultural heritage assets by reference to their significance and the magnitude of any impacts and is presented in **Chapter 16: Cultural Heritage** (EIA Report Volume 2). A detailed desk based assessment is presented in **Appendix 16A Cultural Heritage Desk Based Assessment** (EIA Report Volume 4).

Likely Impacts and Effects

Construction effects consider the setting impacts on above ground scheduled monuments and built heritage, as the buildings and structures of the Proposed Development are installed and constructed. They also consider potential effects on below-ground archaeology.

Construction of the Proposed Development has the potential to affect heritage assets in the following ways:

- partial or total removal of below ground heritage assets;
- compaction of archaeological remains by construction traffic and structures;
- changes to local waterbodies that could affect preservation levels of heritage assets;
- vibration effects that could cause physical damage during construction and/or operation; and
- other adverse effects on the setting of heritage assets e.g. due to visual intrusion, noise, severance, access and amenity etc.

Impacts on built heritage for a range of receptors have been assessed. Sandford Lodge (Category B listed) and its associated walled garden (Category C listed) are located within a non-designated garden, all of which are within the Proposed Development Site. Due to the scale of the Proposed Development, it is envisaged that opportunities to provide effective landscape screening, over and above that already embedded in the design, will be limited. Therefore, the residual effects of the Proposed Development in relation to impacts resulting from change to the setting of designated and non-designated heritage assets will be the same as those reported under construction phase effects for built heritage assets. There is therefore a residual significant effect of moderate adverse in relation to the Category B listed building at Sandford Lodge through change to its setting, recognising that the Lodge is currently in a state of disrepair. Figure NTS 13 to Figure NTS 15 below show the existing earthworks bund, which is to be removed during the construction of the Proposed Development, and the proposed earthworks bund and landscaping at year 1 and year 15.

Due to the low potential for surviving remains at the site, a residual significant effect of moderate adverse remains in relation to the low potential for removal of previously unrecorded archaeological remains of prehistoric and later agriculture of low value that may exist within the site. However, due to the degree of previous disturbance within and surrounding the Proposed Development Site the Aberdeenshire County Archaeologist has confirmed that no archaeological mitigation works are required.

Figure NTS13 VPA Sandford Lodge Existing

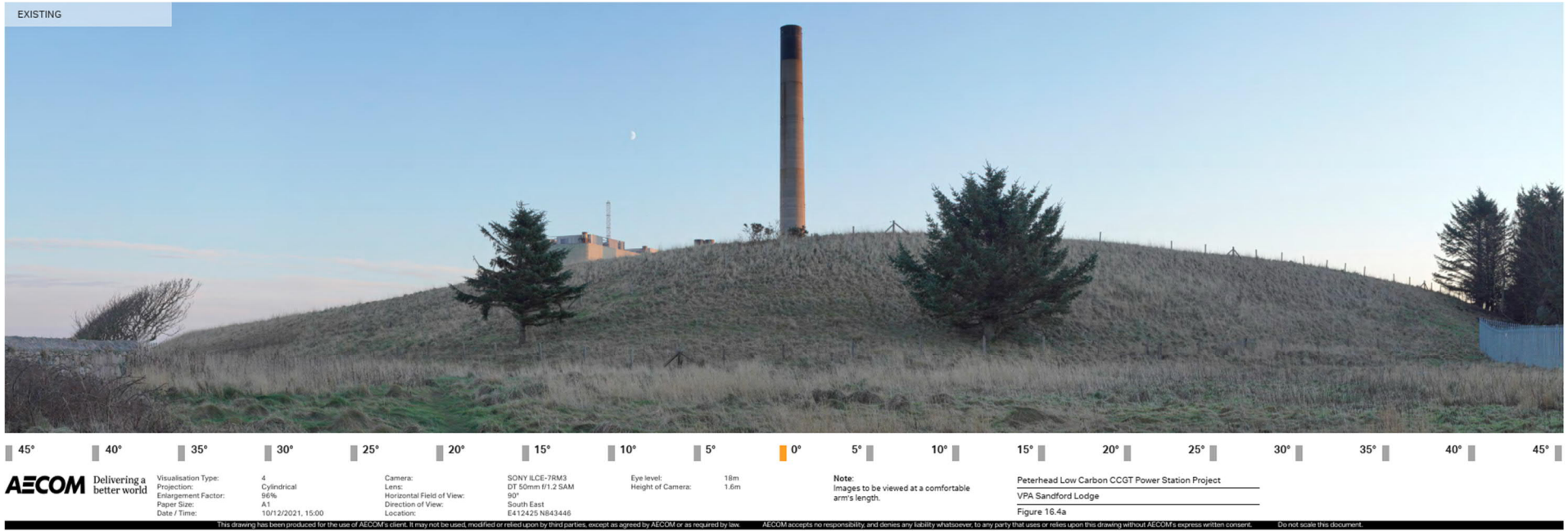


Figure NTS14 VPA Sandford Lodge Proposed

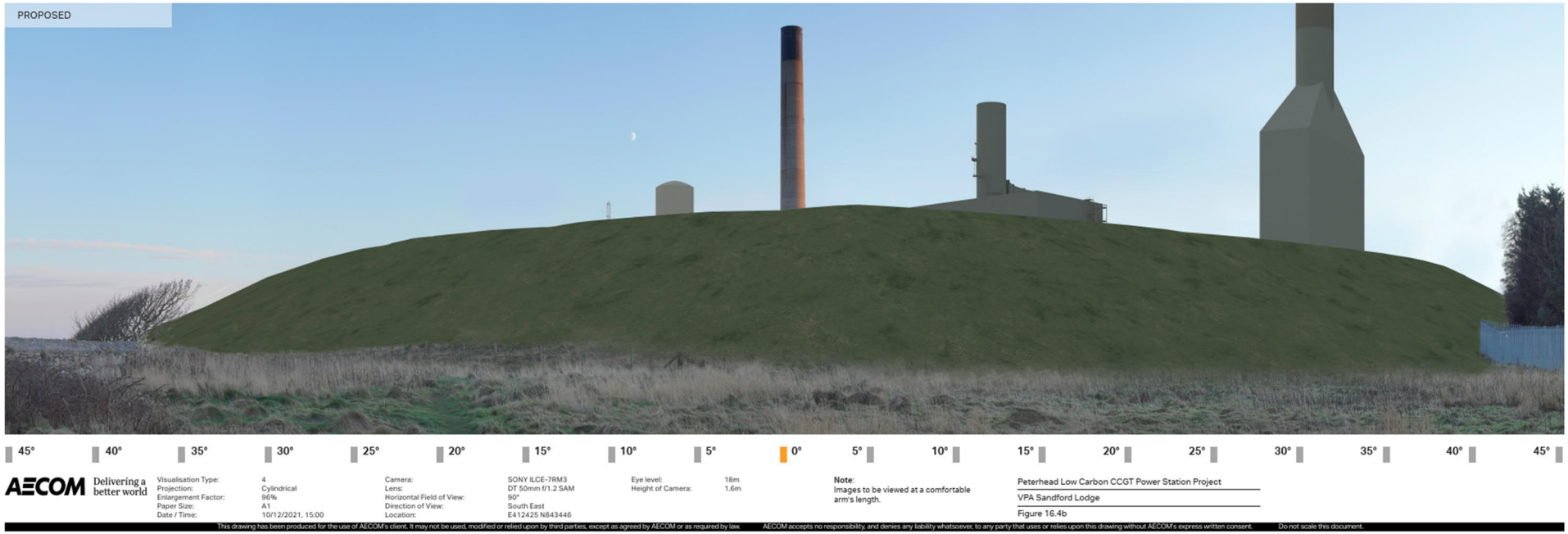
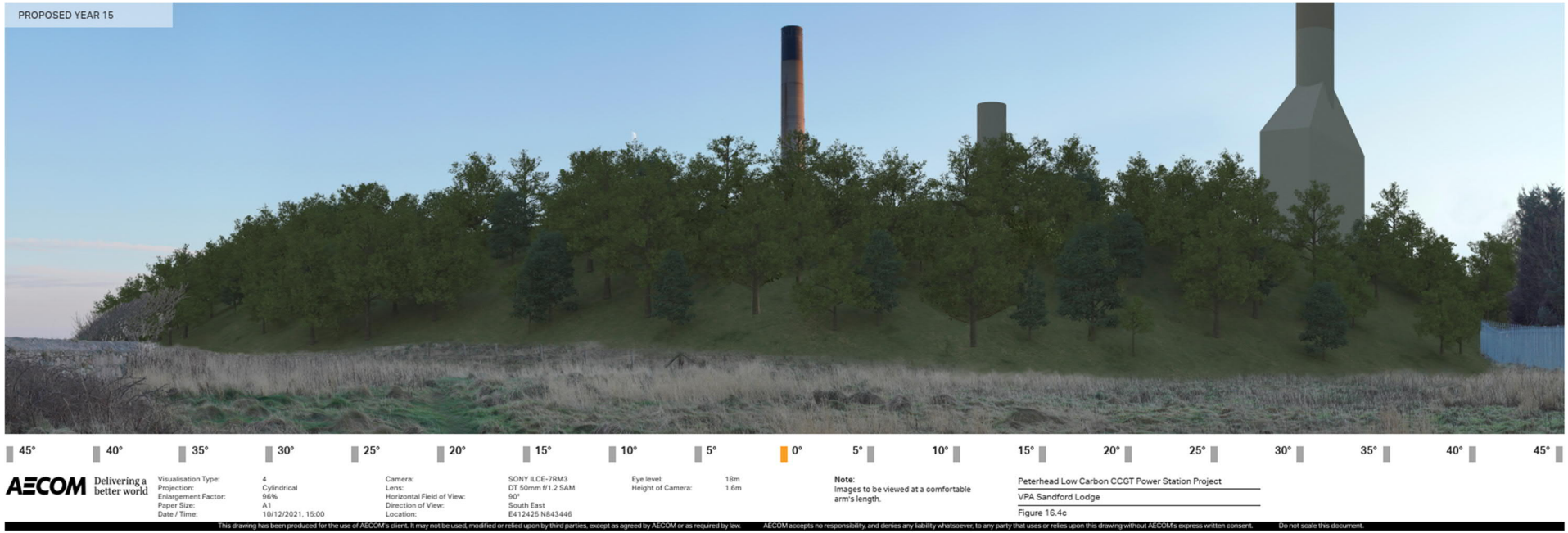


Figure NTS15 VPA Sandford Lodge Proposed Year 15



6.9. SOCIO-ECONOMICS, RECREATION AND TOURISM

An assessment has been undertaken of the potential socio-economic impacts of the Proposed Development which considers the potential effects of construction and decommissioning, and operation of the Proposed Development and is presented in **Chapter 17: Socio-economics, recreation and Tourism** (EIA Report Volume 2) and is supported by **Appendix 17A Workers Accommodation Assessment** (EIA Report Volume 4).

Economic benefits can arise directly (through employment of local people) and indirectly (e.g. during the construction phase, when contractors may be using local accommodation and other amenities). Adverse effects can also occur for example in relation to the wider implications of any demand on local services or worker accommodation. The assessment has taken into account the demographics of the area surrounding the Proposed Development when considering the impacts which are likely to occur. The assessment is presented in **Chapter 17: Socio-economics, Recreation and Tourism** (EIA Report Volume 2) and this is accompanied by **Appendix 17A Workers Accommodation Assessment** (EIA Report Volume 4).

Likely Impacts and Effects

The Proposed Development is anticipated to create an average of 776 temporary construction jobs, with a peak of 1,300 during the indicative 42-month construction period. The net construction employment created by the construction phase of the Proposed Development is predicted to have a major beneficial (significant) short-term effect in the local area through the creation of jobs directly and indirectly, and across a wide range of sectors and skills and benefits for the local economy.

Minor disruption on the local community, businesses and amenity is expected during construction but effects of this are not significant.

During the Proposed Development operational phase, employment would be generated in operative, management and maintenance roles. Operation of the Proposed Development is anticipated to create up to 50 full-time operational roles. Temporary and contractor employees associated with maintenance activities would also be employed as required. These operational effects are assessed as beneficial, although, not significant.

There are not anticipated to be any impacts on businesses or tourism and recreation from the operation of the Proposed Development.

The Proposed Development incorporates embedded mitigation measures to avoid any significant human health effects that are described within the EIA Report **Chapters 8 – 19** and which include:

- determination of an appropriate stack height based on air quality modelling to ensure no significant adverse effects on human receptors;
- process emissions to air will comply with the PPC Permit and based on the use of Best Available Techniques;
- use of best practicable means (BPM) to be applied, as far as reasonably practicable, during construction works to minimise noise (including vibration) at neighbouring residential properties and other sensitive receptors arising from construction; and
- pollution prevention measures during construction and operation.

These measures will help to ensure that impacts on the health and wellbeing of the local population, as well as construction workers and operational staff, are not significant. In summary significant effects

relating to population and human health are restricted to beneficial construction employment effects. No significant adverse human health effects have been identified.

6.10. CLIMATE CHANGE AND SUSTAINABILITY

The assessment presented in **Chapter 18: Climate Change and Sustainability** (EIA Report Volume 2) addresses the potential effects of the Proposed Development on climate change and considers the potential impact of future climate change on the Proposed Development and the surrounding environment. The assessment addresses three separate aspects:

- Lifecycle greenhouse gas (GHG) impact assessment;
- In-combination climate change impact (ICCI) assessment; and
- Climate change resilience (CCR) assessment.

Appendix 18A Sustainability Review (EIA Report Volume 4) accompanies the chapter and includes an assessment of the Proposed Development during its operational phase against a number of key sustainability themes.

An ICCI assessment has been scoped out of this EIA as other technical assessments and licences will identify, assess and mitigate these risks.

Likely Impacts and Effects

The receptor for the GHG assessment is the global climate. The Scottish (and UK) carbon budgets are used as a proxy to assess the impacts to this receptor.

Emissions associated with the Proposed Development have been examined for their significance against the Scottish (and UK) Carbon Budgets for the EIA. However, the Proposed Development is a low carbon generating station designed to be capable of capturing at least 90% and up to 95% of the carbon dioxide that would otherwise be emitted to atmosphere, with the potential to capture more. It has been concluded that the magnitude of impact of the Proposed Development is considered 'low' i.e. GHG emissions could exceed 1% of the current Scottish (and UK) carbon budgets. The overall significance of effect is considered not significant and therefore the operations of the Proposed Development are not expected to affect Scotland in meeting its current Carbon Budgets. As a result of the Proposed Development, the output capacity and operating hours of the existing Peterhead power station are expected to be reduced, thereby resulting in a reduction in carbon dioxide emissions from the site as a whole.

The potential impacts and effects of projections for climate change to the Proposed Development have been assessed and resilience measures assumed to be built into the design taken into account. These include use of Sustainable Drainage Systems (SuDS) to mitigate flood risk. The embedded design measures are sufficient to reduce the likelihood or consequence of an impact occurring as a result of projected climate hazards. As such, no significant resilience risks have been identified and effects are therefore assessed as not significant.

6.11. MAJOR ACCIDENTS AND DISASTERS

An assessment is presented in **Chapter 19: Major Accidents and Disasters** (EIA Report Volume 2) of the Major Accidents and Disasters (MA&D) that have the potential to arise during the construction, operation and decommissioning of the Proposed Development has been undertaken, including assessment of the reasonably foreseeable worst-case environmental consequences, the measures envisaged to prevent or mitigate adverse effects of such events on the environment, and details of the preparedness for and proposed response to MA&D hazards and threats.

Major accidents are incidents such as fires and explosions that could result in serious harm to people. They also have the potential to cause widespread damage to property and the environment. Disasters can be naturally occurring events, such as earthquakes, landslides and flooding.

Likely Impacts and Effects

The engineering design, construction and operation of the Proposed Development will incorporate appropriate standards and mitigation measures necessary to reduce the risks of MA&D to an acceptable level, i.e. as low as is reasonably practicable (ALARP), which is the standard expected by the regulatory authorities (Health and Safety Executive (HSE) and Scottish Environmental Protection Agency). As well as a PPC Permit, the operational plant is likely to be regulated under a Control of Major Accident Hazards (COMAH) Licence regulated by the HSE.

Potential MA&D and their likelihood and tolerability and significance taking account of mitigation measures are detailed for the construction and operation Tables 19-4 and 19-5 (Chapter 19 EIA Report Volume 2). It is considered that the MA&D risk for decommissioning would be the same as those described for construction. It is anticipated that through implementation of appropriate mitigation measures to reduce risks to ALARP (described in **Chapter 19: Major Accidents and Disasters** (EIA Report Volume 2), residual effects on sensitive receptors are not considered likely and effects are therefore assessed as not significant.

6.12. COMBINED AMENITY EFFECTS AND INTER-PROJECT CUMULATIVE EFFECTS

6.12.1. COMBINED AMENITY EFFECTS

The purpose of **Chapter 20: Combined Amenity Effects and Summary of Inter-Project Effects** (EIA Report Volume 2) provides an assessment of the combined amenity effects to consider whether an individual environmental receptor or resource would be affected by more than one type of impact because of the Proposed Development.

The assessment of combined amenity effects has considered the potential for the effects of minor significance and above, identified within each of the technical assessments reported within **Chapters 8 to 19** to interact and combine to affect common receptors, and has concluded that there would be no new significant combined effects during either construction or operation of the Proposed Development.

6.12.2. INTER-PROJECT CUMULATIVE EFFECTS

The purpose of **Chapter 20: Combined Amenity Effects and Summary of Inter-Project Effects** (EIA Report Volume 2) provides a summary of the potential inter-project cumulative effects which may occur because of the Proposed Development being built and operated at the same time as other committed developments. Each technical chapter details the full cumulative assessment for each topic (**Chapter 8 – 19,** EIA Report Volume 2).

Several other proposed developments that are also likely to be constructed and operated in future, and that have the potential to generate cumulative environmental effects together with the Proposed Development have been identified. These include (but are not limited to) the construction and operation of the proposed NorthConnect Converter station and associated Underground HVDC Cables; the Acorn Project and its associated infrastructure and CO_2 Export Pipeline; and a nearby Residential Mixed-Use Development comprising approximately 800 homes.

The potential for cumulative effects with these other developments has been considered for all of the environmental topics by a review of the available information (including published environmental information where available) (**Chapter 8 – 19** EIA Report Volume 2). The assessment has concluded that based on currently available information, significant cumulative effects are unlikely.

7. Summary and Conclusions

The EIA Report presents the findings of the EIA process that has been undertaken for the Proposed Development and includes an assessment of the potential environmental impacts and effects of the Proposed Development during construction, commissioning, operation (including maintenance) and decommissioning phases.

Section 6.0 of this **NTS** and **Chapters 8-19** (EIA Report Volume 2) have considered the potential environmental impacts and effects of the Proposed Development, including the identification of potential adverse and beneficial environmental effects that are considered significant both before, and after mitigation and enhancement measures are taken into account. The assessment has been undertaken following worst-case assumptions for any aspects where the final design selection cannot yet be been made and flexibility must be retained.

A range of environmental impact avoidance, design and mitigation measures have been identified to mitigate and control environmental effects during construction, operation and decommissioning phases of the Proposed Development. These will be secured through appropriate section 36 conditions or planning conditions associated with the deemed planning permission for the Proposed Development. Additional controls will be applied through other legislative requirements including a PPC Permit and, if required, a COMAH Licence for the operation of the Proposed Development.

Chapter 21: Summary of Likely Significant Residual Effects (EIA Report Volume 2) indicates that likely significant residual effects of the Proposed Development include:

- A moderate adverse visual amenity effect during Proposed Development construction, operation and decommissioning on the Site landscape elements, to receptors on the northern half of the core path (representative Viewpoint 6), residential receptors at Viewpoint 4, Viewpoint 8 and at Sandford Villa, Newmill of Sandford and Sandford Bungalow, due to the introduction of built structures against the skyline, making them more prominent and extending the amount of view which includes large scale development. Mitigation opportunities are limited due to the size and scale of the Proposed Development. An integrated design approach that considers massing and placing of taller structures to minimise potential effects has the potential to reduce visual impacts.
- A moderate adverse visual amenity effect during construction for residential receptors at Bevailey and Millbank.
- A moderate adverse effect to the setting of Sandford Lodge as a result of the construction and operation of the Proposed Development.
- A moderate adverse effect in relation to the low potential for removal of previously unrecorded archaeological remains.
- A major beneficial effect related to direct and indirect, and induced employment created by the construction phase of the Proposed Development on the wider impact areas economy.
- A potential major beneficial effect will be seen to the global climate in terms of greenhouse gas emissions, when considered in relation to the sole operation of the existing Peterhead power station.