

SSE THERMAL PETERHEAD LOW CARBON POWER STATION PROJECT

Additional Information Report 2025
16 May 2025



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1. Introduction

In March 2022, SSE Thermal Generation (Scotland) Limited ('the Applicant') submitted an application (the 'Application') seeking consent for the Peterhead Low Carbon Combined Cycle Gas Turbine (CCGT) Project from the Scottish Ministers under Section 36 of 'The Electricity Act, 1989' (the '1989 Act') and a direction deeming planning permission to be granted under Section 57(2) of 'The Town and Country Planning (Scotland) Act, 1997'. An Environmental Impact Assessment (EIA) Report, including Non-Technical Summary was produced in line with the requires under Schedule 1(2) of the '1989 Act'.

This report provides a review of the EIA Report following the Supreme Court decision in the R (Finch) – v- Surrey County Council case, and an update in the Institute of Environmental Management and Assessment (IEMA) GHG Assessment guidance with regards to considering the "upstream" greenhouse gas emissions prompted the Applicant to review the findings of the EIA Report. This review necessitated the need to update Chapter 18 Climate Change and Sustainability to consider the Scope 3 (well-to-tank) Greenhouse Gas (GHG) emissions from the upstream natural gas supply chain.

Additionally, the UK Government has set a clear target to deliver a clean power system by 2030. This will predominantly be delivered by continued growth in renewables, including offshore and onshore wind, solar and batteries, as well as new low-carbon flexible power sources using technologies like carbon capture and hydrogen. At the same time, they recognise that up to 35GW of traditional gas-fired power stations will be required on the system into the 2030s – similar to the amount on the system today, providing no more than 5% of GB's generation in a typical weather year.

We have updated the EIA Report for Peterhead Carbon Capture to consider the cumulative impact of both stations running concurrently for a short period, in addition to taking upstream emissions into account. This includes a "worst case scenario" of the existing station remaining operational until 2040, which is the year SSE have committed to achieve net zero Scope 1 GHG emissions by. However, given the assumed deployment of new low-carbon sources of flexible power, we expect to see reduced running of the existing station.

This review considers the outcomes of the submitted EIA Report (2022) as well as previous additional information submitted in response to post-submission objections received. This is presented in Sections 2 and 3.

An additional wider review of all other EIA topics has been undertaken to identify changes in policy or legislation which could materially change the chapters discussions and conclusion. This review is presented in Section 4. It is noted that anticipated construction and operational start dates reported in the EIA Report have been pushed back, however, the assessment considered duration of the works in months and years rather than definitive dates.

2. Overview of additional information provided to date

Subsequent to the submission of the Application in March 2022, concerns regarding security of energy supply arose, independent of the Proposed Development, but which were cited by the Scottish Environmental Protection Agency (SEPA) in their comments on the EIA Report regarding the assumed worst-case operational regime used in the cumulative assessment within the Air Quality Management Assessment. In agreement with SEPA, the operational regime scenarios were revised in February 2023 to consider the existing Peterhead Power Station remaining in operation at full capacity concurrently with the Proposed Development to ensure a most accurate worst-case scenario.

On the 10th February 2023, the ‘Applicant’ submitted additional information to the Energy Consents Unit (ECU) to respond to the comments, including revised air quality modelling and carbon assessment as well as an updated air quality and climate assessment. While providing greater resolution of assessment and further clarity, it did not change the assessment outcomes and therefore there was no requirement to revise the Air Quality EIAR Chapter or any supporting appendices.

SEPA provided a further response dated 28th March 2023 triggering the need for a Heat Recovery Steam Generator (HRSG) stack height assessment in unabated mode, an Amine assessment and further clarification with regards to Carbon Capture Readiness assessment. The Applicant provided a response in August 2023 concluding that the stack height assessment for the HRSG would have a negligible adverse impacts which are not significant, the Amine assessment will need be conducted following license contractor’s choice of amine post-consent and clarifying the extent of the Carbon Capture Readiness calculations which excluded the existing Peterhead Power Station. SEPA removed their holding objection in September 2023 accepting that some uncertainties would be resolved during the Pollution Prevention Control (PPC) permitting stage.

In addition, Friends of the Earth (FoE) Scotland raised objection to the Proposed Development related to the committed carbon capture rates, operation of both the Proposed Development and the existing Peterhead Power Station, and the perceived limited and short-term economic benefits of the Proposed Development and support for generation and Carbon Capture and Storage (CCS) development within the national planning policy. The Applicant argued that FoE’s comments did not constitute additional information but clarity on items related to technology and policy already addressed in the Section 36 consent submission.

3. Climate Change and Sustainability - additional information now being provided

In addition, to evolving policy on Climate Change, the Supreme Court decision in the R (on the application of Finch) – v – Surrey CC [2024] UKSC 20, and an updated Institute of Environmental Management and Assessment (IEMA) guidance has triggered the need to review the EIA Report and specifically Chapter 18 Climate Change and Sustainability. Changes were identified in so far as they relate to Scope 3 GHG emissions including well-to-tank emissions from the upstream natural gas supply chain, and additional emissions from unplanned unavailability of the CO₂ Transport and Storage (T&S) system with an assumed unabated operational time per annum of 3% (the estimated unplanned availability period) and assumptions around the existing Peterhead Power Station continued operations after the commissioning of Proposed Development until 2040 (the worst case).

Considering these changes, the review of the climate change assessment concluded that the project would have a Moderate Adverse and Significant impact on the basis that emissions are likely to account for a growing proportion of Scottish and UK carbon budgets. The Proposed Development is consistent with policy and good practice and would demonstrably reduce overall emissions against the “without-project” baseline as it can be expected to displace generation from comparable unabated gas-fired power in the UK grid.

Appendix B provides the updated chapter (Chapter 18). In addition, as a result of the updates to Chapter 18 specifically, a number of other minor changes to the EIA Report were required, these are summarised in Table 3.1 below with resulting updates to Chapter 21 (Appendix C) and EIA Appendix 18.A (Appendix B). In addition, for the purposes of clarity an update non-technical summary is provided in Appendix A.

Table 3.1: Summary of changes to the EIA Report as a result of the updated EIAR Chapter 18 Climate Change and Sustainability

EIAR Chapter	Proposed Change
Non-technical Summary	Updated to reflect the outcomes of the changes to the Climate Change & Sustainability Chapter and consequential changes noted below – refer to Appendix A
Chapter 1 Introduction	No change
Chapter 2 Assessment Methodology	No change – note the cumulative effect described in the updated Chapter 18 refers to the future modified baseline as defined here and amended in response to SEPA comments previously to ensure a consistent approach to the worst-case scenario of the continued operation of the existing Peterhead Power Station.
Chapter 3 Site and Surrounding Area	No Change
Chapter 4 Proposed Development	No Change
Chapter 5 Construction Programme and Management	No Change
Chapter 6 Consideration of Alternatives	No Change
Chapter 7 Legislative Context	To be read in conjunction with the updated Chapter 18 (refer to Appendix B), which sets out the changes to relevant legislation and planning policy related to Climate Change. Note also Section 4 of this document below.
Chapter 8 Air Quality	No Change
Chapter 9 Noise and Vibration	No Change
Chapter 10 Traffic and Transport	No Change
Chapter 11 Biodiversity and Nature Conservation	No Change
Chapter 12 Water Environment	No Change
Chapter 13 Flood Risk	No Change
Chapter 14 Ground Conditions	No Change

ElAR Chapter	Proposed Change
Chapter 15 Landscape	No Change
Chapter 16 Cultural Heritage	No Change
Chapter 17 Socio-economics	No Change
Chapter 18 Climate Change and Sustainability	Updated in line with changes to case law and IEMA GHG assessment guidance - refer to Appendix B
Chapter 19 MADS	No Change
Chapter 20 Combined Amenity Effects and Summary of Inter-Project Effects	No Change
Chapter 21 Summary of Likely significant Residual Effects	To be read in conjunction with the updated Chapter 18, which sets out the changes to residual effect. In summary, the re-assessed significance of effect of the operational GHG emissions taking into account Scope 3 GHG emissions and the cumulative operation with the existing Peterhead Power Station operating until 2040 is Moderate Adverse and Significant . While the residual effect remains as Moderate Adverse post mitigation this is due to the emissions likely to account for a growing proportion of the Scottish and UK carbon budget. However, the Proposed Development remains entirely consistent with all relevant policy and good design practice, and it will demonstrably reduce overall emissions as it can be expected to displace generation from a comparable unabated gas-fired power station. Appendix C provides the updated Chapter 21
Appendices and Figures	Appendix 18A updated in accordance with the revised Chapter 18 (refer to Appendix B).

4. Updates to other Policy and Legislation

This section presents a wider review of all policy and legislation. This review was undertaken to identify changes to policy and legislation which could materially change the discussion and conclusions of the assessments within the submitted EIA Report (2022).

Since the submission of the EIA Report in 2022, there have been changes to national and local policy relevant to the Proposed Development. The most notable change was the introduction of National Planning Framework 4 (NPF4) in February 2023. The submitted EIA Report (2022), however, made reference to the Draft NPF4 and thus it can be concluded that the introduction of NPF4 would not impact the conclusions of the submitted EIA Report (2022).

Between 2022 and 2025, there has been no changes to legislation which could materially change the discussion and conclusions of the submitted EIA Report (2022).

Table 4.1 presents a summary of the key policy changes and implications for the submitted EIA Report (2022).

Table 4.1: Summary of changes to Policy

Policy referenced within submitted EIA Report (2022)	Policy superseded by	EIAR Chapter / Section where policy change has relevance	Proposed Change
Scottish Planning Policy	National Planning Framework 4 (NPF4)	All technical chapters (Chapters 8 to 19 inclusive)	No change to technical assessments presented within the submitted EIA Report (2022).
National Planning Framework 3			The policy changes do not impact the assessment of environmental effects presented within the submitted EIA Report (2022).
Aberdeenshire Local Development Plan (2017)	Aberdeenshire Local Development Plan (2023)		Aberdeenshire Local Development Plan (2023), and NPF4 do not introduce any new designated areas / sites which were not assessed within the relevant technical chapters of the submitted EIA Report (2022).
			NPF4 Policy 22 sets out expectations for developments regarding flood risk. Policy 22 does not materially change the assessment of residual effects (Minor adverse), and proposed mitigation outlined in Table 13-7 of Chapter 13 – Flood Risk (within the submitted EIA Report, 2022). This assumes that the detailed design will ensure the Proposed Development's platform level and freeboard will align with NPF4 Policy 22 requirements. Further flood risk assessment will also incorporate the suitable climate change allowance available at the time of assessment.
Aberdeen City and Shire Strategic Development Plan	Strategic Development Plans and their associated supplementary guidance have been superseded by NPF4.	N/A	N/A
Our Place in Time – The Historic Environment	Our Past Our Future (Historic Environment Scotland, 2023)	Chapter 16 Cultural Heritage	No change to technical assessment presented within Chapter 16 of the submitted EIA Report (2022).

Policy referenced within submitted EIA Report (2022)	Policy superseded by	EIAR Chapter / Section where policy change has relevance	Proposed Change
Strategy for Scotland (2014)			<p>The policy changes do not impact the assessment of environmental effects presented within the submitted Chapter 16 of the EIA Report (2022).</p> <p>Our Past Our Future does not introduce any new designated areas / sites which were not assessed within the submitted Chapter 16 of the EIA Report (2022).</p>

5. Conclusion

The review of the climate change assessment concluded that the project would have a Moderate Adverse and Significant impact on the basis that emissions are likely to account for a growing proportion of Scottish and UK carbon budgets. However, the Proposed Development is consistent with policy and good practice and would demonstrably reduce overall emissions against the “without-project” baseline as it can be expected to displace generation from comparable unabated gas-fired power in the UK grid.

Between 2022 and 2025, there have been no changes to legislation which could materially change the discussion and conclusions of the submitted EIA Report (2022). While there has been a delay to the construction and operation start dates the duration of each has not changed which is the basis of the assessment

APPENDIX A: UPDATED NON-TECHNICAL SUMMARY (2025)

SSE THERMAL PETERHEAD LOW CARBON CCGT POWER STATION PROJECT

Environmental Impact Assessment Report
Volume 1: Non-Technical Summary
16 May 2025



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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 (CO ₂) 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.
IEMA	Institute of Environmental Management and Assessment
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

Abbreviation / Term	Description
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).
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.
Scope 1 GHG emissions	Scope 1 emissions, according to the GHG Protocol, are direct greenhouse gas emissions from sources a company owns or controls, such as fuel combustion in boilers, furnaces, vehicles, and on-site industrial processes.
Scope 3 GHG emissions	Scope 3 emissions, according to the Greenhouse Gas (GHG) Protocol, encompass all indirect emissions that occur in an organization's value chain, both upstream and downstream, that are not owned or controlled by the reporting organization, but that the organization indirectly affects.
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

Abbreviation / Term	Description
	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 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

Abbreviation / Term	Description
	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.

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1. Non-Technical Summary

1.1. INTRODUCTION

This document presents a Non-Technical Summary (NTS) of the Environmental Impact Assessment Report (EIA Report) and the 2025 revised chapters that have 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.

Following submission of the Application in 2022, the Supreme Court decision in the R (Finch) – v- Surrey County Council case, and an update in the Institute of Environmental Management and Assessment (IEMA) GHG Assessment guidance with regards to considering the "upstream" greenhouse gas emissions prompted the Applicant to review the findings of the EIA Report. This review necessitated the need to update Chapter 18 Climate Change and Sustainability to consider the Scope 3 (well-to-tank) emissions from the upstream natural gas supply chain, and the worst-case scenario of the existing power station remaining operational up to 2040 by when it will reach economic and design life. A review of policy and legislative changes since 2022 has concluded no impact to the assessment of environmental effects presented within the submitted EIA Report.

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 (CO₂) 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 2030¹. In October 2021 the Scottish Industrial Cluster, of which the Proposed Development is part, was announced as a reserve cluster for Track-1². This means that the Proposed Development and the wider Scottish Cluster are expected to either receive funding support as

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/>

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.

This document provides a summary of the EIA Report and 2025 revised chapters which have 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 2040³. 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 .

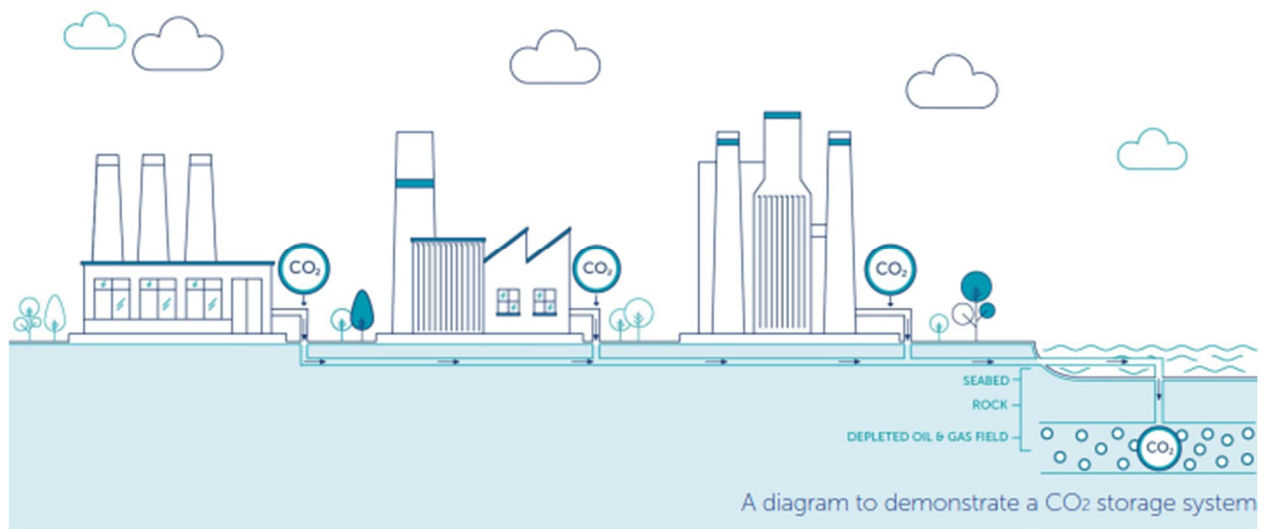
The design of the Proposed Development demonstrates this commitment. The Proposed Development will be built with post-combustion carbon capture technology, consistent with SSE's commitment to reduce the carbon intensity of electricity generated by 60% by 2030, compared to 2018 levels.

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 gone 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

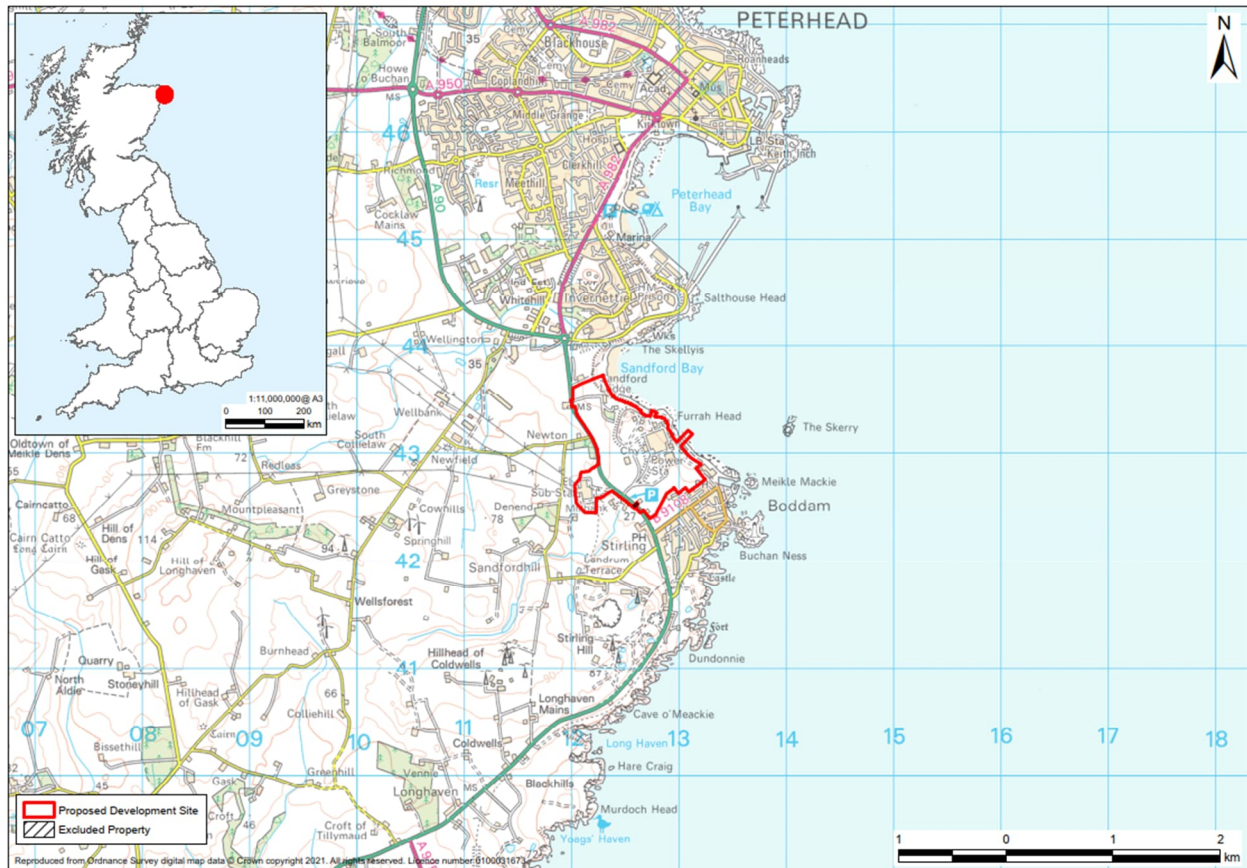
EIA Report Volume	Content
Volume 1: Non-Technical Summary	A stand-alone summary of the EIA Report volumes listed below in non-technical language.
Volume 2: EIA Main Text	<p>Chapters 1 - 2 present an introduction to the project and EIA assessment methodology.</p> <p>Chapters 3 - 6 present a description of the Proposed Development Site and surrounding areas; components of the Proposed Development, their construction and decommissioning, programme and alternatives.</p> <p>Chapter 7 presents a summary of relevant legislation and planning policy.</p> <p>Chapters 8 – 19 present the findings of the environmental assessments, likely significant effects identified, and mitigation, monitoring and enhancement measures proposed.</p> <p>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.</p> <p>Chapter 21 provides a summary of the likely significant residual environmental effects identified.</p>
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.

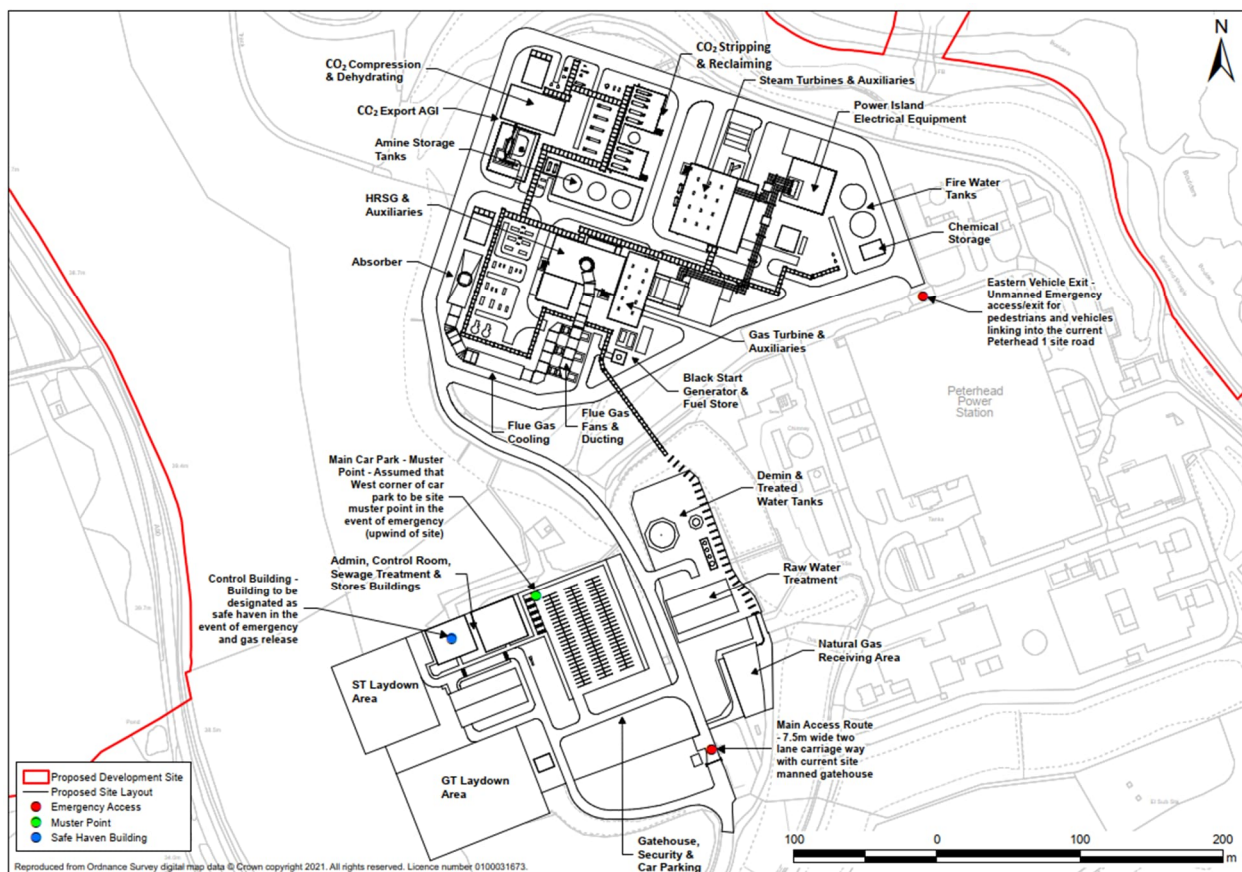
3.2. COMPONENTS OF THE PROPOSED DEVELOPMENT SITE

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. While newer mapping (SEPA, 2025) is available and shows a change (medium to high risk) in the river and surface water flooding risk, the detailed site-specific flood risk assessment (**Appendix 13A, Volume 4**) carried out as part of the EIA Report (2022) and conclusions drawn in **Chapter 13 Water Environment and Flood Risk** with regards significance of effect and required mitigation measures remain unchanged.

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 capacity⁴ 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.

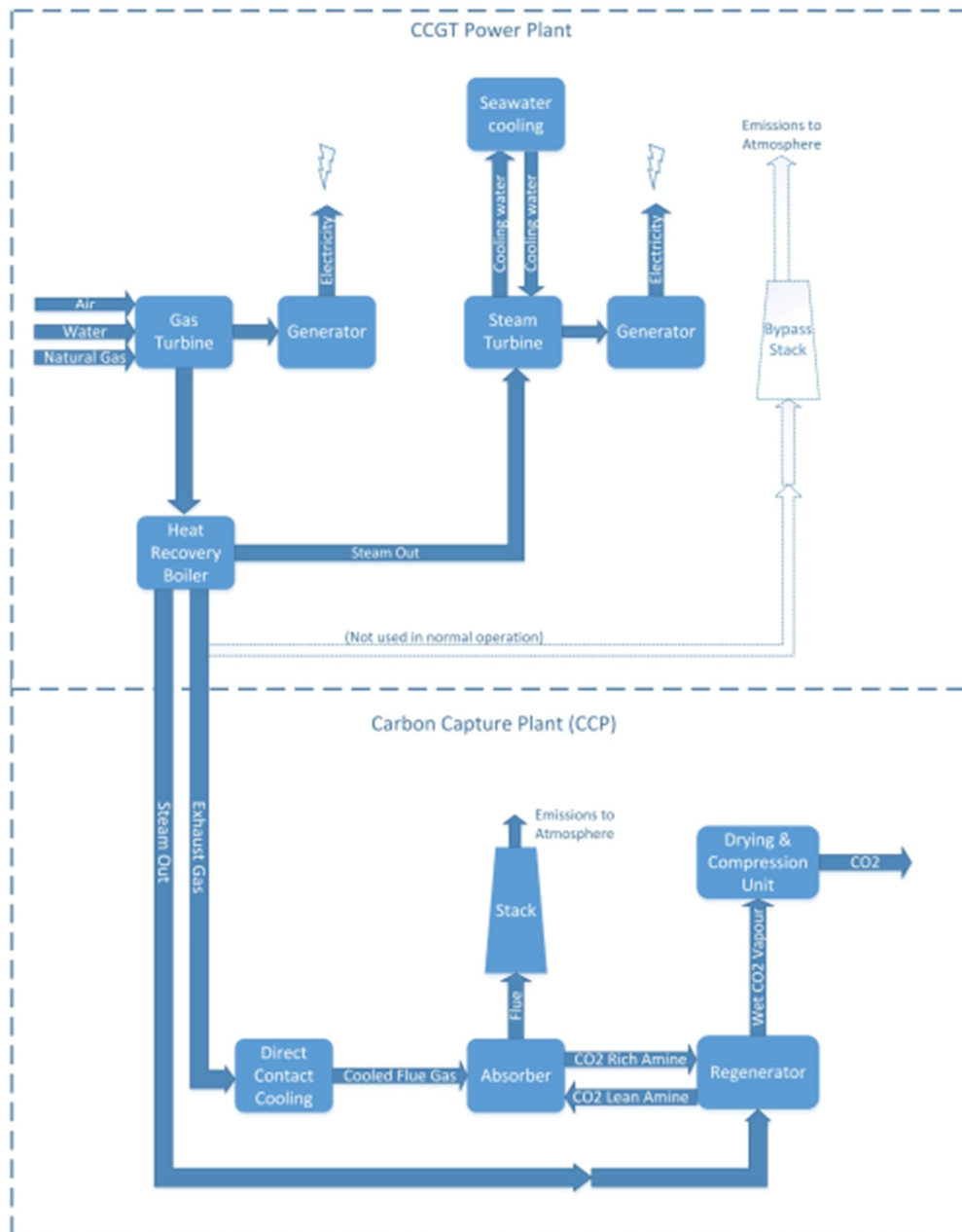
Various associated development that may be required in connection with the above works are detailed in **Chapter 4: The Proposed Development** (EIA Report Volume 4).

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 up to 95%. 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 NO_x 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

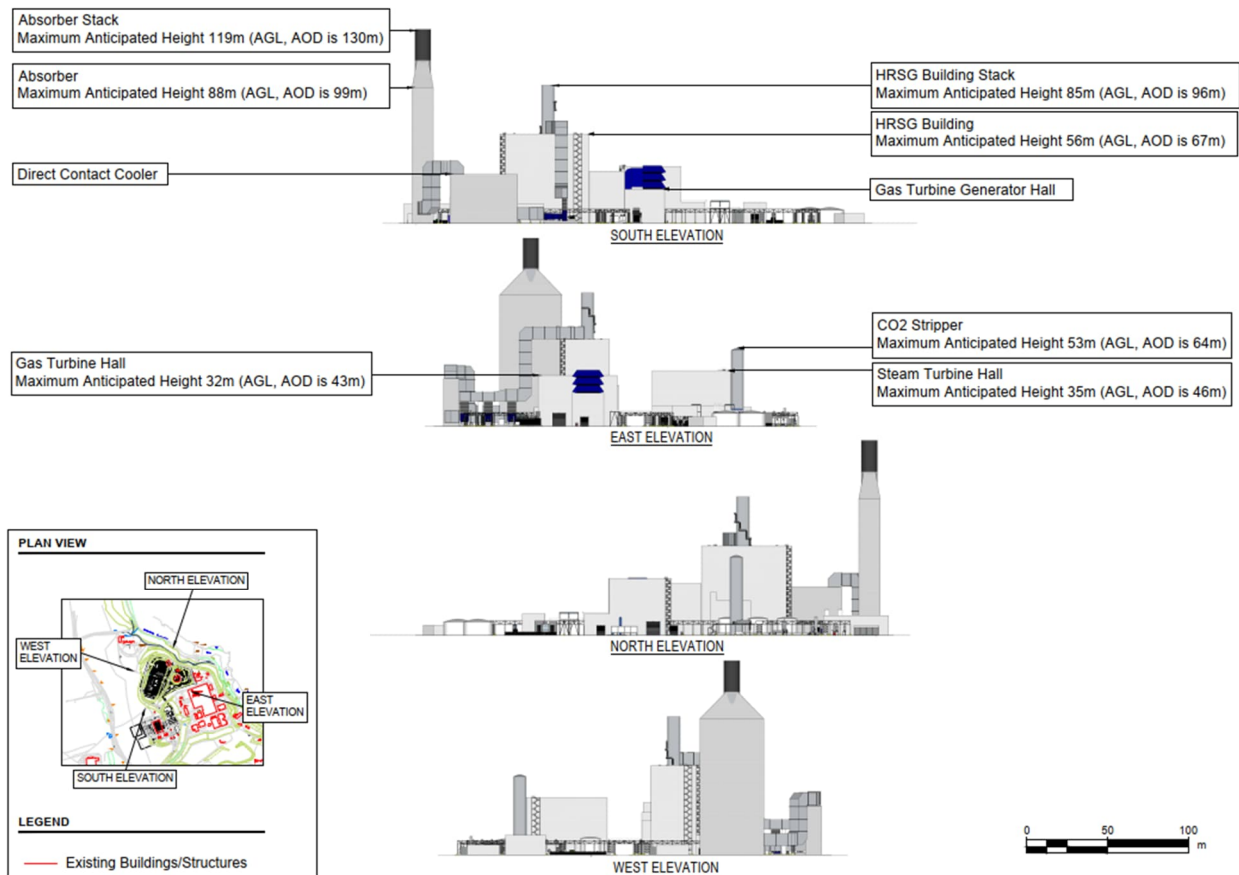


Table 3 Rochdale Envelope and Maximum Design Parameters

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 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 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, it is 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 SSSEN 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.

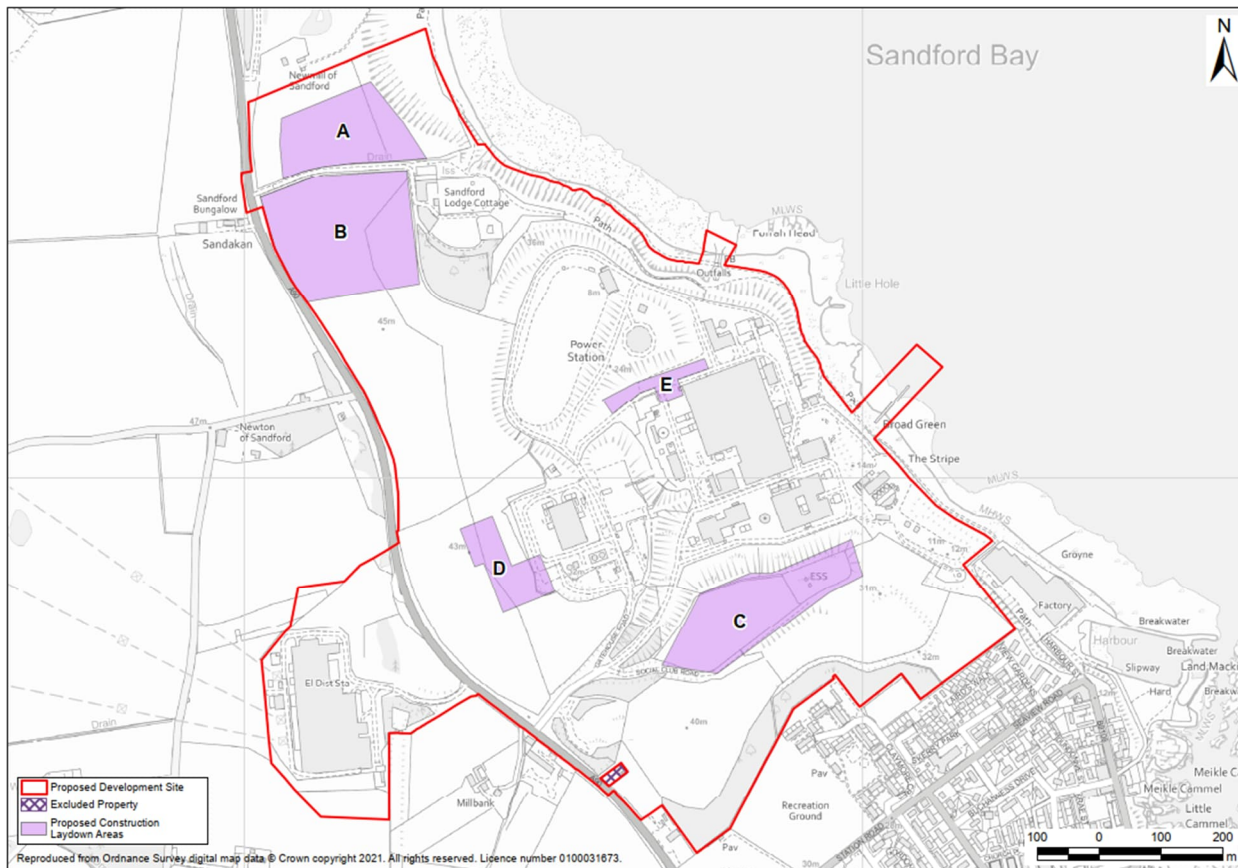
Access to the Proposed Development Site during construction for workers and for all HGVs would be via the new permanent access using the Sandford Lodge access track. It is estimated that there will be approximately 1,300 personnel contracted to work on the Proposed Development at the peak of construction. 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 or 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 2055 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

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

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

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 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

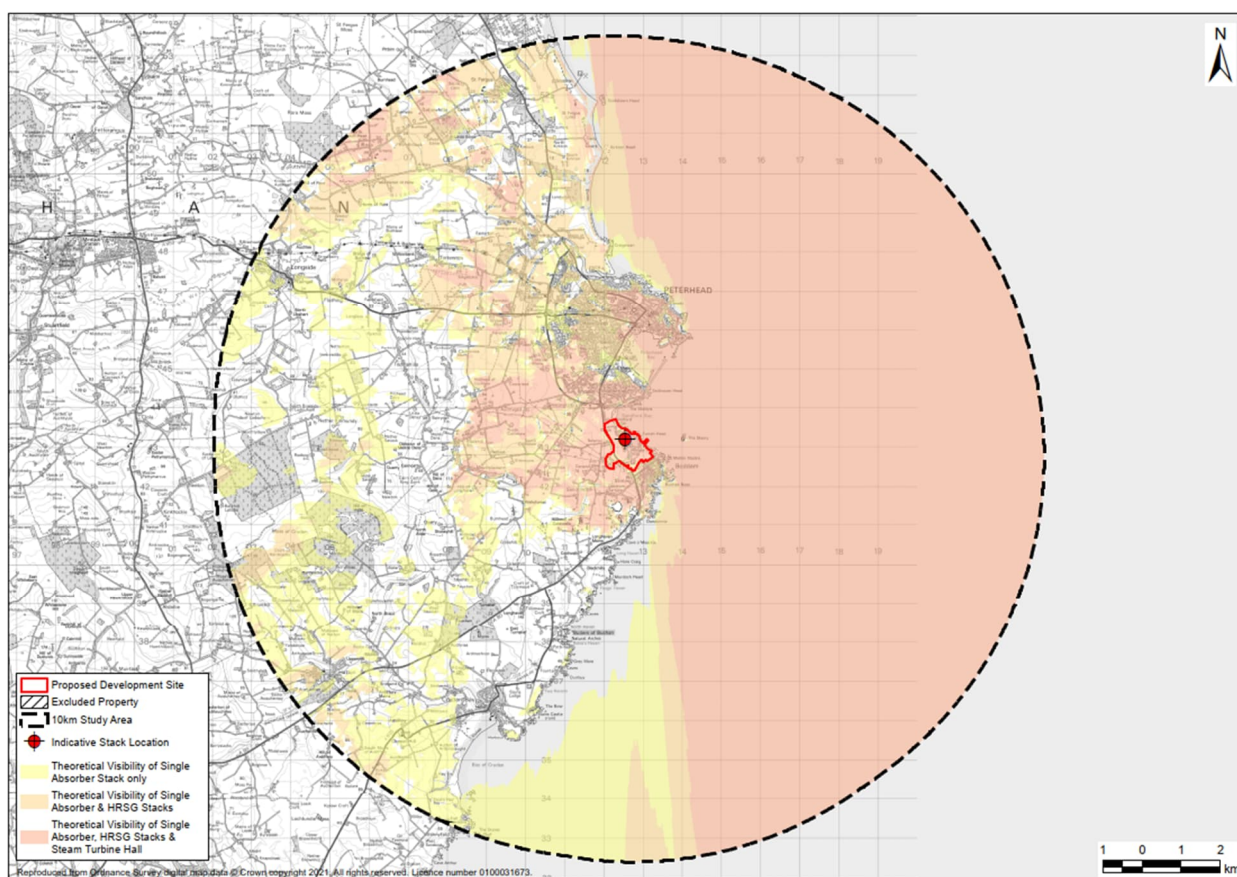
An assessment has been undertaken which considers the potential effects of the construction, operation (including maintenance) and decommissioning of the Proposed Development on landscape character and visual amenity and is presented in **Chapter 14: Landscape and Visual Amenity** (EIA Report Volume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



45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

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Visualisation Type:
 Projection:
 Enlargement Factor:
 Paper Size:
 Date / Time:

4
 Cylindrical
 96%
 A1
 09/12/2021, 09:45

Camera:
 Lens:
 Horizontal Field of View:
 Direction of View:
 Location:

SONY ILCE-7RM3
 DT 50mm f/1.2 SAM
 90°
 North East
 E412361 N841770

Eye level:
 Height of Camera:

60m
 1.6m

Note:
 Images to be viewed at a comfortable
 arm's length.

Peterhead Low Carbon CCGT Power Station Project
 VP08 Stirling Village / Lendrum Terrace
 Figure 15.6.8a

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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

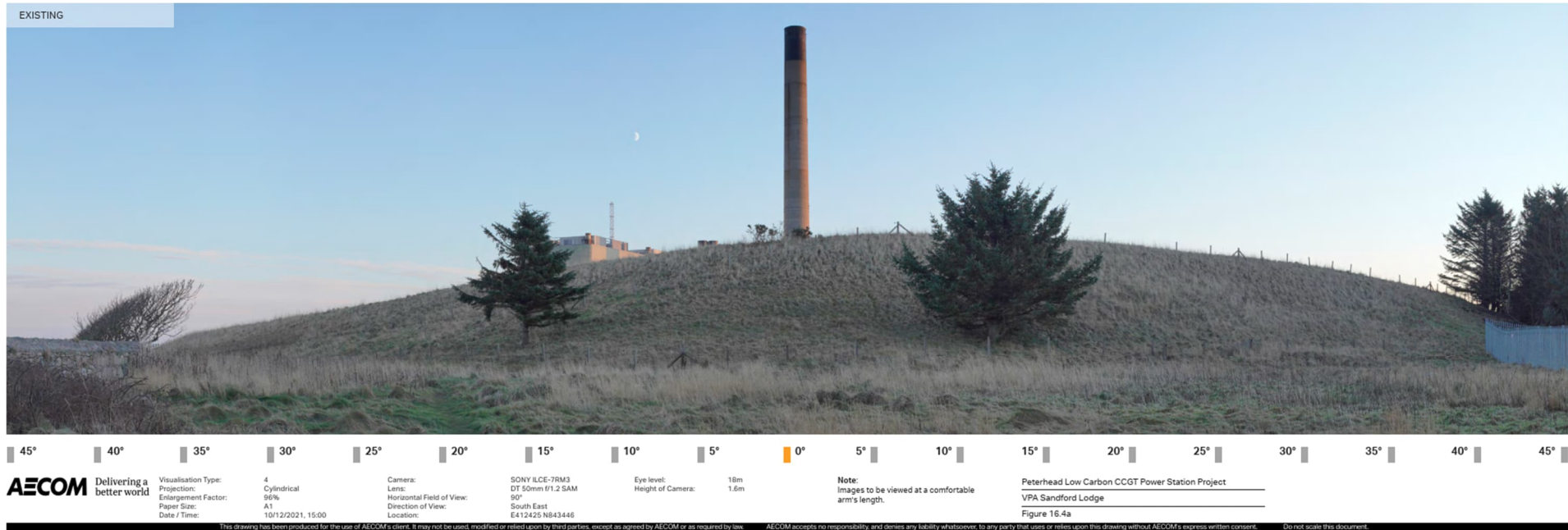


Figure NTS14 VPA Sandford Lodge Proposed

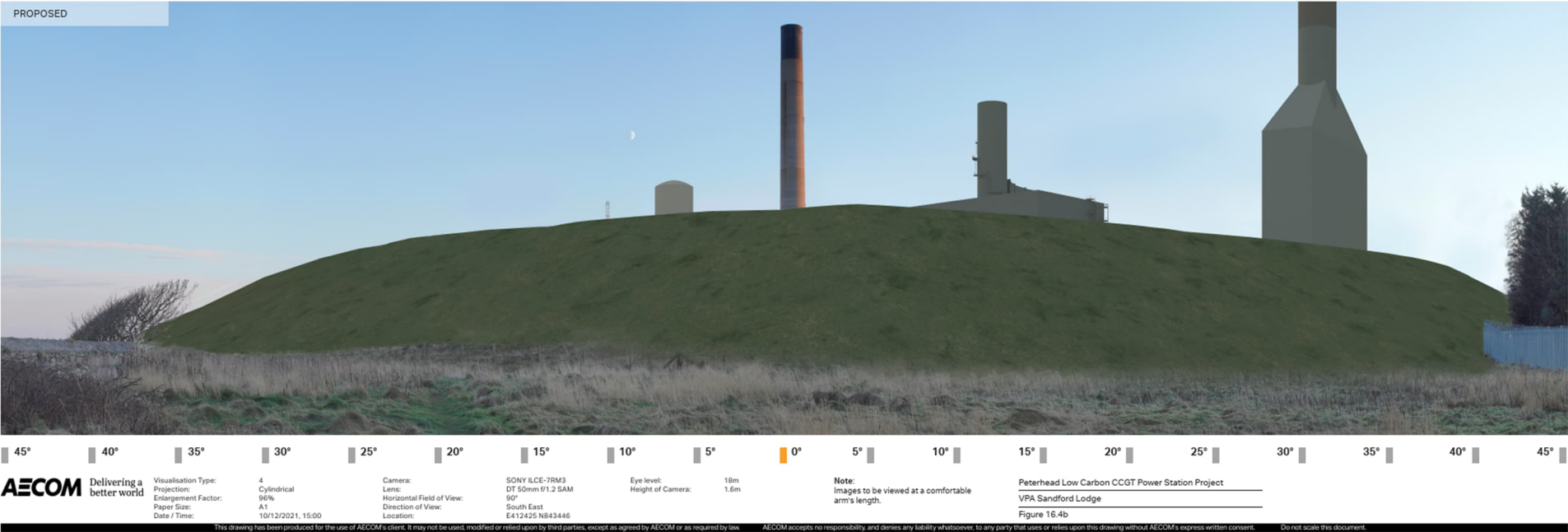
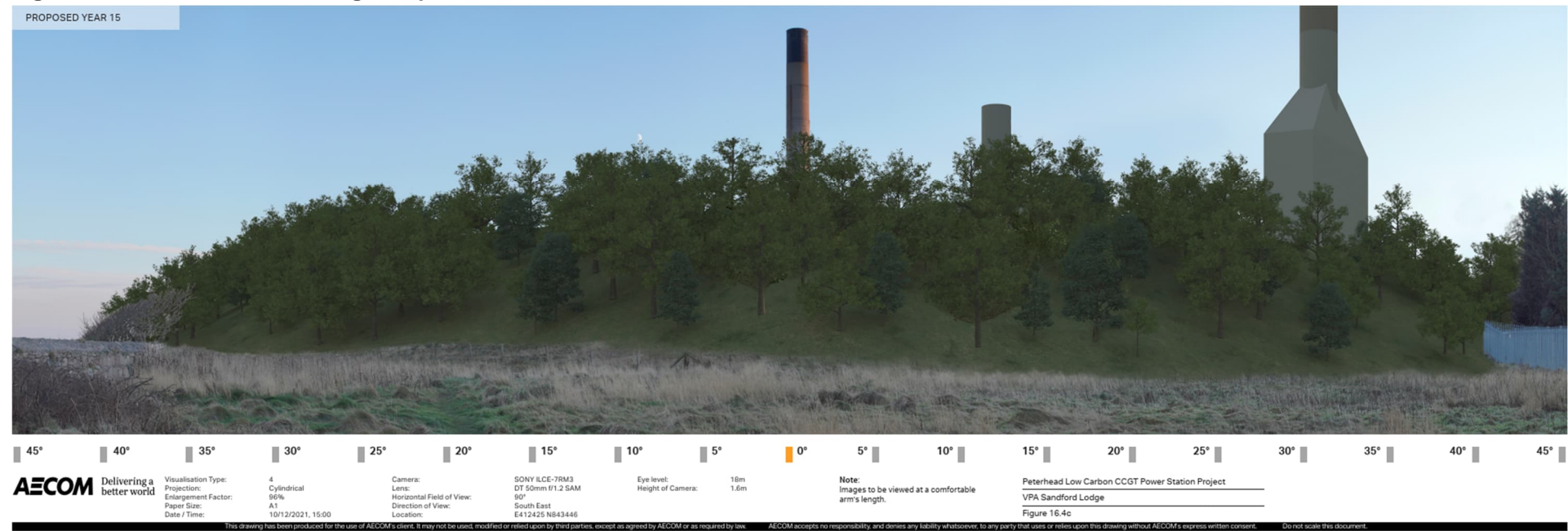


Figure NTS15 VPA Sandford Lodge Proposed Year 15



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. 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. A conservative 90% carbon capture rate has been assumed for the purposes of the GHG assessment. Captured carbon will be compressed and directed to an offshore carbon store and not released to the atmosphere. The majority of the gross operational GHG emissions from the Proposed Development are associated with indirect emissions resulting from the upstream extraction and supply of natural gas (Well-to-Tank emissions).

The potential impacts and effects of future climate change related hazards on the Proposed Development have been assessed, with embedded climate adaptation measures considered within the assessment of initial risk. These include use of Sustainable Drainage Systems (SuDS) to mitigate flood risk.

It has been concluded that the overall GHG significance of effect is considered to be Moderate Adverse and Significant on the basis that emissions are likely to account for a growing proportion of Scottish and UK carbon budgets. However, the Proposed Development remains entirely consistent with all relevant policy and good design practice, and it will demonstrably reduce overall emissions against the “without-project” baseline as it can be expected to displace generation from comparable unabated gas-fired capacity elsewhere in the UK grid.

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 CO₂ 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 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 moderate adverse effect will be seen to the global climate in terms of greenhouse gas emissions, including upstream GHG emissions associated with the supply of natural gas and the combined operation of the existing Peterhead power station considered cumulatively up to 2040.

APPENDIX B: UPDATED EIA REPORT CHAPTER 18 AND APPENDIX 18.A (2025)

SSE THERMAL PETERHEAD LOW CARBON CCGT POWER STATION PROJECT

Environmental Impact Assessment Report
Volume 2: Chapter 18 – Climate Change and
Sustainability
16 May 2025

SSE THERMAL PETERHEAD LOW CARBON CCGT POWER STATION PROJECT

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18. CLIMATE CHANGE AND SUSTAINABILITY

18.1. INTRODUCTION

18.1.1. INTRODUCTION

- 18.1.1.1. This chapter of the Environmental Impact Assessment (EIA) Report assesses the potential impacts of the Proposed Development on the climate and the potential impact of projected future climate change on the Proposed Development and surrounding environment.
- 18.1.1.2. The Proposed Development includes the construction, operation and eventual decommissioning of a Combined Cycle Gas Turbine (CCGT) generating up to 910 MW electrical power output. The Proposed Development will be fuelled by natural gas and include post combustion carbon capture technology that is estimated to capture at least 90% - and up to 95% - of carbon emissions. A conservative 90% carbon capture rate has been assumed for the purposes of the GHG assessment. Captured carbon will be compressed and directed to an offshore carbon store and not released to the atmosphere.
- 18.1.1.3. The Proposed Development will support the ongoing decarbonisation of the Scottish and UK power sectors by providing a dispatchable source of low-carbon electricity. It will enable the displacement of existing, unabated gas-fired generation elsewhere in the grid and in doing so result in an overall reduction of greenhouse gas emissions to the atmosphere. The ability to generate secure, dispatchable low-carbon power is a vital component in maintaining security of supply while also facilitating the continued rollout of onshore and offshore renewable generation capacity.
- 18.1.1.4. In accordance with the requirements of the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended in 2018) (the 'EIA Regulations') (Scotland) (Town and Country Planning, 2017), guidance from the Institute of Environmental Management and Assessment (IEMA) for climate change mitigation (IEMA, 2022) and adaptation (IEMA, 2020) has been applied. This chapter addresses three separate aspects:
- **Lifecycle greenhouse gas (GHG) impact assessment** – the potential effects on the climate from GHG emissions arising from the Proposed Development, including how the Proposed Development would affect the ability of the government to meet its carbon reduction targets;
 - **In-combination climate change impacts (ICCI) assessment** – the in-combination effects of a changing climate and the Proposed Development on receptors in the surrounding environment; and
 - **Climate change risk (CCR) assessment** – the resilience of the Proposed Development to projections for climate change, including how the Proposed Development design would be adapted to take account for the projected risks and impacts of climate change.
- 18.1.1.5. **Appendix 18A: Sustainability Review** (EIA Report Volume 4) accompanies this Chapter and includes an assessment of the Proposed Development during its operational phase against several key sustainability themes. This review outlines where measures have been incorporated to minimise adverse impacts and where the Proposed Development will provide beneficial effects, thus contributing to the wider sustainability of the Proposed Development.

18.2. LEGISLATION, PLANNING POLICY AND GUIDANCE

18.2.1. INTRODUCTION

- 18.2.1.1. This section identifies and describes legislation, policy and guidance of relevance to the assessment of the potential climate impacts associated with the construction, operation and decommissioning of the Proposed Development.
- 18.2.1.2. Legislation, policy and other relevant guidance has been considered on an international, national and local level. The following is considered to be relevant to the climate assessment as it has influenced the sensitivity of receptors and requirements for mitigation or the scope and/or methodology of the assessment.

18.2.2. INTERNATIONAL

- 18.2.2.1. Relevant international legislation and planning policy is detailed in **Table 18-1**.
- 18.2.2.2. **Appendix 18A: Sustainability Review** (EIA Report Volume 4) examines the operational phase of the Proposed Development against the United Nations Sustainable Development Goals (SDGs).

Table 18-1: International legislation and planning policy

Legislation or Planning Policy	Relevance to Climate Change
United Nations Framework Convention on Climate Change Paris Agreement (2016)	The Paris Agreement is an agreement within the UNFCCC requiring all signatories to strengthen their climate change mitigation efforts to keep global warming to below 2°C this century and to pursue efforts to limit global warming to 1.5°C.

18.2.3. NATIONAL

- 18.2.3.1. Relevant UK and Scottish national legislation and planning policy is detailed in **Table 18-2**.

Table 18-2: National legislation and planning policy

Legislation or Planning Policy	Relevance to Climate Change
Department of Energy Security and Net Zero (DESNZ) National Policy Statement for Energy (EN-1) (DESNZ, 2024)	<p>The overarching policy statement for energy (EN-1) details the UK Government’s policy on the need for nationally significant energy projects, and the assessment process for applications regarding these projects.</p> <p>As per paragraph 1.4.2 “<i>In Scotland and in those areas of the Renewable Energy Zone where Scottish Ministers have functions, the Secretary of State will have no functions under the Planning Act 2008 in relation to consenting energy infrastructure projects except as set out in this section. However, energy policy is generally a matter reserved to UK Ministers and this NPS may therefore be a relevant consideration in planning decisions in Wales and Scotland.</i>”</p>

Legislation or Planning Policy	Relevance to Climate Change
UK Nationally Determined Contribution (UK Government, 2024)	In 2024, the UK communicated its new Nationally Determined Contribution to the UNFCCC. Within this, the UK has committed to reducing GHG emissions by at least 81% by 2035 compared to 1990 levels.
The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019	The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019, hereafter referred to as the 'Act' amends the Climate Change (Scotland) Act 2009, setting targets to reduce Scotland's emissions of all greenhouse gases to net-zero by 2045 at the latest. This includes interim targets for reductions of at least 56% by 2020, 75% by 2030, 90% by 2040.
Climate Change (Emissions Reduction Targets) (Scotland) Act 2024	The Climate Change (Emissions Reduction Targets) (Scotland) Act 2024 introduced a framework for a carbon budget-based approach for setting emissions reduction targets up to 2045, although at the time of drafting these budgets have not yet been set, and the previous annual targets remain in force.
Net Zero Strategy (2021)	<p>The UK Government's Net Zero Strategy: Build Back Greener (2021), published on 19th October 2021, sets out the approach government will take to cut emissions and seize green economic opportunities, in order to meet the UK's Sixth Carbon Budget and Nationally Determined Contribution, cutting emissions by at least 68% by 2030 on 1990 levels, and reaching net zero by 2050.</p> <p>Key policies of the strategy include, all electricity coming from low carbon generation by 2035, investment in hydrogen production to complement the electricity system, decarbonising heat and buildings, supporting the electrification of UK vehicles, increasing the share of journeys taken by public transport, cycling and walking and increasing the rate of woodland creation.</p>
The Clean Growth Strategy	In 2017, the government published The Clean Growth Strategy (HM Government, updated 2018a). This Strategy details the increased investment and collaboration in carbon capture usage and storage in the UK to drive industrial innovation and its importance in long-term emissions reduction.
The Clean Growth Strategy: The UK Carbon Capture Usage and Storage (CCUS) Deployment Pathway- An Action Plan	<p>The UK Government (HM Government, 2018a) has identified Carbon Capture Usage and Storage (CCUS) as having a significant part to play in the UK's transition to a low carbon economy. CCUS has been identified as a least cost energy system decarbonisation pathway to 2050. In their Clean Growth CCUS action plan it is stated that:</p> <p><i>"CCUS has economy-wide qualities which could be very valuable to delivering clean industrial growth. It could deliver tangible results in tackling some of the biggest challenges we face in decarbonising our economy,</i></p>

Legislation or Planning Policy

Relevance to Climate Change

contributing to industrial competitiveness and generating new economic opportunities – a key part of our modern Industrial Strategy.”

National Planning Framework 4 (The Scottish Government, 2023)

The National Planning Framework 4 (NPF4), adopted in February 2023 and last amended October 9 2024, sets out is the Scottish Government’s priorities and policies for the planning system up to 2045 and how their approach to planning and development will help to achieve a net zero, sustainable Scotland by 2045. NPF4 differs from previous NPFs in two ways. It incorporates Scottish Planning Policy and the NPF into a single document and is part of the statutory development plan.

This document sets out the Scottish government’s policy intent regarding energy is to “*encourage, promote and facilitate all forms of renewable energy development onshore and offshore. This includes energy generation, storage, new and replacement transmission and distribution infrastructure and emerging low-carbon and zero emissions technologies including hydrogen and carbon capture utilisation and storage (CCUS)*”.

Policy 11 (a, vi) states that development proposals for all forms of renewable, low-carbon and zero emissions technologies will be supported, including proposals associated with negative emissions technologies and carbon capture and storage.

The NPF4 notes the Peterhead Low Carbon Power Station (LCPS) as a National Development, part of The Scottish Cluster of Industrial Green Transition Zones providing “*an overall net positive impact on achieving national greenhouse gas emissions reduction targets*”.

Infrastructure Investment Plan (The Scottish Government, 2021)

Plan includes a longer-term vision, prioritising de-carbonisation, climate change resilience and adaptation in investments.

Climate Change: Scottish National Adaptation Plan 2024-2029 (The Scottish Government, 2024)

This plan sets out the actions the Scottish Government will take to respond to the impacts of climate change, setting out actions for the period 2024 to 2029.

Climate Change (Emissions Reduction Targets) (Scotland) Act 2024 (Scottish Government, 2024)

This Act amends the Climate Change (Scotland) Act 2009, to replace the existing system of annual and interim emissions reduction targets with a system of 5-yearly carbon budgets. It also adjusts when the Scottish Government next has to produce a climate change plan, so that it reflects the new system of carbon budgets.

The 5-yearly Scottish carbon budgets to replace the existing annual and interim targets have not yet been proposed by the Committee on Climate

Legislation or Planning Policy	Relevance to Climate Change
	Change, approved by the Scottish Government or ratified into legislation by the Scottish Parliament. Until these budgets have been set, the existing annual and interim targets are assumed to remain in force.

18.2.4. LOCAL

18.2.4.1. Relevant local planning policy is detailed in Table 18-3.

Table 18-3: Local planning policy

Legislation or Planning Policy	Relevance to Climate Change
Aberdeenshire Local Development Plan (Aberdeenshire Council, 2023)	<p>The local development plan for the area is the Aberdeenshire Local Development Plan (LDP), adopted 13 January 2023).</p> <p>The LDP was written to accord with previous National Planning Framework (NPF3, 2014) and to be consistent with the Aberdeen City and Shire Strategic Development Plan 2020. It sets out the policies that Aberdeenshire Council will use for determining planning applications.</p>

18.2.5. OTHER POLICY

18.2.5.1. Other UK policy, which is not binding in Scotland but which may be relevant to planning decisions in Scotland, is listed in **Table 18-4**.

Table 18-4: Other planning policy

Legislation or Planning Policy	Relevance to Climate Change
Overarching National Policy Statement for Energy (EN-1)	<p>Published by the Department of Energy Security and Net Zero (DESNZ) in 2023, and updated in 2024, this describes the national policy for energy infrastructure in relation to climate impacts and adaptation; adverse effects and benefits; in relation to ES requirements; in relation to adaptation measures in response to climate projections; in relation to climate projections, flood risk and the importance of relevant mitigation.</p> <p>This promotes Carbon Capture and Storage (CCS) as an emerging technology that the Government is aiming to facilitate and encourage, including for gas-fired generating stations. Paragraph 3.5.1 of EN-1 states that <i>“there is an urgent need to new CCS infrastructure to support the transition to a net zero economy.”</i></p>

Legislation or Planning Policy	Relevance to Climate Change
	<p>This Policy Statement further states the benefits of having a diverse mix of power generation, including energy supply security as fossil-fuel generation that can be brought online quickly to meet demand and can complement baseload supply from nuclear and renewables. However, these fossil-fuel power generators will need CCS to be low carbon.</p> <p>EN-1 states that the consenting of new fossil-fuelled power stations at or over 300 MW have to be constructed Carbon Capture Ready (CCRe), as described in Paragraph 3.3.36 of EN-1.</p> <p>Regarding the applicability of EN-1 to Scotland, paragraph 1.4.2 states that</p> <p><i>“In Scotland and in those areas of the REZ where Scottish Ministers have functions, the Secretary of State will have no functions under the Planning Act 2008 in relation to consenting energy infrastructure projects except as set out in this Section [Section 1]. However, energy policy is generally a matter reserved to UK Ministers and this NPS may therefore be a relevant consideration in planning decisions in Scotland.”</i></p>
National Policy Statement for Natural Gas Electricity Generating Infrastructure (EN-2)	<p>Published by DESNZ in 2023, and updated in 2024, this document describes the need for all new natural gas electricity generating plants to assess the viability for supporting carbon capture and storage technologies.</p> <p>Paragraph 1.4.3 states that:</p> <p><i>“The Secretary of State has no functions in relation to planning applications in Wales and Scotland that do not relate to nationally significant infrastructure. However, energy policy is generally a matter reserved to UK Ministers and this NPS may therefore be a relevant consideration in planning decisions in Wales and Scotland.”</i></p>
National Planning Policy Guidance on Climate Change	<p>Guidance published by the Ministry of Housing, Communities and Local Government (2019), this describes how to identify suitable mitigation and climate adaptation measures to incorporate into the planning process. Stating <i>“effective spatial planning is an important part of a successful response to climate change as it can influence the emission of greenhouse gases... Planning can also help increase resilience to climate change impact through the location, mix and design of development.”</i></p> <p>While not directly applicable to Scotland, the guidance may contain relevant points for consideration.</p>

Legislation or Planning Policy	Relevance to Climate Change
Clean Power 2030: Action Plan: A new era of Clean Electricity	This document published by the UK Government (2024) outlines an action plan towards clean energy by 2030, suggesting that up to 2.7GW of additional power CCUS will need to be deployed by 2030, stating “ <i>natural gas fuelled generation equipped with carbon capture technology, can provide non-weather-dependent, dispatchable low carbon generation that will support a renewables-based 2030 system</i> ”.

18.2.6. GUIDANCE

18.2.6.1. Relevant guidance used in this assessment is detailed in **Table 18-5**.

Table 18-5: Guidance

Legislation or Planning Policy	Relevance to Climate Change
IEMA: Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance (2022)	<p>The EIA Guidance for assessing greenhouse gas emissions published by IEMA in 2022 will be followed as the primary guidance document for the completion of this chapter, providing a framework for the consideration of GHG emissions in the EIA process. The guidance sets out how to:</p> <ul style="list-style-type: none"> • Identify the GHG emissions baseline in terms of GHG current and future emissions; • Identify key contributing GHG sources and establish the scope and methodology of the assessment; and • Consider mitigation in accordance with the hierarchy for managing project related GHG emissions (avoid, reduce, substitute, and compensate).
IEMA: Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (2020)	<p>The IEMA Guidance for assessing climate change resilience and adaptation in EIA will be followed. It provides guidance for consideration of the impacts of climate change within project design. The guidance sets out how to:</p> <ul style="list-style-type: none"> • Define climate change concerns and environmental receptors vulnerable to climate factors; • Define the environmental baseline with changing future climate parameters; and • Determine the resilience of project design and define appropriate mitigation measures to increase resilience to climate change.

Legislation or Planning Policy	Relevance to Climate Change
The GHG Protocol (World Resources Institute and World Business Council for Sustainable Development, 2015)	The GHG Protocol provides overarching guidance on developing GHG inventories and reporting standards
British Standards	The British Standards Institution (BSI) BS EN ISO 14064-1:2019 and 14064-2:2019 (2019a and b, respectively) provides specifications for organisational-level and project-level guidance for the quantification and reporting of GHG emissions and removals.
PAS 2080:2016 Carbon Management in Infrastructure	PAS 2080 is a global standard for managing infrastructure carbon and has been authored to meet World Trade Organization requirements. The framework looks at the whole value chain, aiming to reduce carbon and reduce cost through more intelligent design, construction and use.

18.3. ASSESSMENT METHODOLOGY

18.3.1. CONSULTATION

- 18.3.1.1. An EIA Scoping Report was prepared by AECOM and submitted to the statutory and non-statutory consultees in May 2021. The EIA Scoping Report (see **Appendix 1B**, EIA Report Volume 4) sets out the proposed approach to the EIA and is intended to facilitate discussions regarding the scope of the EIA.
- 18.3.1.2. In response to the EIA Scoping Report, the Energy Consents Unit prepared a Scoping Opinion (see **Appendix 1A**, EIA Report Volume 4). Specific comments raised by any consultees related to climate change are listed in **Table 18-6**. **Table 18-6** demonstrates how these comments have been incorporated into this assessment.

Table 18-6: Summary of comments raised in the Scoping Opinion relevant to climate change

Scoping Opinion Source	Subject	Comments	Response/where addressed in this Chapter
Aberdeenshire Council	Guidance	The assessment of Greenhouse Gas (GHG) Emissions in line with appropriate guidance and standards is welcomed, as is the Climate Change Risk (CCR) Assessment.	Noted

Scoping Opinion Source	Subject	Comments	Response/where addressed in this Chapter
	Scope of Assessment	The decision to scope out sea temperature rise and wind from the CCR Assessment is noted, along with the rationale for doing so.	Noted
	Scope of Assessment	It is accepted that the parameters of consideration within the In-Combination Climate Change Impact (ICCI) Assessment (outlined within Table 19 of the Scoping Report) are to be scoped out of the EIAR as other technical assessments and licences will identify, assess and mitigate these risks.	Noted
	GHG Assessment	It is noted that a net decrease in GHG emissions is anticipated as a result of the proposed development during the operational phase, however during the construction phase, emissions may rise as a result of the embodied carbon of the construction products and materials used. The proposed mitigation of the installation of an improved, high efficiency CCGT unit and carbon capture plant is acknowledged. Any additional mitigation required to reduce emissions from the proposed development, identified as a result of the various assessments, should be indicated within the EIAR.	Noted The calculated net change in GHG emissions are detailed within Section 18.6. Any additional mitigation measures are detailed in Section 18.7.

18.3.2. STUDY AREA

GHG Impact Assessment

- 18.3.2.1. The study area for the GHG Impact Assessment includes all GHG emissions from within the Proposed Development Site boundary arising during all stages of the construction, operation and decommissioning of the Proposed Development. It will also include emissions arising from directly related offsite activities such as transport, and where possible, treatment of materials and waste disposal.

CCR Assessment

- 18.3.2.2. The study area for the CCR assessment is the Proposed Development itself.

18.3.3. IMPACT ASSESSMENT METHODOLOGY

GHG Impact Assessment

Determining the Sensitive Receptors

- 18.3.3.1. The identified receptor for GHG emissions is the global climate as the effects are not geographically constrained which means all development has the potential to result in a

cumulative effect on GHG emissions. Therefore, for the purposes of the GHG emissions impact assessment, the global climate will be used as the sensitive receptor. The UK's and Scotland's¹ relevant five-year carbon budgets will be used as a proxy for the global climate.

Determining the Baseline Scenario

- 18.3.3.2. The baseline scenario for the GHG assessment is a 'business as usual' scenario where the Proposed Development is not undertaken. The baseline comprises existing sources of GHG emissions – including the existing Peterhead power station in current operating mode - and carbon stock within the boundary of the existing Site described in **Chapter 3: The Site and Surrounding Area** (EIA Report Volume 2). The methodology for calculating GHG emissions and removals is consistently used across all phases of the Proposed Development.

Determining the Project Scenario

- 18.3.3.3. The alternative project scenario to the 'business as usual' is a 'do something' scenario with the delivery of the Proposed Development, which includes additional GHG-emitting activities undertaken during construction, operation and decommissioning, together with the emissions from the existing power station which will likely operate in a reduced capacity up to 2040.

Determining GHG Emissions

- 18.3.3.4. The potential effects of the Proposed Development to the global climate are calculated in line with ISO14064 (BSI, 2019a and b) and the principles of the GHG Protocol (WRI & WBCSD, 2015). Where activity data have allowed, expected GHG emissions arising from the lifecycle activities associated with the Proposed Development have been calculated by multiplying activity data by its relevant emission factor:

$$\text{Activity data} \times \text{GHG emissions factor} = \text{GHG emissions}$$

- 18.3.3.5. Activity data is a quantifiable measure of activity, such as operating hours or volumes of fuels used. Emission factors convert the activity data into GHG volumes. Activity data has been sourced from client data. Where specific data are not available, a mix of assumptions and industry benchmarks have been used to fill data gaps. Where this is not possible, then a qualitative approach to addressing GHG impacts has been followed, in line with the IEMA Guidance (2022).
- 18.3.3.6. Emission factors have been sourced from publicly available sources, DESNZ (2024), and the University of Bath Inventory of Carbon and Energy (ICE) v.4 (2024).
- 18.3.3.7. In line with the ISO standard 14064 and the principles of the GHG Protocol (WRI & WBCSD, 2015), when calculating GHG emissions, the seven Kyoto Protocol GHGs have been considered, specifically:
- Carbon dioxide (CO₂);
 - Methane (CH₄);
 - Nitrous oxide (N₂O);
 - Sulphur hexafluoride (SF₆);
 - Hydrofluorocarbons (HFCs);
 - Perfluorocarbons (PFCs); and

¹ When these become available. At the time of writing, Scottish carbon budgets had not been proposed or ratified. Existing annual targets have been used to contextualise GHG emissions.

- Nitrogen trifluoride (NF3).

- 18.3.3.8. These GHGs are broadly referred to in this chapter under an encompassing definition of 'GHG emissions', with the unit of tCO₂e (tonnes CO₂ equivalent) or MtCO₂e (megatonnes of CO₂ equivalent).
- 18.3.3.9. Activities included in the baseline and project scenarios are described in more detail and, where possible, quantified in Section 18.6. Any relevant design and impact avoidance measures described within Section 18.5 will be incorporated into the calculation assumptions.
- 18.3.3.10. As agreed during the consultation process, **Table 18-7** summarises the key anticipated GHG emissions sources associated with the Proposed Development and whether they have been scoped into the final assessment.

Table 18-7: Scope of GHG emissions sources

Lifecycle Stage	Activity	Scoped In/Out	Rationale
Pre-construction/ Enabling Works	Any enabling works, land clearance, and disposal of waste generated during the enabling works	In	GHG emissions are expected
Construction	Raw material extraction, product manufacture of construction materials, electricity use, on-site fuel use, waste disposal, and transport	In	GHG emissions are expected
Operation	Power station emissions, raw material extraction, electricity production and use, upstream supply of fuels, fuel use onsite, expected unavailability of CO ₂ Transport and Storage (T&S) system, material transport, waste disposal, landscaping or other offsets/carbon capture	In	GHG emissions or savings are expected
Decommissioning	Removal or renewal of the Proposed Development	In	GHG emissions are expected

Determining Significance of GHG Emissions

- 18.3.3.11. IEMA (2022) guidance states that there are currently no agreed methods to evaluate levels of GHG significance and that professional judgement is required to contextualise the project's emission impacts. In GHG accounting, it is considered good practice to contextualise emissions against pre-determined carbon budgets (IEMA, 2022). Emissions from the Proposed Development have therefore been contextualised against Scottish and UK carbon budgets (**Table 18-8**)

- 18.3.3.12. **Table 18-8** shows the published Scottish carbon targets, which at present have only been calculated up to 2045 when net zero is anticipated. These annual targets have been extrapolated from a 1990/1995 baseline of 75.5 Mt CO₂e, and annual percentage reductions from the baseline, as described by the Scottish Government (2020b and 2020c, respectively). Scotland is targeting a net zero date of 2045.
- 18.3.3.13. The Scottish Government passed legislation and received royal assent in November 2024 to abandon the statutory annual targets (**Table 18-8**) and establish a framework for developing specific carbon budgets for Scotland, similar to the approach used by the UK Government. However, at the time the climate assessment was conducted, the Scotland-specific carbon budgets had not yet been published by the CCC for adoption by the Scottish Government. As a result, the existing annual GHG emissions targets have been used to quantitatively assess the magnitude of GHG emissions associated with the Proposed Development.
- 18.3.3.14. **Table 18-8** also details the published UK carbon targets which will also be used to contextualise the GHG emissions. The UK is currently in the 3rd carbon budget period, which runs from 2018 to 2022. The 3rd to the 5th carbon budgets reflect the earlier UK target (80% reduction target by 2050). The 6th carbon budget, legislated for in June 2021, is the first budget to reflect the amended net zero target of 2050.

Table 18-8: Scottish and UK Carbon Budgets

Year	Scottish: Annual reduction target from baseline (%) and extrapolated upper target value in parentheses (Mt CO ₂ e)	UK Carbon Budget
2021	57.9% (31.87Mt CO ₂ e)	3 rd Carbon Budget (2018-2022)
2022	59.8% (30.43Mt CO ₂ e)	
2023	61.7% (28.99Mt CO ₂ e)	
2024	63.6% (27.55Mt CO ₂ e)	4 th Carbon Budget (2023-2027)
2025	65.5% (26.12Mt CO ₂ e)	
2026	67.4% (24.68Mt CO ₂ e)	
2027	69.3% (23.24Mt CO ₂ e)	5 th Carbon Budget (2028-2032)
2028	71.2% (21.8Mt CO ₂ e)	
2029	73.1% (20.36Mt CO ₂ e)	
2030	75% (18.93Mt CO ₂ e)	6 th Carbon Budget (2033-2037)
2031	76.5% (17.79Mt CO ₂ e)	
2032	78% (16.65Mt CO ₂ e)	

Year	Scottish: Annual reduction target from baseline (%) and extrapolated upper target value in parentheses (Mt CO ₂ e)	UK Carbon Budget
2033	79.5% (15.52Mt CO ₂ e)	6 th Carbon Budget (2033-2037) 965 Mt CO ₂ e
2034	81% (14.38Mt CO ₂ e)	
2035	82.5% (13.25Mt CO ₂ e)	
2036	84% (12.11Mt CO ₂ e)	
2037	85.5% (10.98Mt CO ₂ e)	
2038	87% (9.84Mt CO ₂ e)	Budgets yet to be published
2039	88.5% (8.71Mt CO ₂ e)	
2040	90% (7.57Mt CO ₂ e)	
2041	92% (6.06Mt CO ₂ e)	
2042	94% (4.54Mt CO ₂ e)	
2043	96% (3.03Mt CO ₂ e)	
2044	98% (1.51Mt CO ₂ e)	
2045	100% (net-zero emissions) (0Mt CO ₂ e)	
2046	100% (net-zero emissions) (0Mt CO ₂ e)	
2047	100% (net-zero emissions) (0Mt CO ₂ e)	
2048	100% (net-zero emissions) (0Mt CO ₂ e)	
2049	100% (net-zero emissions) (0Mt CO ₂ e)	
2050	100% (net-zero emissions) (0Mt CO ₂ e)	100% (net-zero emissions) (0Mt CO ₂ e)

18.3.3.15. **Table 18-9** presents the criteria used to determine the significance of GHG emissions associated with the Proposed Development. These criteria have been taken from IEMA guidance on assessing significance of GHG emissions (IEMA, 2022).

Table 18-9: GHG Emissions Significance Criteria

Level of Effect	Significance Criteria	Significance
Major Adverse	The project's GHG impacts are not mitigated or are only compliant with do-minimum standards set through regulation, and do not provide further reductions required by existing local and national policy for projects of this type. A project with Major Adverse effects is locking in emissions and does not make a meaningful contribution to the UK and Scotland's trajectory towards net zero.	Significant
Moderate Adverse	The project's GHG impacts are partially mitigated and may partially meet the applicable existing and emerging policy requirements but would not fully contribute to decarbonisation in line with local and national policy goals for projects of this type. A project with Moderate Adverse effects falls short of fully contributing to the UK's trajectory towards net zero.	Significant
Minor Adverse	The project's GHG impacts would be fully consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type. A project with Minor Adverse effects is fully in line with measures necessary to achieve the UK's trajectory towards net zero.	Not Significant
Negligible	The project's GHG impacts would be reduced through measures that go well beyond existing and emerging policy and design standards for projects of this type, such that radical decarbonisation or net zero achieved well before 2050. A project with Negligible Effects provides GHG performance that is well 'ahead of the curve' for the trajectory towards net zero and has minimal residual emissions.	Not Significant
Beneficial	The project's net GHG impacts are below zero and it causes a reduction in atmospheric concentration, whether directly or indirectly compared to the without project baseline. A project with Beneficial Effects substantially exceeds net zero requirements with a positive climate impact.	Not Significant

CCR Assessment

- 18.3.3.16. An assessment of climate change risk has been undertaken for the Proposed Development to identify potential climate change impacts, and to consider their potential consequence and

likelihood of occurrence, taking account of the measures incorporated into the design of the Proposed Development.

Determining the Sensitive Receptors

18.3.3.17. The types of receptors considered at risk to climate change, are:

- Construction phase receptors (i.e., workforce, plant and machinery);
- The Proposed Development assets and their functionality (i.e., pavements, structures, earthworks and drainage, technology assets, etc.); and
- End-users (i.e., staff and commercial operators etc.).

Determining the Baseline Scenario

18.3.3.18. The current baseline scenario for the CCR assessment is based on recent historic climate data obtained from the Met Office (2021b) recorded by the closest meteorological station to the Proposed Development (Fraserburgh).

Determining the Project Scenario

18.3.3.19. The future climatic baseline for Proposed Development Site has been determined through the UK Climate Impacts Programme UK Climate Projections 2018 (UKCP18).

Determining Climate Change Risks

18.3.3.20. The CCR assessment considers resilience against both gradual climate change, and the risks associated with an increased frequency of extreme weather events as per the UKCP18 (the Met Office, 2021a). The identification and assessment of climate change resilience within EIA is an area of emerging practice.

18.3.3.21. There is no single prescribed format for undertaking such assessments; therefore, the approach adopted to undertaking and reporting the assessment has drawn on good practice from other similar developments and studies and is aligned with existing guidance such as that of IEMA (IEMA, 2020).

18.3.3.22. This assessment of climate change risk is undertaken for the Proposed Development to identify potential climate change impacts, and to consider their potential consequence and likelihood of occurrence, taking account of the measures incorporated into the design of the Proposed Development. As agreed during the consultation process, the scope of the CCR assessment is detailed in **Table 18-10**.

Table 18-10: Scope of the CCR assessment

Climate Risk	Scoped In/Out	Rationale
Extreme weather event	In	The Proposed Development may be vulnerable to extreme weather events such as storm damage, coastal erosion and storm surge to structures and assets.
Precipitation	In	The Proposed Development may be vulnerable to changes in precipitation, for example, pressure on water supply during periods of

Climate Risk	Scoped In/Out	Rationale
		reduced rainfall, and damage to structures and drainage systems during periods of heavy precipitation.
Temperature	In	Increased temperatures may increase cooling requirements of the Proposed Development and could impact on structural integrity of buildings and materials.
Sea level rise	In	The Proposed Development Site is in an area that could be susceptible to sea level rise depending on the local topography.
Sea temperature	Out	The Proposed Development is not likely to be affected by the small increase in sea temperature during its operational life.
Wind	Out	Currently, there is no evidence of compelling trends in storminess when considering maximum gusts over the last five decades (Kendon <i>et al.</i> , 2020).

18.3.3.23. Once potential climate risks have been identified, the likelihood of their occurrence during the project phase is categorised. Likelihood is categorised into five levels depending on the probability of the hazard occurring. **Table 18-11** presents the likelihood levels and definitions used. This is in line with the definitions presented in the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (IPCC, 2014).

Table 18-11: Level of likelihood of a climate risk occurring

Likelihood Category	Description (probability of occurrence)
Very likely	90-100% probability that the impact will occur
Likely	66-90% probability that the impact will occur
Possible, about as likely as not	33-66% probability that the impact will occur
Unlikely	0-33% probability that the impact will occur
Very unlikely	0-10% probability that the impact will occur

18.3.3.24. The consequence of an impact has been measured using the criteria detailed in **Table 18-12**. The probability and consequence will take into account embedded design and impact avoidance measures.-

Table 18-12: Level of consequence of a climate risk occurring

Consequence of Impact	Measure of Consequence for Climate Change Risk
Very high	Permanent damage to structures/assets; Complete loss of operation/service; Complete/partial renewal of infrastructure; Serious health effects, possible loss of life; Extreme financial impact; and Exceptional environmental damage.
High	Extensive infrastructure damage and complete loss of service; Some infrastructure renewal; Major health impacts; Major financial loss; and Considerable environmental impacts.
Medium	Partial infrastructure damage and some loss of service; Moderate financial impact; Adverse effects on health; and Adverse impact on the environment.
Low	Localised infrastructure disruption and minor loss of service; No permanent damage, minor restoration work required; and Small financial losses and/or slight adverse health or environmental effects.
Very low	No damage to infrastructure; No impacts on health or the environment; and No adverse financial impact.

Determining Significance of Climate Change Risks

18.3.3.25. The significance is determined as a function of the likelihood of a climate risk occurring and the consequence to the receptor if the hazard occurs. This is detailed in **Table 18-13**. Where an effect has been identified as moderate or major will be classed as a significant CCR effect. If significant CCR effects are assessed, then appropriate additional mitigation measures (secondary mitigation) are identified.

Table 18-13: CCR significance matrix

		Likelihood of a CCR occurring				
		Very unlikely	Unlikely	Possible	Likely	Very Likely
Consequence	Very low	Negligible	Negligible	Negligible	Negligible	Negligible
	Low	Negligible	Minor	Minor	Minor	Minor
	Medium	Negligible	Minor	Moderate	Moderate	Moderate
	High	Negligible	Minor	Moderate	Major	Major
	Very high	Negligible	Minor	Moderate	Major	Major

18.3.4. ASSESSMENT ASSUMPTIONS AND LIMITATIONS

GHG Impact Assessment

- 18.3.4.1. The majority of emissions resulting from the Proposed Development are associated with the upstream supply of natural gas, the unabated portion of flue gases not captured by the carbon capture plant, and the unplanned unavailability of the CO₂ Transport and Storage (T&S) system.
- 18.3.4.2. Emissions from the upstream natural gas supply chain include the impacts of production, venting, flaring and fugitive emissions, and have been estimated by applying the UK Government's standard Well to Tank (WTT) factor for natural gas, as published in the most recent dataset from the Department of Energy Security and Net Zero (DESNZ). The Applicant recognises that this factor is subject to a degree of uncertainty, and is also liable to change over time as the relative contribution of different sources of natural gas into the UK varies. Should the proportion of gas supplied by pipeline from Norway increase, for instance, the WTT factor will fall due to the lower carbon intensity of gas produced in the Norwegian sector of the North Sea. If, however, the UK increases its reliance on imports of liquefied natural gas (LNG) this may lead to an increase in the WTT emissions of gas supplied via the UK grid. In the absence of any reliable, long term projections around the future supply of gas into the UK, the most recent UK Government factor has been applied in line with best practice.
- 18.3.4.3. Direct emissions from the combustion of natural gas in the power station are estimated on the basis of the standard emissions factor for natural gas as published by the UK Government and the assumed carbon capture rate of 90%. This is a conservative assumption given that capture rates of up to 95% are anticipated for the Proposed Development.
- 18.3.4.4. There may be times when the CO₂ T&S system is unavailable at short notice. These periods of unplanned unavailability are in contrast to planned outages for routine maintenance that are anticipated to largely result in the power station shutting down due to the alignment of power station outages and T&S system outages where practicable and contingent on the operational demands of the grid. Unplanned outages are assumed to occur no more than 3% of the time, based on stated assumptions for similar projects with CCS such as the proposed Net Zero Teesside power station and the associated Northern Endurance Partnership carbon capture and storage network. During periods of unplanned unavailability, 100% of flue gases from the combustion of natural gas are assumed to be emitted to the atmosphere. This is a conservative assumption, as in practice it is likely that the power station may not operate for the full period due to the commercial conditions for unabated operation and dispatchable operation led by energy market conditions.
- 18.3.4.5. The most recent UK government projections of future grid carbon intensity were published in November 2024 (DESNZ, 2024), and take account of the UK's 2050 Net-Zero commitment. All such forecasts and projections are inevitably subject to considerable uncertainty, but the Government's estimates of future grid carbon intensity are the most authoritative data available.
- 18.3.4.6. There is limited information on CO₂ emissions during start-up of the CCP and this will not be quantifiable until after the detailed design stage and verified through plant commissioning. A highly conservative assessment has been undertaken whereby it is assumed that the plant will operate for 8,000 hours per year at 90% capture efficiency; this is envisaged to lead to higher annual emissions than a dispatchable plant operating at lower load factors with start-up emissions.

- 18.3.4.7. The GHG assessment of construction impacts assumes that the measures outlined within the Development Design and Impact Avoidance section of this chapter would be incorporated into the design of the Proposed Development. These measures are considered standard best practice that are usually applied across construction sites in the UK. No additional mitigation has been identified as necessary for the construction phase of the Proposed Development.
- 18.3.4.8. The current GHG assessment is limited to the availability of data and information. **Table 18-7** details the scope of the emissions sources covered in the GHG assessment.

CCR Assessment

- 18.3.4.9. The CCR assessment of construction impacts assumes that the measures outlined within the Development Design and Impact Avoidance section of this chapter would be incorporated into the design of the Proposed Development. These measures are considered standard best practice that are usually applied across construction sites in the UK.
- 18.3.4.10. While modelled climate change projections represent anticipated average weather conditions, they do not capture the full range of possible future severe weather events (i.e., droughts, heatwaves and prolonged heavy rainfall). The CCR assessment is limited to the availability of data and information at the date this assessment was prepared.

18.4. BASELINE CONDITIONS

18.4.1. GHG EMISSIONS

- 18.4.1.1. The Proposed Development Site is described in **Chapter 3: The Site and Surrounding Area** (EIA Report Volume 2). The Proposed Development Site is situated within the existing Peterhead Power Station and land under the control of the Applicant. If the Proposed Development is not consented, it is assumed that the current activities will continue. These activities include the ongoing operation of the existing Peterhead Power Station (Peterhead 1) which comprises three combined cycle gas turbines. The existing power station currently has Transmission Entry Capacity (TEC) of 1,180 MW. In the event of the Proposed Development receiving consent, Peterhead 1 operations are expected to continue with the existing total capacity available up to 2040. It is likely that the Peterhead 1 load factor (annual run time) would be reduced compared to operation in the recent past as the new low carbon power station would sit ahead in the running order.
- 18.4.1.2. **Table 18-14** and **Plate 18-1** present annual GHG emissions since 2007 for the existing power station, as reported by the Scottish Pollutant Release Inventory (SPRI). Previously, data from the European Union (EU) Emissions Trading System (ETS) reports was used which is no longer available. An estimate of WTT emissions has also been provided based on the ratio of emission factors for natural gas supplied by DESNZ (2024). These figures demonstrate the variability of emissions on an annual basis, suggesting that any projections of future plant output are subject to a high degree of uncertainty.

Table 18-14: Historic emissions from the existing Peterhead Power Station

Year	Annual Direct Emissions (tCO ₂ e) (Scope 1)	Annual Well-to-Tank Emissions (tCO ₂ e) (Scope 3)
2007	3,254,864	537,605
2008	3,678,614	607,596
2009	2,772,554	457,942
2010	2,491,412	411,506
2011	2,330,921	384,998
2012	1,416,494	233,962
2013	1,326,059	219,025
2014	331,622	54,774
2015	54,696	9,034
2016	602,845	99,572
2017	952,225	157,279
2018	1,920,203	317,159
2019	1,585,889	261,941
2020	1,300,051	214,729
2021	1,133,542	187,227
2022	1,359,676	224,577
2023	620,792	102,536

[OBJ]

Plate 18-1 Annual emissions from the existing gas-fired power station, 2007-2023

- 18.4.1.3. The emissions values in **Table 18-14** include the direct (Scope 1) emissions associated with the combustion of fuel used within the power station, together with the indirect (Scope 3) emissions associated with activities in the upstream natural gas supply chain. These WTT emissions are estimated based on the ratio of direct to WTT emissions provided in the DESNZ (2024) dataset. The emissions values do not include any of the other operational

activities that might typically be occurring (see Table 18-7). Similarly, all indirect effects associated with the Proposed Development will be associated with the upstream supply chain. Indirect downstream emissions are not applicable to the Proposed Development as the use of any energy produced will not incur any additional emissions. Other minor sources of indirect emissions such as worker transport or water consumption are not included within these figures as they are not anticipated to be material when considering the magnitude of the direct and WTT emissions, nor are they anticipated to differ significantly between the with and without Proposed Development assessment baseline.

- 18.4.1.4. Stocks of terrestrial carbon have also not been considered as part of the baseline emissions as the area is largely unvegetated. The majority of the Proposed Development Site for all configurations are located on an area of existing stony and sparsely vegetated ground north-west of the existing power station which includes small areas of neutral grassland. The proposed connections and supporting infrastructure overlie an existing area of mostly built-up land, with minor losses of semi-improved neutral grassland and improved pasture. The construction laydown areas overlie mainly improved pasture, with some loss of low quality semi-improved neutral grassland to the north. Hedgerows and scrub are also very localised, and loss of trees/scrub to the Proposed Development will be prevented or be minimal. In total, the Proposed Development overlies a maximum of 5 hectares of vegetated habitat.

18.1.1. CURRENT CLIMATIC BASELINE

- 18.4.1.5. The current baseline for the CCR assessment is based on recent historic climate data obtained from the Met Office (2021b) recorded by the closest meteorological station to the Proposed Development (Fraserburgh, approximately 24km from Site) for the period 1981-2010. The data is listed in **Table 18-15**.

Table 18-15: Recent historical climate data summary

Climatic Variable	Month	Value
Average annual maximum daily temperature (°C)	-	11.4
Warmest month on average (°C)	August	17.17
Coldest month on average (°C)	February	2.22
Mean annual rainfall levels (mm)	-	747.65
Wettest month on average (mm)	October	89.68
Driest month on average (mm)	June	47.96

18.1.2. FUTURE CLIMATIC BASELINE

- 18.4.1.6. The future baseline for the CCR assessments is based on future UK Climate Projections 2018 (UKCP18) from the Met Office for the Peterhead area (2020a). This projection data provides probabilistic indications of how global climate change is likely to affect areas of the UK using pre-defined climate variables and time periods.

- 18.4.1.7. For the purpose of the assessment, UKCP18 probabilistic projections for pre-defined 20-year periods for the following average climate variables have been obtained and will be further analysed:
- Mean annual temperature;
 - Mean summer temperature;
 - Mean winter temperature;
 - Maximum summer temperature;
 - Minimum winter temperature;
 - Mean annual precipitation;
 - Mean summer precipitation;
 - Mean winter precipitation; and
 - Sea level rise.
- 18.4.1.8. Projected variables are presented in **Table 18-16** and **Table 18-17**. UKCP18 probabilistic projections have been analysed for the 25 km grid square in which the Site is located. These figures are expressed as temperature/ precipitation anomalies in relation to the 1981-2010 baseline. This baseline was selected as it provides projections for 30-year time periods (e.g., 2010-2039) for the parameters analysed within the assessment compared to the 30-year land-based projections that would be generated from the 1981 - 2010 baseline.
- 18.4.1.9. UKCP18 uses a range of possible scenarios, classified as Representative Concentration Pathways (RCPs), to inform differing future emission trends. These RCPs “...specify the concentrations of greenhouse gases that will result in total radiative forcing increasing by a target amount by 2100, relative to preindustrial levels.” RCP 8.5 is considered to be the worst-case global scenario with the greatest concentration of GHGs in the atmosphere and has been used as the purposes of this assessment as a worst-case scenario.
- 18.4.1.10. Depending on project economics, construction of the Proposed Development is expected to take four years, with the construction period assumed as 2026-2029 for the purpose of this assessment. Power generation with carbon capture is then expected from 2030 for up to 25 years, after which time the Project elements would be assessed for ongoing viability and, only if no longer viable, be decommissioned. Therefore, the CCR assessment has considered a scenario that reflects a high level of greenhouse gas emissions at the 10%, 50% and 90% probability levels up to the 2055 projection to assess the impact of climate change over as much of the lifetime of the Proposed Development as possible.

Table 18-16: Projected changes in temperature, 50% probability, 10% and 90% probability in parenthesis

Climatic Variable	Time Period		
	2010-2039	2030-2059	2060-2089
Mean annual air temperature anomaly at 1.5m (°C)	+0.7 (+0.2 to +1.1)	+1.2 (+0.5 to +1.9)	+2.4 (+1.1 to +3.8)
Mean summer air temperature anomaly at 1.5m (°C)	+0.6 (+0.1 to +1.2)	+1.1 (+0.2 to +2.0)	+2.5 (+0.7 to +4.3)

Climatic Variable	Time Period		
	2010-2039	2030-2059	2060-2089
Mean winter air temperature anomaly at 1.5m (°C)	+0.7 (-0.1 to +1.5)	+1.2 (+0.1 to +2.3)	+2.2 (+0.6 to +3.9)
Maximum summer air temperature anomaly at 1.5m (°C)	+0.6 (-0.1 to +1.2)	+1.1 (-0.1 to +2.2)	+2.6 (+0.5 to +4.7)
Minimum winter air temperature anomaly at 1.5m (°C)	+0.6 (-0.1 to +1.5)	+1.1 (+0.1 to +2.4)	+2.3 (+0.6 to +4.3)

Table 18-17: Projected changes in rainfall, 50% probability, 10% and 90% probability in parenthesis

Climatic Variable	Time Period		
	2010-2039	2030-2059	2060-2089
Annual precipitation rate anomaly (%)	+4.7 (-0.2 to +9.7)	+5.6 (-0.8 to +11.7)	+6.4 (-2.8 to +16.0)
Summer precipitation rate anomaly (%)	+0.1 (-8.7 to +9.8)	-4.0 (-16.0 to +8.2)	-12.5 (-28.3 to +2.5)
Winter precipitation rate anomaly (%)	+10.8 (-0.4 to +22.6)	+17.4 (+0.5 to +36.1)	+25.0 (+0.7 to +53.7)

18.4.1.11. Sea level rise may increase up to 14cm from current levels by the time operations are expected to commence in 2034, and up to 37cm when operations are completed and potential decommissioning of the Proposed Development initiates (from 2058). The ranges of projected sea level rise from the 1981-2000 baseline are detailed in **Table 18-18**.

Table 18-18: Projected 50% probability of sea level rise under RCP 8.5 relative to the 1981-2000 Baseline period (10% and 90% probability in parenthesis)

	2030	2034	2048	2058
Sea level anomaly (m)	+0.10 (+0.07 to +0.14)	+0.12 (+0.08 to +0.16)	+0.19 (+0.13 to +0.27)	+0.26 (+0.18 to +0.37)

18.4.1.12. Using the definitions for likelihood (Table 18-11) and climate change projection data (Table 18-16 to Table 18-18) under the worst case RCP8.5 scenario from UKCP18, the likelihood of occurrence of potential climate hazards is detailed in Table 18-19.

Table 18-19: Potential climate hazards and likelihood of occurrence

Climatic Variable	Potential Hazard	Likelihood of occurrence in timeframe		
		2010-2039	2030-2059	2060-2089
Mean annual air temperature anomaly at 1.5m (°C)	Increase in mean annual air temperature	Very likely	Very likely	Very likely
Mean summer air temperature anomaly at 1.5m (°C)	Increase in mean summer air temperature	Very likely	Very likely	Very likely
Mean winter air temperature anomaly at 1.5m (°C)	Increase in mean winter air temperature	Likely	Very likely	Very likely
Maximum summer air temperature anomaly at 1.5m (°C)	Increase in maximum summer air temperature	Likely	Likely	Very likely
Minimum winter air temperature anomaly at 1.5m (°C)	Increase in minimum winter air temperatures	Likely	Very likely	Very likely
Annual precipitation rate anomaly (%)	Increase in annual precipitation rate	Likely	Likely	Likely
Summer precipitation rate anomaly (%)	Decrease in summer precipitation rate	Likely	Very likely	Very likely
Winter precipitation rate anomaly (%)	Increase in winter precipitation rate	Likely	Very likely	Very likely
Sea level rise (m)	Increase in sea level	Very likely	Very likely	Very likely

18.4.1.13. The 2023 State of the UK Climate report (Kendon *et al.*, 2024) states that “The UK’s climate continues to change. Recent decades have been warmer, wetter and sunnier than the 20th century”. The UK annual mean wind speed from 1969 to 2023 shows a downward trend, consistent with that observed globally, with no strong trends in the degree of storminess.

18.5. DEVELOPMENT DESIGN AND IMPACT AVOIDANCE

18.5.1. CONSTRUCTION

GHG Impact Assessment

18.5.1.1. Aspects of GHG emissions will be managed through the final Construction Environmental Management Plan (CEMP) and related plans that controls construction activities to minimise any impact on the environment through relevant regulations, industry good practice and specific measures described within this ES. The appointed contractors will be required to develop and implement a CEMP to measure, monitor and report energy and water consumption and GHG emissions during construction. A Framework CEMP (**Appendix 5A** EIA Report Volume 4) has been developed, and includes proposed measures to reduce GHG emissions through:

- Reduced fuel consumption on site in vehicles, equipment and plant through minimisation of idling, and switching off when not being used. Preference of lower carbon fuels such as hydrotreated vegetable oil (HVO) fuel, biodiesel or electric powered plant instead of traditional fossil fuels;
- Reduced water consumption in the on-site amenity blocks and construction activities;
- Reduction in transportation of materials to the site, by implementing measures set out in **Appendix 10B: Framework Construction Traffic Management Plan** (EIA Report Volume 4) and secured through a requirement in the Section 36 application;
- Minimisation of emissions through worker commuting by:
 - encouraging group transport by the provision of minibuses;
 - provision of facilities for cyclists; and
 - provision of information on public transport links (all of which will be described in **Appendix 10C: Construction Workers' Travel Plan** (EIA Report Volume 4) and secured through a requirement in the Section 36 application;
- Setting minimum rates for material recycling and re-use, as be described in the Framework Construction Environmental Management Plan, a framework of which is provided in **Appendix 5A** (EIA Report Volume 4); and
- Reducing construction works by re-using, replacing or upgrading the existing water connection infrastructure on Site, and using techniques such as the 'no dig' trenchless construction where practicable.

CCR Assessment

18.5.1.2. Details of embedded design measures that reduce the vulnerability of the Proposed Development are contained within the Framework CEMP and other assessments, such as **Chapter 12: Water Environment**, **Chapter 13: Flood Risk**, and **Chapter 14: Ground Conditions** (EIA Report Volume 2). Examples of these measures include:

- Storage of topsoil and other construction materials outside of the 1 in 100-year floodplain to protect materials from high rainfall and flooding events or sea level rise;
- Suitable storage and bunding of fuels, chemicals etc to protect from high rainfall events or sea level rise. This will be further supported by the Water Management Plan and an Incident and Emergency Response Plan;
- Laydown and welfare areas will be laid will permeable membranes to protect the Site from high rainfall and flooding events; and

- The Contractor will monitor weather forecasts and receive SEPA flood alerts and plan works accordingly, protecting workers and resources from any extreme weather conditions such as storms, flooding or heatwaves.

18.5.2. OPERATIONS

GHG Impact Assessment

- 18.5.2.1. The purpose of this Proposed Development is to provide low carbon electricity through the use of a high efficiency gas-fired power station with carbon capture connected to offshore carbon storage. Through its overall design, the Proposed Development offers the opportunity to reduce the carbon emissions and overall carbon intensity from the Proposed Development and aid decarbonisation of the electricity supplied to the national grid. A carbon capture plant fitted to the generating station will use a chemical process to absorb and capture up to 95% of the carbon dioxide in the flue gases. However, for the purposes of this assessment a conservative estimate of a 90% capture rate has been assumed. Captured CO₂ (carbon emissions) will be compressed and pumped into an offshore geological store and therefore prevented from being released to the atmosphere.
- 18.5.2.2. The PPC Permit application will present several measures that the Proposed Development would include in order to improve energy efficiency and to reduce overall GHG emissions. The design of the Proposed Development will be based on European Best Available Technique (BAT) reference documents ('BRefs') for CCGT plants and the Environment Agency's Guidance: Post-combustion carbon dioxide capture: emerging techniques (2024). The GHG assessment within this Chapter has been based on high levels of thermal efficiency within the CCGT as an H-Class unit is proposed to be used.
- 18.5.2.3. Process emissions would be managed and regulated through a PPC Permit issued by SEPA in accordance with the Industrial Emissions Directive and Energy Efficiency Directive. Other embedded measures incorporated in the operational design are described in the EIA Report, in particular **Chapter 4: Proposed Development** and **Chapter 8: Air Quality** (EIA Report Volume 2).
- 18.5.2.4. To reduce emissions associated with operational worker commuting, sustainable forms of travel will be promoted including provision of cycle storage areas.

CCR Assessment

- 18.5.2.5. Details of embedded design measures that reduce the vulnerability of the Proposed Development are contained within other technical disciplines, such as **Chapter 12: Water Environment** and **Chapter 13: Flood Risk** (EIA Report Volume 2). Examples of these measures include:
- The power station is designed to operate over a large range of ambient conditions including winter and summer extreme values. Temperature changes would therefore not have a noticeable impact on the plant's operation although it does affect the peak electrical output;
 - Suitable storage and bunding of fuels, chemicals etc to protect from high rainfall. This will be supported by a Site Emergency Response Plan;
 - Cabling will be buried underground, insulating against overheating in times of heatwaves;
 - Installation of a suitable surface water drainage network and management system, Sustainable drainage systems (SuDS), to protect the Site from high rainfall events;
 - Flood Resistance and Resilience Measures to be implemented, including:

- critical equipment assets to be raised above estimated peak flood level (see **Appendix 13A: Flood Risk Assessment** EIA Report Volume 4). Critical equipment would include electrical equipment, transformers, main boiler feed pumps, condensate extraction pumps, primary air fan and induced draught fan;
- Flood Emergency Response plan to be developed in consultation with SEPA;
- adherence to SEPA flood warnings and alerts;
- defined emergency access and egress routes; and
- maintenance of the drainage system will be incorporated in general site management and remains the responsibility of the operator.

18.5.3. DECOMMISSIONING

GHG Impact Assessment

- 18.5.3.1. At this stage, limited specific additional mitigation measures have been identified for the decommissioning phase of the Proposed Development due to uncertainties in the future emission factors, and demolition technologies available. A Decommissioning Environmental Management Plan (DEMP) will be produced to appropriate guidance and legislation at the time, and will likely include measures to reduce GHG emissions, for example encouraging the contractors to recycle the bulk of the plant, equipment and materials.

CCR Assessment

- 18.5.3.2. At this stage, limited specific mitigation measures have been identified for the decommissioning phase of the Proposed Development. A DEMP will be produced to appropriate guidance and legislation at the time and will likely be similar to that of the construction phase but reflect future climatic conditions at that point in time in the future.

18.6. LIKELY IMPACTS AND EFFECTS

18.6.1. CONSTRUCTION

GHG Impact Assessment

- 18.6.1.1. To assess the magnitude of the climate change impacts because of GHG emissions associated with construction of the Proposed Development, the GHG emissions that would be associated with the project activities are calculated based on the assumptions listed below:
- The construction programme is anticipated to take 4 years (2026 – 2029 has been considered in the assessment) operating within the hours of 07:00 to 19:00 Monday to Friday and 07:00 to 13:00 on Saturday;
 - As described in 18.4.1, the baseline carbon held in terrestrial stocks has not been quantified as it is largely a built-up area; however small (less than 5 hectares) losses of grassland, pasture, hedgerow and scrub are expected;
 - Numbers of construction workers and vehicle traffic have been estimated from Chapter 5: Construction Programme and Management (EIA Report Volume 2), Chapter 10: Traffic and Transport (EIA Report Volume 2) and Appendix 10C Construction Worker Travel Plan (EIA Report Volume 4);
 - Materials transport has been included in this estimate; materials are assumed to be travelling a one-way distance of 50km, and includes a return trip;
 - Embodied carbon from construction materials is partially included in this estimate. Using building floor area from the gas turbine hall, heat recovery steam generator, and steam

turbine, estimates have been made using WRAPs Net Waste Tool. This excludes fit-out materials and other infrastructure of these buildings due to insufficient data or information at this stage in the design. Excluded materials and components are not considered material to the overall GHG assessment;

- Additional construction activities included in this estimate include mains water for domestic, sanitation and construction purposes. It is assumed that each person on-site uses 71 litres of water per day (Water UK, 2021). Other construction water uses such as wheel-washing or dust suppression have been accounted for conservatively with an industry benchmark from the Strategic Forum for Construction Water Subgroup (2011);
- Waste transport and disposal is included in this estimate. Construction waste volume estimates have based on building floor area areas for the indicative Proposed Development layout (Chapter 4: The Proposed Development EIA Report Volume 2) and waste types published by Construction Resources and Waste Platform (CRWP, 2009). Landfill wastes from excavation wastes as described in Chapter 5: Construction Programme and Management (EIA Report Volume 2) are included. Water treatment volumes from domestic and sanitation uses are assumed to all be treated and are included in this estimate. Fuel-usage onsite has been included in this estimate. Using construction value, an approximate volume of emissions has been calculated using industry benchmarks (Glenigan, 2018). This figure is likely to be conservative in consideration of the Development Design and Impact Avoidance measures to use lower carbon fuels such as HVO fuel, biodiesel or electric powered plant instead of traditional fossil fuels; and
- Uses of grid electricity for temporary welfare and office facilities have been included in this estimate. Usage has been conservatively estimated on continuous use during construction hours using CIBSE Energy Benchmarks (2008) and is based upon 500m2 of facilities.

18.6.1.2. As detailed in **Table 18-20**, using the listed inclusions and exclusions, the total construction-related GHG emissions from the Proposed Development are calculated to be 98,864 tCO₂e with the majority (65%) of emissions being associated with the carbon embodied in materials and products used to construct. Over the 4-year construction period, average annual emissions are estimated to be approximately 24,716 tCO₂e/yr. As these activities would not happen without this Proposed Development, all these emissions are considered additional to the baseline scenario.

Table 18-20: Construction phase GHG emissions

Lifecycle Stage	Project Activity/Emission Source	Emissions (tCO ₂ e) over 4-year Construction Period	% of total
Product Manufacture	Embodied carbon of material and products	64,261	65.0%
Construction and Commissioning	Materials and product transport	23,300	23.6%
	Electricity usage	176	0.2%
	Fuel usage onsite	3,755	3.8%

Lifecycle Stage	Project Activity/Emission Source	Emissions (tCO ₂ e) over 4-year Construction Period	% of total
	Worker commute	7,089	7.2%
	Waste disposal	255	0.3%
	Materials	28	0.0%
TOTAL		98,864	
Annual estimation		24,716	

Significance of GHG Emissions

18.6.1.3. Emissions associated with the construction of Proposed Development have been examined for their significance against the Scottish and UK Carbon Budgets in **Table 18-21**. At most, during the years the construction emissions occur, the estimated emissions contribute 0.11% to the Scottish Carbon Budget in 2029, and 0.00003% to the 4th and 5th UK Carbon Budget.

Table 18-21: Significance assessment of construction phase emissions

Year	Potential Construction Phase Emissions (Mt CO ₂ e)	Scottish Carbon Budget (Mt CO ₂ e)	Percentage Contribution of Emissions to Scottish Carbon Budget	UK Carbon Budget	Percentage Contribution of Emissions to UK Carbon Budget
2026	0.025	26.5	0.09%	4 th Carbon Budget (2023-2027) 1,950 Mt CO ₂ e	0.00003%
2027	0.025	24.99	0.1%		
2028	0.025	23.44	0.11%		
2029	0.025	21.89	0.11%	5 th Carbon Budget (2028-2032) 1,725 Mt CO ₂ e	0.00003%
2030	0	20.35	0		
2031	0	19.13	0		
2032	0	17.91	0		
2033	0	16.69	0		N/A
2034	0	15.46	0		

Year	Potential Construction Phase Emissions (Mt CO ₂ e)	Scottish Carbon Budget (Mt CO ₂ e)	Percentage Contribution of Emissions to Scottish Carbon Budget	UK Carbon Budget	Percentage Contribution of Emissions to UK Carbon Budget
2035	0	14.24	0	6 th Carbon Budget (2033-2037) 965 Mt CO ₂ e	
2036	0	13.02	0		
2037	0	11.8	0		

18.6.1.4. The emissions resulting from the construction phase of the Proposed Development are considered to be **Minor Adverse** and **Not Significant** as per the criteria presented in Table 18-9, with any residual emissions being in line with best practice and the UK's net zero trajectory. The construction of the Proposed Development remains fully in line with best practice and current UK policy requirements for energy infrastructure. While residual emissions will occur due to construction, these have been sufficiently mitigated and will contribute towards infrastructure that will lower the average emissions intensity of the UK electrical grid.

18.6.1.5. The projects GHG impacts would be fully consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type. A project with Minor Adverse effects is fully in line with measures necessary to achieve the UK's trajectory towards net zero.

CCR Assessment

18.6.1.6. Future climate change projections have been reviewed and the sensitivity of assets of during the construction of the Proposed Development examined. Assets of the Proposed Development are assessed in **Table 18-22** and are based upon climate change hazards scoped in (see Table 18-10).

18.6.1.7. No significant climate change risks during construction phase of the Proposed Development have been identified.

Table 18-22: Potential construction phase CCRs

Climate Hazard Type	Projection Likelihood	Sensitive Receptor	Description of Potential Impact	Embedded Design Measures	Likelihood of an Impact Occurring	Consequence of Impact Occurring	Climate Change Risk Level	Significant?	Additional Mitigation Measures
Increased frequency and intensity of heat waves	Possible	Plant and vehicles, physical structures, materials, and access routes to sites	Overheating of electrical equipment Damage to materials	A high-level risk assessment of severe weather impacts on the process will be produced by the main contractor to inform mitigations. The Contractor will monitor weather forecasts and plan works accordingly, protecting workers and resources from any extreme weather conditions such as high temperatures. Any receptors, construction-related operations and activities potentially sensitive to severe weather events should be considered in the assessment. Climate change projections should be considered in the risk assessments	Very Unlikely	Low	Negligible	No	None
Increased frequency and intensity of heat waves	Possible	Staff, visitors on-site	Increased heat stress/heat exhaustion for workers.	Prevention measures covered in the CEMP and health and safety plans e.g., temporary buildings such as site offices will be designed with measures to control summertime overheating.	Unlikely	Medium	Minor	No	None

Climate Hazard Type	Projection Likelihood	Sensitive Receptor	Description of Potential Impact	Embedded Design Measures	Likelihood of an Impact Occurring	Consequence of Impact Occurring	Climate Change Risk Level	Significant?	Additional Mitigation Measures
Increased frequency of droughts	Possible	All receptors	None considered	None considered	Very Unlikely	Very Low	Negligible	No	None
Increase in storm intensity	Unlikely	Plant and vehicles, physical structures, materials, and access routes to sites	Damage to structures/materials/equipment and resulting in delays to programme and associated costs and/or unacceptable safety risks. May include high winds increasing dust (and other debris), storm surge	<ul style="list-style-type: none"> The potential risks to the Proposed Development arising from storm events, is considered within Appendix 13A: FRA (EIA Report Volume 4). This includes a consideration of any required mitigation to ensure resilience for the lifetime of the project. The FRA will inform the adoption of any adaptation / mitigation measures that need to be incorporated into the final design. A high-level risk assessment of severe weather impacts on the process will be produced by the main contractor to inform mitigations. The Contractor will monitor weather forecasts and plan works accordingly, protecting workers and resources from any extreme weather conditions such as storms. Any receptors, construction-related operations and 	Unlikely	Low	Minor	No	None

Climate Hazard Type	Projection Likelihood	Sensitive Receptor	Description of Potential Impact	Embedded Design Measures	Likelihood of an Impact Occurring	Consequence of Impact Occurring	Climate Change Risk Level	Significant?	Additional Mitigation Measures
			and coastal erosion.	activities potentially sensitive to severe weather events should be considered in the assessment. Climate change projections should be considered in the risk assessments Flood Resistance and Resilience Measures to be implemented, including i) critical equipment assets to be raised above estimated peak flood level (e.g. electrical equipment, transformers, main boiler feed pumps, condensate extraction pumps, primary air fan and induced draught fan); ii) Flood Emergency Response plan to be developed in consultation with SEPA; iii) make use of SEPA flood warnings and alerts; iv) define emergency access and egress route; and v) ensure maintenance of the drainage system will be incorporated in general site management and remains the responsibility of the operator.					

Climate Hazard Type	Projection Likelihood	Sensitive Receptor	Description of Potential Impact	Embedded Design Measures	Likelihood of an Impact Occurring	Consequence of Impact Occurring	Climate Change Risk Level	Significant?	Additional Mitigation Measures
Sea level rise	Very Likely	Plant and vehicles, physical structures, materials, and access routes to sites	Viability of and access to sites (such as heavy rain resulting in surface water flooding of local roads, sources of power supply or inundation of sites).	The contractors will use a short to medium range weather forecasting service from the Met Office, or other approved meteorological data and weather forecast provider, to inform short to medium term programme management, environmental control and impact mitigation measures. The contractors will register with SEPA's flood warning service in areas of flood risk.	Possible	Low	Minor	No	None

18.6.2. OPERATIONS

GHG Impact Assessment

18.6.2.1. To assess the magnitude of the climate change impacts through GHG emissions associated with operating the Proposed Development, the GHG emissions that would be associated with the project activities are calculated based on the assumptions listed below:

- The Proposed Development is expected to be available and manned 24 hours a day, 7 days per week for 25 years. Information regarding maintenance schedules is not currently available, however it is assumed that the plant will be offline for two weeks every two years for maintenance (worst case frequency described in **Chapter 4: The Proposed Development** (EIA Report Volume 2), running for 8,000 hours per year. This is considered to be an absolute worst case scenario for the purposes of the GHG assessment, with anticipated plant running hours more likely to be substantially lower than this in line with the dispatchable case presented in **Table 18-23** below.
- Carbon stocks gained through landscaping are assumed to be zero at this stage. Landscaping plans are yet to be finalised but there are likely to be some locations where it would be beneficial. Any increases in carbon stocks in this stage will reduce the overall emissions, therefore this is a conservative precautionary assumption.
- Grid electricity is assumed to be zero as all requirements will be obtained via a parasitic load when the plant is operating. Grid electricity will be used for building and offices when the plant is switched off during dispatch mode or during maintenance, however this is expected to not be material as the majority of electricity consumption will arise through the use of the absorber and CO₂ compressors which will not be operating during these periods.
- Fuels and oils required on-site, other than natural gas, may include but are not limited to diesel required for the emergency diesel generator, lubricating oils and acetylene. One tonne of diesel per annum has been included within this estimate, and volumes of other fuels and oils are assumed to be a minor fraction and are not material to the GHG assessment.
- The majority of carbon emissions will arise from the CCGT plant's use of natural gas when operating in abated mode, including emissions from the upstream natural gas supply chain. The carbon capture system is designed to remove carbon dioxide from the flue gases. The overall effectiveness of the carbon capture system varies depending on the operating mode applied and has been calculated based on material balance flow data provided for each mode, assuming 90% capture rates are achieved for the purposes of providing a conservative estimate for the Reference Case.
- The abated CCGT unit will produce up to a net electrical output of 741 MW (which accounts for the reduction in electrical output from the CCGT as steam is diverted from the steam turbine for use in the CCP, as well as the parasitic load of the CCP and HP compressor), with a carbon intensity of approximately 37.98 tonnes CO₂ per GWh based on 90% capture of the CO₂. It is assumed that the carbon capture storage system and sequestration technology is operational and functioning as expected, subject to unplanned outages (see below).
- Unplanned unavailability of the T&S infrastructure has been considered, with a conservative estimate of 3% unplanned unavailability assumed for this assessment.
- CO₂ may be used for purging of the electrical generators for maintenance purposes. The volumes of gas and the frequency of the activity is not known at this stage of design

although these are likely to be a minor source of GHG emissions. These are therefore not included in this estimate.

- Electrical circuit breakers and other switchgear historically used sulphur hexafluoride (SF₆) as an arc quencher and noise suppressant. This gas has a very high global warming potential, but suppliers are increasingly producing SF₆-free equipment, or sealed-for-life units with extremely low leakage rates. For the purposes of this assessment, it is assumed that leakage rates will be negligible and is not included.
- Emissions associated with some waste transport and disposal have been included in this estimate. Municipal waste estimates have been included and are based upon annual per person waste statistics (Zero Waste Scotland, 2017) and it is assumed half the volume is recycled. Industrial waste volumes are assumed to be the same weight as incoming materials that could be quantified. Water treatment volumes are included from domestic sanitation uses and are assumed to all be treated offsite.
- Worker commuting has been included in this estimate using current estimates of required operational staff. This assumes that all 50 workers will travel by petrol car with an occupancy of 1 person per vehicle. Using current estimates of likely distribution of worker staff, it is assumed that 87% of workers will commute from Aberdeen, 8% from Peterhead and 5% from Fraserburgh, as described in **Chapter 10: Traffic and Transport** (EIA Report Volume 2). All transits include a two-way journey. It is assumed a further 50 staff will be required onsite during the 14-day maintenance every two years using the same car occupancy rates and location distribution.
- Embodied emissions associated with operational materials have been partially included in this estimate. For mains water for domestic and sanitation uses, it is assumed that each person on-site uses 71 litres of water per day, half of the average daily water use in England and Wales (Water UK, 2021). Materials required for operations are likely to include bulk solvent, sodium hydroxide and sulphuric acid, ammonia/ urea, triethylene glycol, hydrogen, biocides, anti-scalants, sulphuric acid, sodium hydroxide, phosphoric acid, polyelectrolyte, molasses, cleaning chemicals, inert firefighting gases, carbon dioxide and mains water. Available volumes included in this estimate include sodium hydroxide, sulphuric acid, fresh solvent, and hydrogen.
- It has been assumed that materials required for operations (fuels and oils, other than natural gas, chemicals, and parts) are generally available on average within 80 km of the Site including a return trip. Five incoming HGVs have been included in this estimate.

- 18.6.2.2. The material balance flow data for each operating mode includes information on final stack emissions of CO₂. For each operating mode, a gross power plant electricity output figure has been combined with the expected electricity demand of the CCP and other ancillary equipment to give a net power plant electricity output in megawatts. Combining the final stack emissions per operating hour with the net electricity output of the generating station with carbon capture plant gives an average emissions factor in tonnes CO₂e/GWh for each operating mode. These emissions factor have been compared with the current (DESNZ 2024) UK average emissions factor, and with UK government estimates of projected emissions factors for each of the years in the plant's operating lifetime.

Operational Modes

- 18.6.2.3. Operational Modes are discussed further within **Chapter 4: The Proposed Development** (EIA Report Volume 2). The four operating modes used to form the basis of this assessment are listed below:

- **Reference Case:** The Proposed Development will operate for up to c. 8,000 hours per year at 100% full load on the CCGT and 90% carbon capture rate;
- **Dispatchable Reference Case:** The Proposed Development will operate for up to c. 8,000 hours per year, at 100% load, with a 90% carbon capture rate for the first five years. Annual running hours will then decrease to 6,000 hours for its 6-10th operational years, 5,000 hours for years 11-15 and 4,000 hours for years 16-25 with the carbon capture rate remaining at 90%;
- **Combined Winter/Summer Case:** As noted earlier, there are some differences in the operation of the generating station depending on seasonal variations. To consider this within the assessment, a combined summer/ winter scenario was included. Under this scenario, the Proposed Development will operate for up to c. 4,000 hours in each mode each year. The CCGT will be under 100% load with 90% carbon capture running 4,000 hours in each mode each year; and
- **Reference scenario with enhanced carbon capture performance:** The Proposed Development will operate for up to c. 8,000 hours per year at 100% CCGT load with 95% carbon capture.

- 18.6.2.4. While the figures presented in this chapter represent the worst-case scenario of 8,000 hours of operation annually for 25 years of operation to allow for assessment of unconstrained operation, it is considered most likely that the Proposed Development will reduce its operating hours over the course of its design life more in line with the dispatchable reference case. This would more accurately reflect the Proposed Development's role in supporting a future renewables-based UK energy grid with firm dispatchable power.
- 18.6.2.5. As described in **Chapter 4: The Proposed Development** (EIA Report Volume 2), there are several technical and engineering factors which will influence the carbon capture rate.
- 18.6.2.6. It is generally the case that there is a linear relationship between operating hours and direct operational plant GHG emissions for each mode, so for a reduced number of operating hours the total annual emissions can be adjusted accordingly. The only minor changes to a linear relationship are associated with start-up and shut-down cycles; given the limited changes in these periods and the low frequency of start-up and shut-down, they are considered to be negligible for the purposes of this assessment.
- 18.6.2.7. GHG emissions and electrical output data has been provided for four possible operating modes as follows (**Table 18-23**).

Table 18-23: Direct and indirect operational GHG Emissions from the abated power plant running in four different operating modes

Operating mode	Reference Case	Dispatchable Reference Case (Reduced Hours)	Combined Winter/Summer Case	Reference Case (95% carbon capture)
Gross output from power plant (MWe)	777.3	777.3	741.1	777.3
Electrical load from capture, compression and ancillary plant (MWe)	35.9	35.9	35.0	35.9
Net output from abated power plant (MWe)	741.4	741.4	706.1	741.4

Operating mode	Reference Case	Dispatchable Reference Case (Reduced Hours)	Combined Winter/Summer Case	Reference Case (95% carbon capture)
Gas Consumption (kWh/hour)	1,389,395	1,389,395	1,332,689	1,389,395
Lifetime Operating Hours	200,000	135,000	200,000	200,000
Overall carbon capture rate (%)	90%	90%	90%	95%
Lifetime emissions to atmosphere (tonnes CO ₂ e) (Scope 1)	5,630,940	2,669,000	5,401,100	2,786,800
Lifetime T&S Unavailability Emissions (tonnes CO ₂ e) (Scope 3)	1,520,354	720,652	1,458,302	1,605,678
Lifetime Well-to-Tank Emissions (tonnes CO ₂ e)	9,300,610	4,408,513	8,921,017	9,300,610
Lifetime output from abated plant (GWh)	148,275	57,969	141,229	148,275
Average emissions factor (tonnes CO ₂ e/GWh) (Scope 1 only)	37.98	37.98	38.24	18.79
Total Lifetime Operational Emissions (tonnes CO ₂ e)	16,451,904	11,105,035	15,780,439	13,693,096

18.6.2.8. As detailed in **Table 18-24**, using the listed inclusions and exclusions, the gross operational GHG emissions from the Proposed Development are estimated to be 17,070,241 tCO₂e with the majority (9,300,610 tCO₂e, or 54.48%) of emissions being associated with supply of fuel from the upstream natural gas supply chain as calculated above. Assuming that emission-related activities remain constant over the operational design life, annual emissions are estimated to be 682,610 tCO₂e/year.

Table 18-24: Reference Case Gross Operational phase GHG emissions

Lifecycle Stage	Project Activity/Emission Source	Emissions over 25 year operational period (tCO ₂ e)	Percentage of total operational emissions
Operations	Embodied carbon of materials and products, largely chemicals used in carbon capture process	392,495	2.30%

Lifecycle Stage	Project Activity/Emission Source	Emissions over 25 year operational period (tCO ₂ e)	Percentage of total operational emissions
	Materials and product transport	7,509	0.04%
	Electricity usage	0	0.00%
	Fuel usage onsite (CCGT emissions)	5,630,940	32.99%
	Fuel usage onsite (other fuels)	98	<0.01%
	Well-to-Tank Emissions	9,300,610	54.48%
	T&S Unavailability	1,520,354	8.91%
	Waste disposal	208,655	3.34%
	Worker commute	9,580	0.15%
	Carbon stocks (landscaping)	0	0.00%
TOTAL		17,070,241	
Average annual operational emissions		682,610	

Net Operational Carbon

- 18.6.2.9. As described in **Section 18.4.1**, the future baseline scenario represents GHG emissions from activities that will be undertaken should the Proposed Development not be consented. Annual emissions data for the existing gas-fired power station are available for the period 2007-23 inclusive (SEPA, 2025), and these annual emissions are shown in **Table 18-14** and in **Plate 18-1**. Historic emissions are clearly variable, so it is challenging to forecast with any certainty what the future baseline emissions are likely to be. Furthermore, there is uncertainty over the lifetime of the existing power station in the event that the Proposed Development is not consented.
- 18.6.2.10. Given the expected operational scenario of the existing power station, the direct annual emissions from the Proposed Development would be substantially lower than from the existing power station. **Plate 18-2** shows the relative carbon intensity of energy produced (tCO₂e/GWh) from the existing power station and the Proposed Development, with the carbon intensity of energy produced at the Proposed Development will be 76% lower than that at the existing installation when considering all emissions sources (Scope 1,2 and 3).

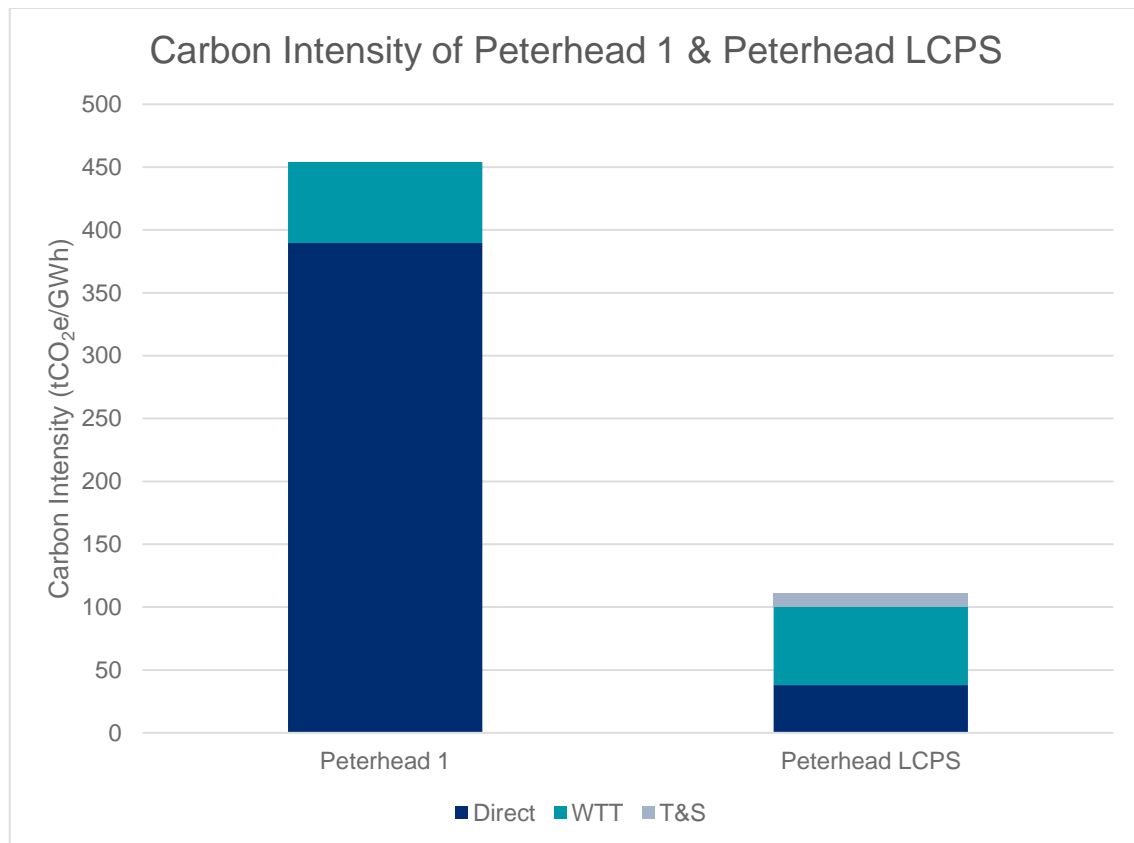


Plate 18-2: Comparison between the operational carbon intensity of electricity generated at the existing Peterhead 1 and proposed Peterhead Low Carbon Power Station (Scopes 1,2 & 3)

GHG Avoidance

- 18.6.2.11. The GHG avoidance and net benefit of the Proposed Development is centred on the carbon capture, carbon export pipeline and offshore sequestration technology being operational. The use of carbon capture and storage on dispatchable gas-fired generation is a key technology that will support Scotland and the UK to make the transition to net zero emissions, facilitating the development of resilient electricity networks powered by zero emissions renewable generation technologies. The emissions from consumption of natural gas detailed above are for the reference case described in **Table 18-23** above, with the carbon capture plant running as designed and achieving at least 90% capture of carbon. The carbon capture plant is designed to run at up to 95% capture rates, preventing a higher proportion of direct emissions from the combustion of fuel to be captured, geo-sequestered and not released into the atmosphere.
- 18.6.2.12. The purpose of the Proposed Development will be to supply dispatchable, low-carbon electricity to the UK grid and therefore displace comparable higher carbon generation sources. Table 18-26 presents the carbon intensity of national averages for electricity generation in the UK in 2018. The table details the carbon intensity associated with the combustion of the primary fuel source only.
- 18.6.2.13. **Table 18-25** compares the carbon intensity of the Proposed Development (both with and without the carbon capture technology). Unabated, the carbon intensity of the Proposed Development (322 tCO₂ per GWh) is lower than the typical combined-cycle gas-fired generation (390 tCO₂ per GWh), when considering only scope 1 direct emissions due to process and technology efficiencies. Using the carbon capture technology, the abated plant

will result in a carbon intensity of 38 tCO₂ per GWh at 90% capture, which offers the ability of the Proposed Development to displace existing, unabated gas fired power stations within the UK. The current grid average emissions intensity in 2024 is 207 tCO₂ per GWh (DESNZ, 2024), significantly higher than the energy due to be produced by the Proposed Development.

Table 18-25: Recent carbon intensities of UK electricity grid generation sources

Generation source by fuel type	Emissions (tonnes of CO ₂ per GWh of Electricity generated) (Scope 1 Emissions only)
Typical Combined Cycle Gas Turbine (DECC, 2015)*	390
Typical Open Cycle Gas Turbine (DECC, 2015)	460
UK Grid average (DESNZ, 2024)	207
Proposed Development (unabated - without carbon capture technology)	322
Proposed Development (abated - with 90% carbon capture)	38

**Emissions intensity amended from DECC, utilising the DESNZ Net Calorific Value (NCV) emissions factor for natural gas combustion. Original figure (354 tCO₂e/GWh) uses the Gross Calorific Value emissions factor which is typically not applicable to CCGT operations.*

- 18.6.2.14. The UK electricity grid is in the process of being decarbonised as the UK transitions toward net zero by 2050. BEIS (2023) provides grid intensity projections to 2100. Current projections indicate that the UK grid average will fall to 3 tCO₂ for every GWh generated by 2050, with the carbon intensity projected to remain constant at that level to 2100.
- 18.6.2.15. It is necessary to note that the reduction in grid carbon intensity cannot take place without a shift from unabated to abated gas-powered generation alongside an increase in renewable and other low-carbon generating capacity. Installations such as the Proposed Development will play a vital role in decarbonising the UK power sector, enabling generation from existing unabated gas-fired power stations to be displaced with much lower-carbon electricity.
- 18.6.2.16. It is anticipated that the existing Peterhead 1 power station will continue to operate for a period of approximately 10 years after the commissioning of the Proposed Development, but during this time the availability of a dispatchable, low-carbon generation source will enable the displacement of a proportion of generational load from Peterhead 1 and other comparable, unabated gas-fired power stations elsewhere in the UK grid.

Significance of GHG Emissions

- 18.6.2.17. The assessment of significance of GHG emissions from the Proposed Development has been undertaken in accordance with the IEMA guidance *Assessing Greenhouse Gas Emissions and Evaluating their Significance (2nd Edition)* published in early 2022. This revised edition of the IEMA guidance placed greater emphasis on mitigation and whether

emissions from a project align with the UK's net zero target by 2050 (and Scotland's net zero target by 2045). The IEMA guidance states that:

'The crux of significance is not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050/2045'

18.6.2.18. The guidance goes on to state:

'For the avoidance of doubt IEMA's position that all emissions contribute to climate change has not changed ... Major or moderate adverse effects and beneficial effects are considered to be significant. Minor adverse and negligible effects are not considered to be significant.'

18.6.2.19. **Table 18-9** above summarises the IEMA guidance around how to apply significance criteria for the GHG impact of projects.

18.6.2.20. There are three key areas to be considered when evaluating the significance of a project's GHG impact:

18.6.2.21. The magnitude of overall emissions resulting from the project over its lifecycle, and its alignment with a relevant trajectory to net zero;

18.6.2.22. The estimated net emissions impact of the project, with reference to a business as usual scenario within which the project is not developed, the so-called "without project baseline";

18.6.2.23. Consistency with applicable existing and emerging policy requirements and good practice design standards for projects of this type.

18.6.2.24. Each of these areas will be considered in turn.

Overall magnitude of emissions from the Proposed Development

18.6.2.25. The Proposed Development will result in substantial emissions of GHGs during its operation, and a comparison with UK carbon budgets shows a contribution of 0.34% during the 6th Carbon Budget period, as shown in **Table 18-26** below. Relative to the existing Scottish annual targets (shortly to be replaced with 5-yearly budget periods) the Proposed Development contributes an ever greater proportion of annual targets, reaching a peak of 41.8% of the total in 2044, as the targets approach the Scottish net zero date of 2045. As noted above, this reference case assumes that the Proposed Development runs in baseload mode as a worst case scenario, with the more likely dispatchable case more likely to represent a future operational scenario. Under the dispatchable case, the contribution to Scotland's 2044 annual target would be 20.3%. Under either scenario, the Proposed Development contributes a substantial proportion to Scotland's national carbon targets as the net zero date of 2045 is approached. It should be noted that the majority of these emissions (57%) result from indirect upstream WTT emissions with the gas supply network. As such, it is not possible to quantify what proportion of these emissions will occur within the boundary of Scottish Carbon Budgets and are therefore reported here in their entirety as a worst case.

18.6.2.26. From 2045 onwards, Scotland's net carbon emissions must be zero, preventing any further percentage comparisons from being carried out. After the net zero target date of 2045, all residual emissions from all sources must be balanced by corresponding carbon dioxide removals in other areas.

Table 18-26: Significance assessment of operational phase emissions

Year	Potential Operational Phase Emissions (Mt CO ₂ e)	Scottish Carbon Budget (Mt CO ₂ e)	Percentage Contribution of Emissions to Scottish Carbon Budget	UK Carbon Budget	Percentage Contribution of Emissions to UK Carbon Budget
2028	0	23.4	0	5 th Carbon Budget (2028-2032) 1,725 Mt CO ₂ e	0.12%
2029	0	21.9	0		
2030	0.68	20.3	3.3%		
2031	0.68	19.1	3.6%		
2032	0.68	17.9	3.8%		
2033	0.68	16.7	4.1%	6 th Carbon Budget (2033-2037) 965 Mt CO ₂ e	0.35%
2034	0.68	15.5	4.4%		
2035	0.68	14.2	4.8%		
2036	0.68	13.0	5.2%		
2037	0.68	11.8	5.8%		
2038	0.68	10.6	6.4%	7 th Carbon Budget (2038-2042) <i>Not yet published</i>	
2039	0.68	9.3	7.3%		
2040	0.68	8.1	8.4%		
2041	0.68	6.5	10.4%		
2042	0.68	4.9	13.9%		
2043	0.68	3.3	20.9%	8 th Carbon Budget (2043-2047) <i>Not yet published</i>	
2044	0.68	1.6	41.8%		
2045	0.68	0.0	N/A		

Comparison with a future baseline scenario

18.6.2.27. The IEMA guidance makes reference to the need to assess a project's impact, 'whether directly or indirectly compared to the without project baseline'. In this instance, we can

consider what the without project baseline might be, i.e. a scenario in which the Proposed Development does not go ahead and in which the power that it is expected to generate is sourced from an alternative but comparable source.

- 18.6.2.28. In the case of the Proposed Development, it will provide secure, low-carbon dispatchable generation capacity that is able to displace existing unabated dispatchable gas-fired generation capacity elsewhere in the UK. Across the UK there is around 30 GW of unabated gas-fired capacity that continues to provide a substantial proportion of the UK's electricity generation, including marginal generating capacity. With the closure of the last coal-fired power station in Autumn 2024, the existing CCGT fleet represents the largest single source of emissions to be addressed in support of the goal of effectively decarbonising the UK power grid.
- 18.6.2.29. But replacing existing secure, dispatchable power sources such as existing unabated gas-fired power stations can only be carried out by similarly secure, dispatchable units such as the Proposed Development in order to provide reliable security of supply. The proposed development, therefore, is vital in enabling this ongoing shift from unabated to abated gas-fired generation capacity to proceed over the coming years. As noted above, the Proposed Development will generate secure electricity with a carbon intensity 76% lower than that generated by the existing unabated CCGT (Peterhead 1) located at the site. It is reasonable to assume that it will provide a similar reduction in emissions intensity relative to other existing unabated gas-fired units on the grid.

Consistency with existing and emerging policy and good practice

- 18.6.2.30. When evaluating the significance of a project's GHG impact, the IEMA guidance requires that consideration is given to the extent to which it is consistent with all relevant policy requirements and good practice design standards. The IEMA description of a project with minor adverse impacts includes the following description:

'The project's GHG impacts would be fully consistent with applicable existing and emerging policy requirements and good practice design standards for a project of this type'.

- 18.6.2.31. As noted above, the Proposed Development is entirely consistent with relevant policy and planning requirements including:
- 18.6.2.32. National Planning Framework (NPF) 4, with specific reference to Policy 11(vi) – support for proposals associated with negative emissions technology and carbon capture;
- 18.6.2.33. Overarching National Policy Statement for Energy (EN-1)², referencing the importance for carbon capture ready dispatchable combustion plant to be available to support and complement the generation of power from renewable sources;
- 18.6.2.34. National Policy Statement for Natural Gas Electricity Generating Infrastructure (EN-2), with reference to the classification of natural gas fired generation that is carbon capture ready as Critical National Priority Infrastructure.
- 18.6.2.35. Aberdeenshire Local Development Plan, with reference to policy C3.2 – support for the development of carbon capture and storage developments.

Overall evaluation of significance of GHG impact.

² NPS EN-1 and EN-2 are not directly applicable to planning applications in Scotland, but as energy policy is generally a matter reserved to the UK Government these policy statements may be a relevant consideration to planning decisions in Scotland.

- 18.6.2.36. Considering each of the issues discussed above – overall magnitude of emissions and alignment with trajectory to net zero; net impact relative to a without-project baseline; and consistency with policy and good practice, it is clear that there is no one obvious way to evaluate significance. Net impact relative to a baseline suggests a beneficial impact, while consistency with policy and good practice indicates a minor adverse impact.
- 18.6.2.37. But as noted above, the receptor for the GHG assessment is the global climate with the corresponding Scottish and UK Carbon Budgets used as a proxy. The overall emissions that will result from the Proposed Development under the scenario identified as the reference case contribute substantially to UK, and particularly Scottish, carbon budgets and targets.
- 18.6.2.38. IEMA's guidance states that
- “The crux of significance is not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050/2045”*
- Overall emissions will be demonstrably lower than a corresponding, unabated power station (76% lower generation carbon intensity than the existing Peterhead power station under the baseline ‘do nothing’ scenario), and the development is consistent with policy and good practice. But the contextualisation of emissions against Scottish and UK carbon budgets and targets leads to an overall evaluation of significance for the Proposed Development's GHG impact of **Moderate Adverse** and **Significant**.
- 18.6.2.39. As defined by IEMA, a Moderate Adverse rating applies where:
- “the project's GHG impacts are partially mitigated and may partially meet the applicable existing and emerging policy goals for projects of this type. A project with moderate adverse effects falls short of fully contributing to the UK's trajectory towards net zero”.*
- 18.6.2.40. It is important to recognise, as noted above, that the Proposed Development is fully aligned with policy goals for projects of this type. The evaluation of significance as Moderate Adverse is made on the basis of the Proposed Development's contributions to UK, and particularly Scottish, carbon budgets and targets since these are applied as proxies for a trajectory towards net zero as described in the IEMA guidance.

CCR Assessment

- 18.6.2.41. Future climate change projections have been reviewed and the sensitivity of assets of during the operation of the Proposed Development examined. Assets of the Proposed Development are assessed in **Table 18-26** and are based upon climate change hazards scoped in (see **Table 18-10**).
- 18.6.2.42. No significant climate change risks during operational phase of the Proposed Development have been identified.

Table 18-28: Potential operations phase CCRs

Climate Hazard Type	Projection Likelihood	Sensitive Receptor	Description of Potential Impact	Embedded Design Measures	Likelihood of an Impact Occurring	Consequence of Impact Occurring	Climate Change Risk Level	Significant?	Additional Mitigation
Increase in annual temperature	Very Likely	All receptors	see- Increase in summer temp	see- Increase in summer temp	Very Unlikely	Very Low	Negligible	No	None
Increase in summer temperature	Very Likely	All receptors (infrastructure, buildings, staff and workers)	Thermal comfort of building users. Increase in air conditioning requirements. Overheating of electrical equipment. Heat damage, deformation, cracking and thermal expansion of building surfaces and pavements	All buildings will be designed to UK standards and specifications. Detailed design of buildings will include consideration of cooling requirements.	Unlikely	Low	Minor	No	None
Increase in summer temperature	Very Likely	Function of facility	Reduced efficiency of CCGT	The power plant is designed to operate over a large range of ambient conditions and the plant efficiency. Temperature changes would not have a noticeable impact.	Unlikely	Medium	Minor	No	None
Increase in winter temperature	Very Likely	All receptors	see- Increase in summer temp	see- Increase in summer temp	Very Unlikely	Very Low	Negligible	No	None

Climate Hazard Type	Projection Likelihood	Sensitive Receptor	Description of Potential Impact	Embedded Design Measures	Likelihood of an Impact Occurring	Consequence of Impact Occurring	Climate Change Risk Level	Significant?	Additional Mitigation
Increase to heat waves	Possible	Built terrestrial assets, staff facilities and access routes to sites	Impacts on the thermal comfort of building users Increase in ambient temperature of buildings, leading to higher air conditioning requirements and impacts on the thermal comfort of building users Overheating of electrical equipment Heat damage, deformation, cracking and thermal expansion of building surfaces and pavements	All buildings will be designed to UK standards and specifications. Detailed design of buildings will include consideration of cooling requirements.	Unlikely	Low	Minor	No	None
Increase to heat waves	Possible	Function of facility	Reduced efficiency of CCGT	The power plant is designed to operate over a large range of ambient conditions and the plant efficiency.	Unlikely	Medium	Minor	No	None
Decrease in annual rainfall	Likely	All receptors	See- Decrease in summer rainfall	See- Decrease in summer rainfall	Unlikely	Medium	Minor	No	None

Climate Hazard Type	Projection Likelihood	Sensitive Receptor	Description of Potential Impact	Embedded Design Measures	Likelihood of an Impact Occurring	Consequence of Impact Occurring	Climate Change Risk Level	Significant?	Additional Mitigation
Decrease in summer rainfall	Very Likely	All receptors	Water shortages. Drying out of pavement structures. Deterioration of structures or foundations due to decrease in soil moisture levels. Insufficient water for plant cooling	Detailed building design to consider water efficiency fixtures.	Unlikely	Medium	Minor	No	
Increase to winter rainfall	Very Likely	All receptors	Surface water flooding and standing waters. Deterioration of structures or foundations due to increase in soil moisture levels. Damage to building surfaces/ exposed utilities from increased drying/wetting and increase frost penetration. Damage to infrastructure through storm surge and river flooding. Deterioration of structures or foundations due to increase in soil moisture levels. Damage to building surfaces/ exposed utilities from increased drying/wetting and increase frost penetration	<ul style="list-style-type: none"> Initial capture of surface water run-off through appropriate sustainable drainage system (SuDS) methods detailed in Appendix 13B (EIA Report Volume 4). The Flood Risk Assessment (FRA) (Appendix 13A EIA Report Volume 4) includes a number of adaptation measures that would be considered in the detailed design and operations management. 	Possible	Low	Minor	No	

Climate Hazard Type	Projection Likelihood	Sensitive Receptor	Description of Potential Impact	Embedded Design Measures	Likelihood of an Impact Occurring	Consequence of Impact Occurring	Climate Change Risk Level	Significant?	Additional Mitigation
Increase droughts	Possible	Built terrestrial assets, staff facilities and access routes to sites	See- Decrease in summer rainfall	See- Decrease in summer rainfall	Unlikely	Medium	Minor	No	None
Increase droughts	Possible	Restored / enhanced habitat, including replanting	Increased drought may limit ability to establish target habitats as desired vegetation may not survive extended dry periods. Trees planted may also die as a result of drought.	Habitat restoration / enhancement areas and any areas of replanting will be monitored to determine success in establishing target habitats / vegetation. Where required, remedial actions will be implemented including watering or replacement of dead specimens.	Possible	Medium	Moderate	No	None
Increase in storm intensity	Unlikely	Built terrestrial assets, staff facilities and access	Damage to utilities and roofs due to high winds or intense rainfall Damage to drainage systems, gutters and downpipes due to flooding from intense rainfall Flooding from drainage systems during intense or prolonged	• Initial capture of surface water run-off will be provided by appropriate sustainable drainage system (SuDS) methods. A range of different potential SuDS solutions are considered further within Appendix 13B (EIA Report Volume 4).	Unlikely	Very High	Minor	No	None

Climate Hazard Type	Projection Likelihood	Sensitive Receptor	Description of Potential Impact	Embedded Design Measures	Likelihood of an Impact Occurring	Consequence of Impact Occurring	Climate Change Risk Level	Significant?	Additional Mitigation
			rainfall. Land loss, destabilisation and flooding from erosion and storm surge	<ul style="list-style-type: none"> The Flood Risk Assessment (FRA) (Appendix 13A EIA Report Volume 4) will inform the any adaptation measures that need to be incorporated into the final design and operations management. 					
Sea level rise	Very Likely	Built terrestrial assets, staff facilities and access routes to sites	Surface water flooding and standing waters Deterioration of structures or foundations due to increase in soil moisture levels Damage to building surfaces/ exposed utilities from increased drying/wetting and increase frost penetration Damage to infrastructure through storm surge and river flooding Deterioration of structures or foundations due to increase in soil moisture levels Damage to building surfaces/ exposed utilities from increased	<ul style="list-style-type: none"> Initial capture of surface water run-off will be provided by appropriate sustainable drainage system (SuDS) methods. A range of different potential SuDS solutions are considered further within Appendix 13B (EIA Report Volume 4). Flood Resistance and Resilience Measures to be implemented, including i) critical equipment assets to be raised above estimated peak flood level (e.g. electrical equipment, transformers, main boiler feed pumps, condensate extraction pumps, primary air fan and induced draught fan); ii) Flood Emergency Response plan to be developed in consultation with SEPA; iii) make use of SEPA flood warnings and alerts; iv) 	Unlikely	Low	Minor	No	None

Climate Hazard Type	Projection Likelihood	Sensitive Receptor	Description of Potential Impact	Embedded Design Measures	Likelihood of an Impact Occurring	Consequence of Impact Occurring	Climate Change Risk Level	Significant?	Additional Mitigation
			drying/wetting and increase frost penetration	define emergency access and egress route; and v) ensure maintenance of the drainage system will be incorporated in general site management and remains the responsibility of the operator.					

18.6.3. DECOMMISSIONING

GHG Impact Assessment

- 18.6.3.1. To assess the magnitude of the climate change impacts through GHG emissions associated with decommissioning of the Proposed Development, the GHG emissions that would be associated with the Proposed Development decommissioning activities could include those associated with:
- Demolition and excavation of all buildings and infrastructure, as required;
 - Disposal and treatment of all wastes; and
 - Return of the Site to an industrial brownfield use under hardstanding (i.e., no change in land use).
- 18.6.3.2. At this stage of the design, details regarding these activities have not been developed, however they are assumed to be commensurate with emissions generated during the construction stage (e.g., of the approximate magnitude of 184,184 tCO₂e). As these activities would not happen if this Proposed Development did not take place, all these emissions are considered additional to the baseline scenario.

Significance of GHG Emissions

- 18.6.3.3. As these decommissioning emissions would happen after net zero targets for both Scotland and the UK, the impact of any emissions would be classed as **Moderate Adverse** and **Significant**. Along with all residual emissions taking place beyond Scotland's net zero date of 2045, they would require to be balanced by removals elsewhere.

CCR Assessment

- 18.6.3.4. Future climate change projections have been reviewed and the sensitivity of assets of during the decommissioning of the Proposed Development examined. Assets of the Proposed Development are assessed in Table 18-17 and are based upon climate change hazards scoped in (see **Table 18-10**).
- 18.6.3.5. No significant climate change risks during decommissioning phase of the Proposed Development have been identified.

Table 18-27: Potential decommissioning phase CCRs

Climate Hazard Type	Projection Likelihood	Sensitive Receptor	Description of Potential Impact	Embedded Design Measures	Likelihood of an Impact Occurring	Consequence of Impact Occurring	Climate Change Risk Level	Significant?	Additional Mitigation Measures
Increase to heat waves	Possible	Staff, visitors on-site	Increased heat stress/ heat exhaustion for workers.	Prevention measures covered in the CEMP and health and safety plans e.g., temporary buildings such as site offices will be designed with measures to control summertime overheating.	Unlikely	Medium	Minor	No	None
Increase droughts	Possible	All receptors	None considered	None considered	Very Unlikely	Very Low	Negligible	No	None
Increase in storm intensity	Unlikely	Built assets, materials, staff facilities and access routes to sites	Damage to structures/materials/equipment and resulting in delays to programme and associated costs and/or unacceptable safety risks.	A high-level risk assessment of severe weather impacts on the process will be produced by the main contractor to inform mitigations. The Contractor will monitor weather forecasts and plan works accordingly, protecting workers and resources from any extreme weather conditions such as high	Unlikely	Low	Minor	No	None

Climate Hazard Type	Projection Likelihood	Sensitive Receptor	Description of Potential Impact	Embedded Design Measures	Likelihood of an Impact Occurring	Consequence of Impact Occurring	Climate Change Risk Level	Significant?	Additional Mitigation Measures
				temperatures. Any receptors, decommissioning-related operations and activities potentially sensitive to severe weather events should be considered in the assessment. Climate change projections should be considered in the risk assessments"					
Sea level rise	Very Likely	Built assets, materials, staff facilities and access routes to sites	Viability of and access to sites (such as heavy rain resulting in surface water flooding of local roads, sources of power supply or inundation of sites).	The contractors will use a short to medium range weather forecasting service from the Met Office, or other approved meteorological data and weather forecast provider, to inform short to medium term programme management, environmental control and impact mitigation measures. The contractors will register with the SEPA flood warning service in areas of flood risk.	Unlikely	Low	Minor	No	None

18.7. MITIGATION, MONITORING AND ENHANCEMENT MEASURES

18.7.1. OVERVIEW

- 18.7.1.1. The management of impacts and the application of mitigation/ adaption measures during construction will be secured through the CEMP. The use of the carbon capture plant will control up to 95% of GHG emissions during plant operation. The Proposed Development will result in significantly decreased emissions relative to the existing installation, reducing the carbon intensity of dispatchable power generation to help the transition to net zero emissions.
- 18.7.1.2. As no significant CCR risks have been identified, no further mitigation or enhancement measures have been proposed. No additional monitoring is recommended, other than that detailed within the CEMP during construction, and that which will be required under the PPC Permit during the operational stage of the Proposed Development.

18.8. CUMULATIVE EFFECTS

18.8.1. CUMULATIVE EFFECTS

- 18.8.1.1. Climate change is the result of cumulative impacts as it is the result of innumerable minor activities, a single activity may itself result in a minor or insignificant impact, but when combined with many other activities, the cumulative impact could be significant. The nature of greenhouse gases is such that their impact on receptors (the global climate) is not affected by the location of their source. The GHG emissions assessment presented by its nature is a cumulative assessment and considers whether the Proposed Development would contribute significantly to emissions on a national level.
- 18.8.1.2. The global atmosphere is the receptor for climate change impacts and has the ability for holding GHG emissions. Nevertheless, as stated by IEMA (2022), all GHG emissions are considered significant and therefore would contribute to climate change. While the impact of any individual proposed development may be limited, it is the cumulative impact of many proposed developments over time that could have a significant impact on climate change.
- 18.8.1.3. As such it is generally not possible to define a study area for the assessment of cumulative effects of GHG emissions nor to undertake a cumulative effects assessment, as the identified receptor is the global climate and effects are therefore not geographically constrained. However, due to the Proposed Development occupying the same site location as an existing power plant (Peterhead 1) and the potential for an inter-relationship in meeting grid generation needs with Peterhead 1, their cumulative emissions (Scope 1 and Scope 3 WTT) from the commencement of construction of Peterhead Low Carbon Power Station are presented in Plate 18-3. The combined operation of the existing Peterhead 1 and the proposed Peterhead LCPS shown here has been described as the Future Modified Baseline in other chapters of this EIAR and defined in Chapter 2 as the worst case. We have assumed as a worst case that the existing power station operates all three units (up to 1,180 MW) with an estimated annual load factor of 20%.
- 18.8.1.4. In this scenario, the existing Peterhead 1 facility is expected to provide a supporting role in conjunction with Peterhead LCPS up to 2040 in the event the Peterhead LCPS is

commissioned. During an estimated 10-year period (2030-2039) emissions will be produced by both the Peterhead 1 and Peterhead LCPS facilities, after which time operations and emissions will cease for Peterhead 1 as it is decommissioned.

- 18.8.1.5. The cumulative effects of the existing Peterhead 1 power station together with the Proposed Development does not materially impact the outcome or significance of the operational GHG assessment.

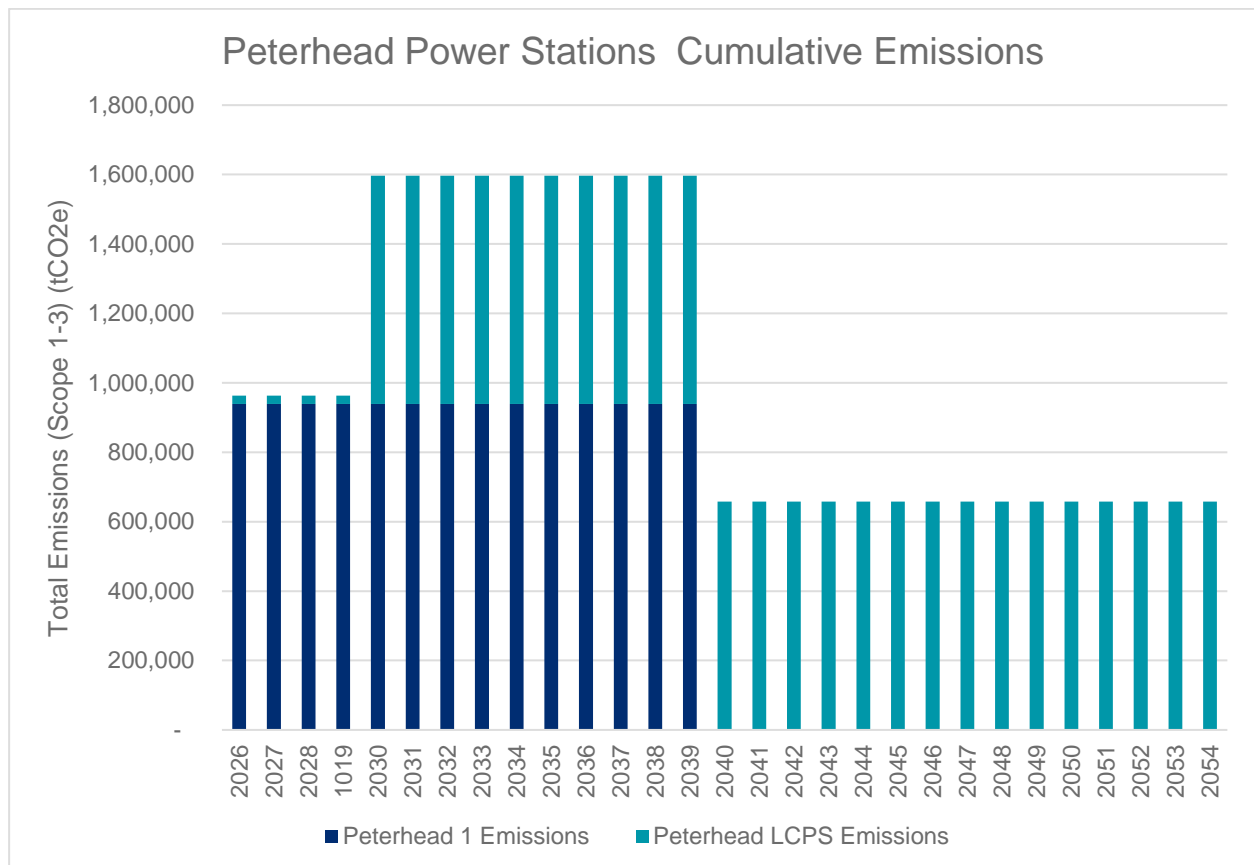


Plate 18-3: Cumulative Operational Emissions of Peterhead 1 & Peterhead Low Carbon Power Station

- 18.8.1.6. Cumulative effects are not relevant to the CCR assessment, as it considers the impact of climate change on the Proposed Development itself.

18.9. LIMITATIONS OR DIFFICULTIES

18.9.1. GHG IMPACT ASSESSMENT

- 18.9.1.1. The most recent UK government projections of future grid carbon intensity were published in November 2023. All such projections are subject to considerable uncertainty.
- 18.9.1.2. There is limited information on CO₂ emissions during start-up of the CCP and this will not be quantifiable until after the detailed design stage and verified through plant commissioning. A conservative assessment has been undertaken whereby it is assumed that the plant will operate for 8,000 hours per year at 90% capture efficiency. Carbon capture rates of up to

95% are likely to be achieved and the plant is expected to run in dispatchable mode to support renewables generation, rather than as a baseload plant. The direct emissions presented in the GHG assessment, therefore, are based on very conservative assumptions and amount to a worst-case scenario.

- 18.9.1.3. The largest single source of GHG emissions results from the upstream natural gas supply chain, including energy consumed in production, venting, flaring and fugitive emissions. Estimated emissions reported are based on the energy content of fuel gas consumed, together with the most recent well to tank (WTT) emissions factor for natural gas published by the UK Government. This factor is subject to change over time, depending both on the source of natural gas into the UK grid, and on the carbon intensity of different gas sources. Given the uncertainty involved in attempting to predict future WTT emissions intensities, the most up to date factor has been applied over the entire design life of the Proposed Development.
- 18.9.1.4. The unplanned unavailability of the Transport and Storage (T&S) system is another source of emissions that is subject to uncertainty. An assumption of 3% unplanned unavailability (as opposed to a planned outage for maintenance purposes) has been applied based on similar developments elsewhere in the UK. This is considered to be a conservative estimate.

18.9.2. CCR ASSESSMENT

- 18.9.2.1. The CCR assessment of construction impacts assumes that the measures outlined within the Development Design and Impact Avoidance section of this chapter would be incorporated into the design of the Proposed Development. These measures are considered standard best practice that are usually applied across construction sites in the UK. No additional mitigation has been identified as necessary for any stage of the Proposed Development.
- 18.9.2.2. While modelled climate change projections represent anticipated average weather conditions, they do not capture the full range of possible future severe weather events (i.e. droughts, heatwaves and prolonged heavy rainfall). The CCR assessment is limited to the availability of data and information at the date this assessment was prepared.

18.10. SUMMARY OF LIKELY SIGNIFICANT RESIDUAL EFFECTS

18.10.1. SUMMARY

- 18.10.1.1. Following mitigation, the residual GHG impact remains Moderate Adverse and Significant, on the basis that emissions are likely to account for a growing proportion of Scottish and UK carbon budgets. The Proposed Development remains entirely consistent with all relevant policy and good design practice, and it will demonstrably reduce overall emissions as it can be expected to displace generation from comparable unabated gas-fired capacity elsewhere.
- 18.10.1.2. No significant residual CCR impacts have been identified.

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SSE THERMAL PETERHEAD LOW CARBON CCGT POWER STATION PROJECT

Environmental Impact Assessment Report
Volume 4: Appendix 18A - Sustainability
Review
16 May 2025



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1. Introduction

1.1. OVERVIEW

The scope of the sustainability review set out in this appendix is to assist in understanding, assessing and prioritising any actions that may be taken to improve the sustainability of the Proposed Development during the operational phase, beyond the application of best available techniques (BAT) that will be applied through the Pollution Prevention Control (PPC) Permit. The review could assist in defining actions that can be incorporated into the overall integrated environmental, health and safety and quality management system by the Applicant.

Construction and decommissioning activities are not included in the scope of the sustainability review given the broad application of best practice guidance during these stages, based on the Framework Construction Environmental Management Plan (CEMP) and the final Decommissioning Environmental Management Plan (DEMP) that is proposed to be secured by requirement of the Section 36 Application. The sustainability review is qualitative, but where relevant, uses data provided within quantitative assessment to provide a basis for targeting any actions in the future.

2. Sustainability Review

2.1. OVERVIEW

The United Nations Sustainable Development Goals (UN SDG) provide the basis for this sustainability review. The UN SDG are widely recognised by stakeholders, especially in local, regional and national government, where they are mandated. The UN SDG apply to all countries globally and are relevant for all economic sectors.

As the scope of this sustainability review is limited to the data on the Proposed Development presented in the Section 36 Application documents, including the Environmental Impact Assessment Report (EIA Report), a number of the UN SDG are not considered relevant/ in scope. All UN SDG are included, but those aspects which are out of scope are indicated in Table 1. For those aspects in scope, commentary and signposting is provided to where the relevant assessment is provided in this EIA Report.

Table 1 UN Sustainability Goals

UN Sustainability Goal	Does the Proposed Development have the potential to influence this goal within the scope of its planned operations? N (No influence) L (Limited influence) S (Potential to influence)	Commentary and Signposting
Goal 1. End poverty in all its forms everywhere	L	Chapter 17: Socio-economics, Recreation and Tourism (EIA Report Volume 2) describes the creation of direct long term employment opportunities and indirect employment that will contribute towards this goal. Although the short-term impacts during construction are anticipated to be beneficial and significant and the long term impacts of this are beneficial and not significant.
Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture	N/A (limited construction phase influence)	Chapter 3: The Site and Surrounding Area and Chapter 5: Construction Programme and Management (EIA Report Volume 2) highlight limited agricultural land is required for the Proposed Development. The small field (2.7ha) in the northern boundary of the Proposed Development Site was tenanted arable land under the ownership of the Applicant and will be used for temporary construction laydown. Use of this land will no have impact on food production/security in the local area. The control measures within the Soil Resources Plan of the final CEMP, secured under a Section 36 Application requirement, will control the handling of agricultural land.
Goal 3. Ensure healthy lives and promote well-being for all at all ages	L	The Proposed Development during its operational phase is not anticipated to result in significant adverse residual effect for human health, as assessed in the following chapters of the EIA Report (Volume 2): <ul style="list-style-type: none"> • Chapter 8 Air Quality (from dust and nuisance) • Chapter 9 Noise and Vibration (from nuisance)

UN Sustainability Goal	Does the Proposed Development have the potential to influence this goal within the scope of its planned operations? N (No influence) L (Limited influence) S (Potential to influence)	Commentary and Signposting
		<ul style="list-style-type: none"> • Chapter 10 Traffic and Transport (from user safety, fear and intimidation) • Chapter 12 Water Environment (from pollution incidents) • Chapter 13 Flood Risk (third party impacts and on workers) • Chapter 14 Geology, Hydrology and Land Contamination (from contamination and pollution) <p>The exception to this is in relation to visual amenity effects which are considered moderate adverse (significant) during the operational stage at two local viewpoints, for users of the coastal path between Boddam and Invernettie and for a small number of nearby residential receptors (South Base Road, Newmill of Sandford, Sandford Bungalow and Milbank Farm) and cannot be mitigated by the addition of landscape features.</p> <p>The Applicant is investing in a Landscaping and Biodiversity Management and Enhancement Plan that will provide healthy spaces during the operational phase within the Proposed Development Site.</p>
Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	L	<p>Chapter 17: Socio-economics, Recreation and Tourism (EIA Report Volume 2) confirms that the Applicant is seeking to give back to the local community through charitable donations scheme and wider support initiatives to local schools and businesses. The Applicant is committed to maximising the use of local companies to support the development of the Project, as far as reasonably practicable. As we progress proposals, we will engage with the local supply chain through activities such as ‘Meet the Buyer’ events.</p>

UN Sustainability Goal	Does the Proposed Development have the potential to influence this goal within the scope of its planned operations? N (No influence) L (Limited influence) S (Potential to influence)	Commentary and Signposting
Goal 5. Achieve gender equality and empower all women and girls	N/A	Equality aspects are not within the agreed scope of the EIA Report or Section 36 Application and are therefore out of scope. These aspects are covered by the Applicant's workplace policies.
Goal 6. Ensure availability and sustainable management of water and sanitation for all	L	The effects on the water environment have been assessed in Chapter 12: Water Environment and Chapter 13: Flood Risk (EIA Report Volume 2) and the accompanying appendices and are considered not significant, with the application of embedded and additional mitigation. Controls within the PPC Permit are considered adequate to prevent water pollution incidents and provide the necessary action plans to take rapid remedial action if incidents occur.
Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all	S	As described in Chapter 4: The Proposed Development (EIA Report Volume 2) the aim of the Proposed Development is to assist in the UK Government's target to achieve Net Zero carbon emissions by 2050 and the Scottish Governments commitment to Net Zero by 2045. Controls will be provided within the PPC Permit which allow measurement of progress against the relevant targets. The greenhouse gas emissions are assessed within Chapter 18: Climate Change and Sustainability (EIA Report Volume 2) as a contribution to the overall global climate is considered Significant on the basis that emissions are likely to account for a growing proportion of Scottish and UK carbon budgets. However, the Proposed Development remains entirely consistent with all relevant policy and good design practice, and it will demonstrably reduce overall emissions against the "without-project" baseline as it can be expected to displace generation from comparable unabated gas-fired capacity elsewhere in the UK grid.

UN Sustainability Goal	Does the Proposed Development have the potential to influence this goal within the scope of its planned operations? N (No influence) L (Limited influence) S (Potential to influence)	Commentary and Signposting
Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	N/A	<p>The investment decisions to date, and that will be made in the future in relation to the Proposed Development, are based upon the Applicant's commitment to long-term economic, social and environmental sustainability. The Planning Statement provides further explanation. Effects are not assessed in the EIA Report.</p> <p>Chapter 17: Socioeconomics, Tourism and Recreation (EIA Report Volume 2) highlights the Proposed Development has the potential to have a beneficial impact for local employment depending on how many jobs are created.</p>
Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation	N/A	<p>As explained in Chapter 4: The Proposed Development (EIA Report Volume 2), the technology proposed is 'First of a Kind' in Scotland and therefore fosters innovation, although this aspect is not assessed in the EIA Report. The approach taken to the design of the Proposed Development is further explained in the Design and Access Statement.</p>
Goal 10. Reduce inequality within and among countries	N/A	<p>Equality aspects are not within the agreed scope of the EIA Report although it is recognised that the Proposed Development (as a part of the Acorn carbon capture and storage (CCS) Project) will provide a positive contribution to the regional economy within the Region.</p>
Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable	S	<p>Chapter 19: Major Accidents and Disasters (EIA Report Volume 2) assesses the potential for a wide range of major accidents and disasters, (e.g. fires, explosions and the release of carbon dioxide (CO₂) gas) with the potential to impact people both on and off-site, as well as assets and property and the surrounding environment. Such incidents have an extremely low probability of occurrence but would have the potential for significant effects on people and the environment</p>

UN Sustainability Goal	Does the Proposed Development have the potential to influence this goal within the scope of its planned operations? N (No influence) L (Limited influence) S (Potential to influence)	Commentary and Signposting
		<p>without mitigation. The embedded mitigation and control of operations through relevant regulatory regimes is proposed to be applied to reduce risks to As Low As Reasonably Practicable (ALARP) such that residual effects would be not significant.</p> <p>Appendix 13A: Flood Risk Assessment (EIA Report Volume 4) describes the flood resilience measures proposed for the Proposed Development Site. Operation of the Proposed Development will not increase flood risk elsewhere. Effects related to flood risk are assessed in Chapter 13: Flood Risk (EIA Report) as not significant. Outline Landscape and Biodiversity Strategy (Appendix 11H EIA Report Volume 4) describes the Applicant's proposals to provide an overall net gain for biodiversity that will provide healthy spaces within the Proposed Development Site, and which includes proposals formative woodland planting, native scrub planting, meadow sowing, hedgerow enhancement and pond/scrape creation. The beneficial effect of this is quantified but not assessed in Chapter 11: Biodiversity and Nature Conservation (EIA Report Volume 2).</p>
Goal 12. Ensure sustainable consumption and production patterns	N/A	Consumption of raw materials will be controlled by the PPC Permit and is therefore not within the scope of this review.
Goal 13. Take urgent action to combat climate change and its impacts	S	As described in Chapter 4: The Proposed Development (EIA Report Volume 2) the aim of the Proposed Development is to assist in the UK Government's target to achieve Net Zero carbon emissions by 2050 and the Scottish Governments targets by 2045 in order to combat climate change and its impacts by capturing at least 90% of the carbon dioxide that would otherwise be emitted from the generating station. Residual greenhouse gas emissions are assessed as

UN Sustainability Goal	Does the Proposed Development have the potential to influence this goal within the scope of its planned operations? N (No influence) L (Limited influence) S (Potential to influence)	Commentary and Signposting
		significant. Chapter 18: Climate Change and Sustainability (EIA Report Volume 2) describes the measures within the Proposed Development that are proposed to strengthen resilience and adaptation to several climate-related hazards. In combination climate impacts (ICCI) are assessed as significant under the worst-case assumption of the existing Peterhead Power Station remaining in operation to 2040. Climate change resilience (CCR) impacts and effects are assessed as not significant.
Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development	N/A	Coastal process has been scoped out of the EIA Report as no works are proposed to the coastline boundary or within the marine environment. The effects on the marine environment, including in relation to biodiversity (species and habitats) has been considered in Chapter 11: Biodiversity and Nature Conservation (EIA Report Volume 2). No significant effects are anticipated on species or habitats within the marine environment because of the Proposed Development.
Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	L	Proposals to achieve no net loss of biodiversity and a quantifiable gain for biodiversity as a result of the Proposed Development are outlined in Outline Landscape and Biodiversity Strategy (Appendix 11H EIA Report Volume 4) including: <ul style="list-style-type: none"> Planting of native woodland blocks. Native scrub planting and lowland meadow sowing on slopes around the CCGT area and meadow sowing around the proposed ponds/scrapes for the benefits of pollinators, invertebrates and other wildlife.

UN Sustainability Goal	Does the Proposed Development have the potential to influence this goal within the scope of its planned operations? N (No influence) L (Limited influence) S (Potential to influence)	Commentary and Signposting
		<ul style="list-style-type: none"> Pond/scrape creation in the northern most-laydown area to benefit wading bird species, as well as invertebrate and botanical diversity, and likely small breeding birds as well. Diversification of the woody composition of the hedges either side of the Sandford Lodge track which are currently dominated by hawthorn.
Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	N/A	It is considered that this goal is covered by the Applicant's wider corporate policies. Effects are not assessed in this EIA Report.
Goal 17. Strengthen the means of implementation and revitalise the global partnership for sustainable development	N/A	It is considered that this goal is covered to a limited extent by the Applicant's presence within the Scottish Industrial Cluster. Effects are not assessed in this EIA Report.

APPENDIX C: UPDATED EIA REPORT CHAPTER 21 (2025)

SSE THERMAL PETERHEAD LOW CARBON CCGT POWER STATION PROJECT

Environmental Impact Assessment Report
Volume 2: Chapter 21 - Summary of Likely
Significant Effects
16 May 2025



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21. Summary of Likely Significant Residual Effects

21.1. INTRODUCTION

21.1.1 INTRODUCTION

- 21.1.1.1. This chapter of the Environmental Impact Assessment Report (EIA Report) summaries the likely cumulative effects with other schemes in the surrounding area and assessed the potential for combined effects on any one receptor because of the Proposed Development.
- 21.1.1.2. **Chapters 8 to 19** of this EIA Report (Volume 2) have considered the potential environmental impacts and effects of the Proposed Development. This chapter summarises those adverse and beneficial environmental effects that are considered to be significant (i.e. moderate and major effects).
- 21.1.1.3. Mitigation measures are either embedded within the design, or construction. Details of these are provided within the technical **Chapters 8 to 19** (EIA Report Volume 2). Where technical topics identify construction mitigation measures, these are highlighted within **Appendix 5A Framework CEMP** (EIA Report Volume 4). A Schedule of Operational Commitments is provided in **Appendix 21A** (EIA Report Volume 4) which highlights mitigation measures to be put in place during the operation of the Proposed Development. Once these measures have been put in place, the residual effect remains, which is reported within Table 20.1 below.

21.2. SUMMARY OF SIGNIFICANT ENVIRONMENTAL EFFECTS AND PROPOSED MITIGATION MEASURES

21.2.1 INTRODUCTION

21.2.1.1. Table 20.1 summarises the significant environmental effects of the Proposed Development that have been identified, following implementation of the embedded mitigation or impact avoidance measures included in the design of the Proposed Development (as detailed in **Chapters 8 to 19** EIA Report Volume 2), where relevant).

21.2.2 APPROACH

- 21.2.2.1. For each topic, the reasonable worst-case scenario is assessed, including the construction programme scenario and design parameters. Further details on the reasonable worst case (or 'Maximum Design Parameters') are set out in **Chapter 4: The Proposed Development** (EIA Report Volume 2). The specific worst-case for each assessment is described in **Chapters 8 to 19** (EIA Report Volume 2) as appropriate. Effects have been assessed for the construction, operation (including maintenance) and decommissioning scenarios.
- 21.2.2.2. As outlined in **Chapter 2: Assessment Methodology** (EIA Report Volume 2), for the purposes of this EIA an effect is considered to be 'significant' if it is assessed to be moderate (adverse or beneficial) or major (adverse or beneficial). Minor or negligible effects are only referenced in this chapter where a 'significant' (moderate or major) effect has been reduced to a 'no significant' effect following mitigation.
- 21.2.2.3. To provide further clarification on the nature of the effects, each has been identified for the purposes of this summary as:
- Short term (St) – effects occurring only over a short period of time, e.g. an effect that only lasts for the duration of the construction period, or one that lasts for only part of the operational phase;
 - Medium term (Mt) – effects occurring for the duration of the Proposed Development's operation, but which cease when operations cease; or
 - Long term (Lt) – effects occurring beyond the operation of the Proposed Development, for example the permanent loss of habitat associated with the Proposed Development.
 - Temporary (T) – effects that are not permanent because the effect would no longer occur if the impact was removed within the relevant timescale (for example the visual amenity impact of construction structures would be described as St, T as the impact does not continue when the structures are removed);
 - Permanent (P) – effects that remain and cannot be readily reversed within the relevant timescale (for example an environmental feature that is lost and cannot be replaced until after decommissioning would be Mt, P. In the event that it could not be replaced at all, this would be Lt, P); and
 - Direct (D) – effects that result from a direct impact, for example, the loss of ecological habitat; or
 - Indirect (In) – also known as secondary effects, effects that result indirectly, for example, increased traffic could indirectly impact on air quality.

Table 21-1: Summary of Likely Significant Residual Effects

Development stage	Environmental Effect (following development design and impact avoidance measures)	Classification of effect prior to mitigation	Mitigation/ enhancement (if identified)	Classification of residual effect after mitigation	Nature of effect(s) (Lt/ Mt/ St and P/ T and D/ In)
Chapter 8: Air Quality					
Construction	No significant effects are predicted to occur.				
Operation	No significant effects are predicted to occur.				
Decommissioning	No significant effects are predicted to occur.				
Chapter 9: Noise and Vibration					
Construction and Decommissioning	No significant vibration effects or noise effects due to construction traffic are predicted to occur at all receptors.				
Construction and Decommissioning	No significant daytime noise effects on residential NSRs R1-R6 and R8 are predicted to occur.				
Construction and Decommissioning	Daytime working in the vicinity of NSR R7 and R9 predicted to result in adverse effects in the short-term during construction. This effect is primarily due to the short distance between the	Moderate/ Major adverse (significant)	Further detailed assessment and CEMP once contractor appointed	Up to Minor adverse (not significant)	St, T, D

Development stage	Environmental Effect (following development design and impact avoidance measures)	Classification of effect prior to mitigation	Mitigation/ enhancement (if identified)	Classification of residual effect after mitigation	Nature of effect(s) (Lt/ Mt/ St and P/ T and D/ In)
	closest of the properties in this NSR group to the noise source.				
Construction and Decommissioning	Evening/nighttime noise effects on all residential NSRs	Moderate/major adverse (significant)	Further detailed assessment and CEMP once contractor appointed	Minor adverse (not significant) on the basis that mitigation is employed such that the BS 5228 ABC noise limits are met and the Chapter 9 Section 9.7 (EIA Report Volume 2) mitigation guidance is followed.	St, T, D
Operation	No significant effects are predicted to occur.				
Chapter 10: Traffic and Transport					
Construction	No significant effects are predicted to occur.				
Operation	No significant effects are predicted to occur.				
Decommissioning	No significant effects are predicted to occur.				
Chapter 11: Biodiversity and Nature Conservation					

Development stage	Environmental Effect (following development design and impact avoidance measures)	Classification of effect prior to mitigation	Mitigation/ enhancement (if identified)	Classification of residual effect after mitigation	Nature of effect(s) (Lt/ Mt/ St and P/ T and D/ In)
Construction	No significant effects are predicted to occur to ecological features.				
Construction/ Decommissioning	Disturbance to barn owls nesting during construction/decommissioning should the species breed within the outbuildings at Sandford Lodge	Temporary moderate adverse (significant)	Provision of two nest boxes prior to commencement of construction	Negligible (not significant)	St, T, In
Operation	No significant direct effects on habitats and species are predicted to occur.				
Operation	Also, refer to Chapter 8: Air Quality (EIA Report Volume 2) in relation to effects of ammonia, nutrient nitrogen deposition, and acid deposition at habitats sites.				
Decommissioning	No significant effects are predicted to occur.				
Chapter 12: Water Environment					
Construction	No significant effects are predicted to occur.				
Operation	No significant effects are predicted to occur.				
Decommissioning	No significant effects are predicted to occur.				
Chapter 13: Flood Risk					

Development stage	Environmental Effect (following development design and impact avoidance measures)	Classification of effect prior to mitigation	Mitigation/ enhancement (if identified)	Classification of residual effect after mitigation	Nature of effect(s) (Lt/ Mt/ St and P/ T and D/ In)
Construction	No significant effects are predicted to occur.				
Operation	No significant effects are predicted to occur because of flooding of local roads and residential properties because of the Proposed Development.				
Operation	Existing Power Station and Proposed Development - High	Major adverse (significant)	Removal of Den of Boddam culvert on Millbank Garage property Raising of Proposed Development platform	Minor adverse (not significant)	Lt, P, D
Decommissioning	No significant effects are predicted to occur.				

Chapter 14: Ground Conditions

Construction	No significant effects are predicted to occur.				
Operation	No significant effects are predicted to occur.				
Decommissioning	No significant effects are predicted to occur.				

Chapter 15: Landscape and Visual Amenity

Development stage	Environmental Effect (following development design and impact avoidance measures)	Classification of effect prior to mitigation	Mitigation/ enhancement (if identified)	Classification of residual effect after mitigation	Nature of effect(s) (Lt/ Mt/ St and P/ T and D/ In)
Construction, Operation and Decommissioning	No significant effects on landscape character or the wider Special Landscape Area are predicted to occur				
Construction, Operation and Decommissioning	Effect on the site landscape elements	Moderate adverse (significant)	n/a	Moderate adverse (significant)	Construction and decommissioning St, T, D Operation Lt, P, D
Construction, Operation and Decommissioning	No significant effects at Viewpoints 1, 2, 3, 5, 7, 9, 10 and 11, and for residential receptors at Denend Croft, Gateside and Hjaltland are predicted to occur.				
Construction, Operation and Decommissioning	Adverse visual amenity effects for residents at Viewpoint 6 (receptors in Boddam (Harbour Street), and receptors on the northern half of the core path)	Minor - residents Moderate adverse - core path users (significant)	A Landscape and Biodiversity Management and Enhancement Plan (LBMEP) accompanies the Section 36 application which presents proposals for planting, although such planting would not reduce the significance of visual effects at these locations.	Minor - residents Moderate adverse - core path users (significant)	As above.

Development stage	Environmental Effect (following development design and impact avoidance measures)	Classification of effect prior to mitigation	Mitigation/ enhancement (if identified)	Classification of residual effect after mitigation	Nature of effect(s) (Lt/ Mt/ St and P/ T and D/ In)
Construction, Operation and Decommissioning	Adverse visual amenity effects for residents at Viewpoint 4, Viewpoint 8; Residential receptors at: Sandford Villa, Newmill of Sandford; and Sandford Bungalow.	Moderate adverse (significant)	As above.	Moderate adverse (significant)	As above.
Construction and Decommissioning	Adverse visual amenity effects at Residential receptors at Bevailey and Millbank.	Moderate adverse (significant)	As above.	Moderate adverse (not significant)	Construction and decommissioning St, T, D
Chapter 16: Cultural Heritage					
Construction	Category B listed Sandford Lodge	Moderate adverse (significant)	Landscaping and bund formation to screen Sandford Lodge	Moderate adverse (significant)	Lt/ P/ In
Construction	Previously unrecorded archaeological sites	Moderate adverse (significant)	Consultation with the Aberdeenshire County Archaeologist confirmed no archaeological monitoring works are required due to the degree of previous ground disturbance and the consequently low potential for	Moderate adverse (significant)	Lt/ P/ D

Development stage	Environmental Effect (following development design and impact avoidance measures)	Classification of effect prior to mitigation	Mitigation/ enhancement (if identified)	Classification of residual effect after mitigation	Nature of effect(s) (Lt/ Mt/ St and P/ T and D/ In)
			unrecorded remains to be present.		
Operation	No significant effects are predicted to occur.				
Decommissioning	No significant effects are predicted to occur.				
Chapter 17: Socio-economics, Tourism and Recreation					
Construction	The effect of direct, indirect and induced employment created by the construction phase of the Proposed Development on the Wider Impact Area’s economy.	Major beneficial (significant)	As no significant adverse effects have been identified, no mitigation is required.	Major beneficial (significant)	St/T/D
Construction	No significant adverse effects are predicted to occur in relation to tourism and recreation.				
Operation	No significant effects are predicted to occur.				
Decommissioning	No significant effects are predicted to occur.				
Chapter 18: Climate Change and Sustainability					
Construction	No significant effects are predicted to occur.				

Development stage	Environmental Effect (following development design and impact avoidance measures)	Classification of effect prior to mitigation	Mitigation/ enhancement (if identified)	Classification of residual effect after mitigation	Nature of effect(s) (Lt/ Mt/ St and P/ T and D/ In)
Operation	The effect of operating the Proposed Development on the global climate when considered in relation to the Scottish and UK carbon budgets.	Moderate adverse (significant)	It is important to recognise that the Proposed Development is fully aligned with policy goals for projects of this type and is set to replace the existing Peterhead Power Station by 2040 and capturing up to 95% of GHG emissions.	Moderate adverse (significant)	Lt/ P/ D
Decommissioning	Decommissioning of the proposed development would be additional impacts to global climate and to the baseline scenario all taking place beyond the Scotland net zero date of 2045.	Moderate Adverse (significant)	Limited mitigation to be balanced with removals elsewhere	Moderate Adverse (significant)	St/ P/ D

Chapter 19: Major Accidents and Disasters

Construction	No significant effects are predicted to occur.
Operation	No significant effects are predicted to occur.
Decommissioning	No significant effects are predicted to occur.

Development stage	Environmental Effect (following development design and impact avoidance measures)	Classification of effect prior to mitigation	Mitigation/ enhancement (if identified)	Classification of residual effect after mitigation	Nature of effect(s) (Lt/ Mt/ St and P/ T and D/ In)
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Chapter 20: Cumulative and Combined Effects

Construction	No new combined or cumulative significant effects are predicted to occur.				
Operation	No new combined or cumulative significant effects are predicted to occur.				
Decommissioning	No new combined or cumulative significant effects are predicted to occur.				

Note: Lt = long term, Mt = medium term, St = short term, P = permanent, T = temporary, D = direct, and In = indirect.