10 February 2023

Your Reference
ECU00003433

Our Reference
Peterhead Low Carbon CCGT Power Station

[redacted]
Consents Manager
Energy Consents Unit
The Scottish Government
4th Floor
5 Atlantic Quay
150 Broomielaw
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By Email only

ECU Reference: ECU00003433

SSE Thermal Generation (Scotland) Limited

Peterhead Low Carbon CCGT Project, Land at and in the vicinity of the Peterhead Power Station Site, near Boddam, Peterhead, Aberdeenshire

Response to SEPA Comments 'Advice to the determining authority' dated 1st July 2022

Dear [redacted]

Following the response from the Scottish Environment Protection Agency (SEPA) dated 1st July 2022 to the application for Section 36 consent for the Peterhead Low Carbon CCGT Power Station Project (hereafter referred to as 'the Proposed Development'), SSE Thermal Generation (Scotland) Limited (hereafter referred to as 'the Applicant') have engaged with SEPA to discuss the holding objection and work towards addressing the comments on the Proposed Development.

Security of supply and commercial developments in the period between submitting the application for the Proposed Development and present mean it is now considered prudent to consider additional scenarios for the future of the existing Peterhead Power Station.

This has resulted in re-modelling future baseline scenarios to ensure the worst-case scenario is appropriately considered in the Environmental Impact Assessment (EIA). This potential change in operation of Peterhead Power Station, its relevant context and any potential implications for the material submitted in support of the application is further outlined below.

Enclosed includes:

- The Applicant's response to the comments raised by SEPA regarding the need for additional information to remove the holding objection, specifically relating to matters associated with the assessment of air quality and emissions and the management of firewater. This is submitted in addendum to this letter.
- The findings of an EIA screening assessment undertaken to consider a potential revised worst-case scenario as associated with revised assumptions regarding the ongoing operation of the existing Peterhead Power Station. This is enclosed with this letter.
- This letter also includes responses to comments raised by SEPA that were not specifically referred to as requiring a response or further information for the Energy Consents Unit to make an informed decision on the Proposed Development.

Revision of the Assumed Operational Regime of the existing Peterhead Power Station

In submitting the application, it was assumed for the purposes of modelling a 'worst-case scenario', that at the time the Proposed Development comes online, only one of the existing three units at Peterhead Power Station would be in operation; this was based on the Applicant's understanding of electricity demand. As a result of recent security of energy supply concerns that have been triggered by events that have taken place since the submission of the application, the Applicant has raised the possibility that there may be more existing units still in operation at that time. As agreed in discussions with SEPA, the Applicant has therefore reviewed and updated the air quality modelling and associated assessments for a revised worst-case scenario where the existing generating station runs concurrently with the Proposed Development in both abated and unabated mode. It is foreseeable that the Proposed Development could operate for periods in unabated mode, for example if the CO_2 Transport & Storage System was temporarily unavailable or during plant testing. Outside of these limited circumstances the anticipated commercial arrangements will create a sufficient incentive to ensure abated operation and it is expected that market design and support contracts for the Power Stations will set maximum emissions limits as we progress to Net Zero. The assessments, as reported in the technical response to SEPA and enclosed within this letter, reflect this revised potential worst-case scenario, and any potential environmental impacts associated with this scenario.
The Applicant has publicly stated that it does not envisage the existing Peterhead Power Station to continue operations into the 2030s, which is the case for most of the Applicant's existing thermal generation portfolio, as the company transitions to low carbon flexible thermal generation.[1] The short term future of the existing units at Peterhead will be influenced by a number of factors, including the date at which the new generating station comes online, delivery of new capacity across the system by that date, system needs, levels of electricity demand, policy, and market signals. On this basis, it is uncertain whether the three existing gas turbines will be required to operate alongside the Proposed Development for any period of time, however the consideration of this scenario is worthwhile given changing energy security circumstances since the application was submitted.

Implications for the existing Environmental Impact Assessment Report

To ensure that no matters relevant to the EIA Report (EIAR) require updating as a result of the 'revised worst-case scenario', an EIA screening activity has been undertaken to review the changes against the environmental topics considered in the EIAR. The change in worst-case scenario allows for the continued operation of all three existing gas turbines at the existing Peterhead Power Station. In undertaking the assessment no amendments to the existing or proposed physical infrastructure would be necessary to accommodate the scenario with the three existing gas turbines for the existing Peterhead Power Station operating concurrently with the Proposed Development in both abated and unabated mode.

The findings of this screening exercise are presented in **Table 1** enclosed within this response. Following this review, with the exception of revised air quality modelling results and climate change assessment, there are no requirements to amend the findings of the original EIAR. It is also noted that whilst the modelled outputs from the air quality and carbon assessments have been amended there are no proposed changes to the identification of, or mitigation for, potentially significant impacts as a result of the Proposed Development when assessed against the revised worst-case future baseline.

Where 'Not Applicable' (N/A) is denoted within **Table 1** (enclosed) this indicates that the potential effects from the revised future baseline of the continued operation of the three existing gas turbines at the existing Peterhead Power Station in combination with the Proposed Development will not result in a potentially significant effect to the environmental/social topics identified in the screening checklist. It is recognised that the Proposed Development as identified and assessed within the EIAR may have identified potential effects, including potentially significant effects, to the environmental/social topics

[1] For example, see FY23 Half Year Statement, p65: hy23-interim-statement-final.pdf

identified, however, this additional assessment only considers where a change in the findings of the initial assessment are required (and should therefore be read alongside the initial assessment).

Commitment to Net Zero & Climate Change Act

Appendix 2 of SEPA's response to the ECU discusses the Proposed Development and the consideration of Climate Change Duties. The Applicant welcomes SEPA's conclusion that *'Therefore, in principle, the proposed development complies with the principal strategic policy approach to securing a flexible and resilient energy system which predominantly relies on renewables but requires the immediacy of response from thermal electrical generation to address demand.'*

The Applicant agrees with this conclusion and emphasises its commitment to decarbonising this thermal electrical generation to achieve Net Zero and Decarbonisation targets. Indeed, the Proposed Development has been developed by the Applicant in response to the UK Government's Cluster Sequencing Process. A renewables-led transition to Net Zero requires flexible capacity to maintain security and stability of supply. The Planning Statement submitted with the application sets out an assessment of the Proposed Development against all relevant legislation and policy.

SSE has already reduced its company scope 1 emissions significantly, with a transition from high to lower carbon generation; as part of this, the Applicant closed coal generation units ahead of Government's target. SSE has set itself demanding science-based targets when it comes to carbon emissions, including the reduction of scope 1 carbon intensity by 80% by 2030, and to reduce absolute scope 1 and 2 Greenhouse Gas emissions by 72.5% by 2030; currently ~93% of SSE's scope 1 and 2 emissions come from thermal generation. These science-based targets are aligned with a 1.5°C pathway. Furthermore, SSE aims to achieve net zero across its scope 1 and 2 emissions by 2040.

In its Net Zero Transition Plan[2], SSE has set out its overall approach to reducing emissions, which includes advocacy for policy to deliver Net Zero in an orderly way whilst ensuring security of supply. SSE's own primary focus is on rapid and deep cuts to carbon emissions to achieve net zero across its scope 1 and 2 emissions by 2040 at the latest. SSE believes that negative emissions technologies may be required to neutralise its remaining residual emissions. While the neutralisation of residual emissions will, technically, be the last action SSE takes on its journey to net zero, it assumes it will be required to neutralise residual scopes 1 and 2 emissions by 2040 at the latest.

SSE has also publicly presented its Net Zero Acceleration Programme, that is a £12.5bn fully funded investment plan to 2026, to deliver on these science-based targets.

In recognition of the need to transition the current electricity system and meet the targets of net zero the Applicant has stated in the application material for the Proposed Development that it would not be developed without the carbon capture plant (CCP) as the Applicant is fully committed to building a generating station which has a clear route to decarbonisation (EIAR, Volume 2, Chapter 1 – Introduction, Section 1.3.2.2).

Although this letter includes analysis of a revised worst-case scenario, the approach and commitment by the Applicant to decarbonise existing and proposed power generation has not changed, nor has its science-based targets to achieve net zero. The additional information provided and amended modelling of operational scenarios of the existing Peterhead Power Station have been made to reflect potential future operational scenarios given current security of supply challenges and need to maintain security of supply. Regardless of this, the findings of this work and back-check of the material previously submitted to support the application have not identified any requirement to amend any of the original application material.

We trust that the above information is clear, however, should there be value in any further discussion on these matters we would welcome the opportunity to do so.

[2] nztp-report-oct22-final.pdf (sse.com)

Yours sincerely,

[redacted]

[redacted]
Associate Director, Environment & Sustainability
AECOM Limited
[redacted]

Enclosed:

- Table 1 - Screening assessment for additional or amended potentially significant environmental impacts
- Response to SEPA Advice to Determining Authority – Request for Additional Information

Table 1 Screening assessment for additional or amended potentially significant environmental impacts

Question	(Part 2a) (Part 2a) / (Part 2b) – Answer to the question and explanation of reasons on additional Impacts. (Yes/No or Not Known (?) or N/A) Briefly explain answer to Part 2a and, if applicable and/or known, include name of feature and proximity to site. (If answer in Part 2a / 2b is 'No', the answer to Part 3a / 3b is 'N/A')	(Part 3a) / (Part 3b) (only if Yes in part 2a) – Is a Significant Effect Likely from the additional impact? (Yes/No or Not Known (?) or N/A) Is a significant effect likely, having regard particularly to the magnitude and spatial extent (including population size affected), nature, intensity and complexity, probability, expected onset, duration, frequency and reversibility of the impact and the possibility to effectively reduce the impact? If the finding of no significant effect is reliant on specific features or measures of the project envisaged to avoid, or prevent what might otherwise have been, significant adverse effects on the environment these should be identified in bold.
NATURAL RESOURCES		
Will construction, operation or decommissioning of the project involve actions which will cause physical changes in the topography of the area?	N/A	N/A
Will construction or operation of the project use natural resources above or below ground such as land, soil, water, materials/minerals or energy which are non-renewable or in short supply?	N/A	N/A
Are there any areas on/around the location which contain important, **high quality or scarce resources** which could be affected by the project, e.g. forestry, agriculture, water/coastal, fisheries, minerals?	N/A	N/A
WASTE		
Will the project produce solid wastes during construction or operation or decommissioning?	N/A	N/A
POLLUTION AND NUISANCES		

Question	(Part 2a) (Part 2a) / (Part 2b) – Answer to the question and explanation of reasons on additional Impacts. (Yes/No or Not Known (?) or N/A)	(Part 3a) / (Part 3b) (only if Yes in part 2a) – Is a Significant Effect Likely from the additional impact? (Yes/No or Not Known (?) or N/A)
Will the project release pollutants or any hazardous, toxic or noxious substances to air?	Yes. With the continued operation of the three gas turbines of the existing Peterhead Power Station there are likely to be greater cumulative emissions from the two power stations. From the revised emissions/ air quality modelling, which includes further design information, there is generally a reduction in emissions levels across all modelled scenarios from the emissions assessed and reported within the EIAR. The only exception to this is the assessment of N-amine and the emission dispersion modelled at ecological receptor E1 – Buchan Ness SPA.	No. The assessment of N-amine used the rate constants advised by the Carbon Capture and Storage Associated (CCSA) for Monoethanolamine (MEA) and Dimethylamine (DMA). It is noted that the actual amine (or amines) present in the solvents are not known at this stage in project development as they will be determined by the appointed Contractor, and therefore the results presented are indicative. Further assessment will be required once further information on the solvent to be used is provided, which will be identified during the PPC permit variation stage and further assessed as necessary. The additional air quality technical note presented in the response to SEPA (appended to this letter) outlines the potential exceedances of emissions levels presented in the EIAR, along with the overall lowering level of emissions. As per the conclusions of the air quality assessment within the EIAR **it is assumed that BAT-Associated Emission Levels (BAT-AEL) will be met** for the operational plant as required and in accordance with use of BAT under the PPC permitting regime. Therefore there are no proposed changes to the findings of the conclusions of the air quality assessment as presented in the EIAR.
Will the project cause noise and vibration or release of light, heat, energy or electromagnetic radiation?	N/A	N/A
Will the project lead to risks of contamination of land or water from releases of pollutants onto the ground or into surface waters, groundwater, coastal waters or the sea?	N/A The Proposed Development is to utilise the existing abstraction and discharge licences for cooling water and effluent discharge.	N/A
Are there any areas on or around the location which are already subject to pollution or environmental damage, e.g. where existing	N/A	N/A

Question	(Part 2a) (Part 2a) / (Part 2b) – Answer to the question and explanation of reasons on additional Impacts. (Yes/No or Not Known (?) or N/A)	(Part 3a) / (Part 3b) (only if Yes in part 2a) – Is a Significant Effect Likely from the additional impact? (Yes/No or Not Known (?) or N/A)
legal environmental standards are exceeded, which could be affected by the project?		
POPULATION & HUMAN HEALTH		
Will there be any risk of major accidents (including those caused by climate change, in accordance with scientific knowledge) during construction, operation or decommissioning?	No. The continued operation of all three gas turbines at the existing Peterhead Power Station would operate under the existing consents, licences and procedures in place to reduce the risk of any potential major accidents.	No. The major accidents and disasters chapter within the EIAR (Chapter 19) reported that all potential risks could be mitigated to at most, tolerable if not as low as reasonably possible. This may also include alignment to the Control of Major Accident Hazard (COMAH) Regulations. The continued operation of all three gas turbines at the existing Peterhead Power Station is not anticipated to change these conclusions, and therefore it remains that there is no potential risk of major accidents occurring.
Will the project present a risk to the population (having regard to population density) and their human health during construction, operation or decommissioning? (for example due to water contamination or air pollution)	No, as above, the existing Peterhead Power Station will operate under the existing consents, licences and procedures to ensure there is no risk to the population and their health during its operation, and decommissioning.	No. As reported within the EIAR (Chapter 17: Socio-economics, tourism and recreation) there will be no significant adverse effects. This conclusion can be translated to that of the continual operation of the power station. Therefore, there is no need for any changes to the conclusions reported within the EIAR.
WATER RESOURCES		
Are there any water resources including surface waters, e.g. rivers, lakes/ponds, coastal or underground waters on or around the location which could be affected by the project, particularly in terms of their volume and flood risk?	Yes. The Peterhead power station is located between two WFD river catchments, the 'River Ugie North/South confl to tidal limit' approximately 4km north and Slains Burn approximately 6km south. However, all watercourses within the study area drain directly to the coast and so discharge directly into the Ugie Estuary to Buchan Ness (Peterhead) Coastal WFD waterbody and Buchan Ness to Cruden Bay Coastal WFD waterbody. There are a number of surface waterbodies located in proximity to the power station, including Sandford Bay (coastal), Invernettie Burn (watercourse), Den of Boddam Burn (watercourse), and a number of	No. It is noted that with the continued operation of three gas turbines at the existing Peterhead Power Station, there is the potential for increased deposition of NO_x. NO_x will not impact on the nearby water resources. Therefore, the continual operation of the power station will have no impact on them. Further, it was noted within the EIAR that any additional discharges to watercourse would be controlled via consents obtained from SEPA. It is, however, understood that the continual operation of the power station would remain within the parameters defined in the existing consents, ensuring any discharges meet the required

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	ditches, drains and ponds. Further details of these can be found in Chapter 12: Water Environment of the EIAR which assessed the impact to these receptors.	standards. As such, there are no changes to the results of the EIAR from the potential continued operation of the existing Peterhead Power Station.
BIODIVERSITY (SPECIES AND HABITATS)		
Are there any protected areas which are designated or classified for their terrestrial, avian and marine ecological value, or any non-designated / non-classified areas which are important or sensitive for reasons of their terrestrial, avian and marine ecological value, located on or around the location and which could be affected by the project? (e.g. wetlands, watercourses or other water-bodies, the coastal zone, mountains, forests or woodlands, undesignated nature reserves or parks. (Where designated indicate level of designation (international, national, regional or local))).	Yes. There are eleven statutory designated sites for nature conservation with 15km of the Proposed Development Site which may be impacted as a result of altered or increased emissions from the continued operation of three gas turbines at the existing Peterhead Power Station. 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. Further details of these can be found within Chapter 11: Biodiversity and Nature Conservation, of the EIAR. Of the above, only a number have the potential to be impacted due to proximity: • Buchan Ness to Collieston Coast SPA (immediately adjacent); • Buchan Ness to Collieston SAC (750m south-east); and • Bullers of Buchan Coast SSSI (750m south-east). The SPA and SSSI are designated for their bird species, whilst the SAC is designated for its vegetated cliff habitat.	No. The additional air quality technical note presented in the response to SEPA (appended to this letter) outlines the potential exceedances of emissions levels expected at the Buchan Ness SPA from those assessed in the EIAR. Specifically, the levels of NO_x as a result of the continued operation of three gas turbines at the existing Peterhead Power Station in conjunction with the Proposed Development will increase. These however are not considered to be a concern, due to the open sea habitat adjacent to the power station, additionally, the siting of the bird nests (on coastal rock), is approximately 1km south of the power station emissions stack, and is therefore not considered to be vulnerable to increased NOx deposition. At the SAC and SSSI any change to vegetation is considered to result from overall long-term exposure. The EIAR assessed that a worst case annual average PEC would be well below the critical level, and whilst the annual average PEC has been revised as part of the re-modelling the conclusions of the assessment remain the same. There are no changes to the results of the EIAR, including the Habitat Regulations Assessment from the continued operation of three gas turbines at the existing Peterhead Power Station in conjunction with the Proposed Development.
Could any protected, important or sensitive species of flora or fauna which use areas on or around the site, e.g. for breeding, nesting, foraging, resting, over-wintering, or migration, be affected by the project?	No. See above.	No. See above.

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LANDSCAPE & VISUAL		
Are there any areas or features on or around the location which are protected for their landscape and scenic value, and/or any non-designated / non-classified areas or features of high landscape or scenic value on or around the location which could be affected by the project? Where designated indicate level of designation (international, national, regional or local).	N/A	N/A
Is the project in a location where it is likely to be highly visible to many people? (If so, from where, what direction, and what distance?)	N/A	N/A
CULTURAL HERITAGE/ARCHAEOLOGY		
Are there any areas or features which are protected for their cultural heritage or archaeological value, or any non-designated / classified areas and/or features of cultural heritage or archaeological importance on or around the location which could be affected by the project (including potential impacts on setting, and views to, from and within)? Where designated indicate level of designation (international, national, regional or local).	N/A	N/A
TRANSPORT & ACCESS		
Are there any routes on or around the location which are used by the public for access to recreation or other facilities, which could be affected by the project?	N/A	N/A
Are there any transport routes on or around the location which are susceptible to congestion or which cause environmental	N/A	N/A

Question	(Part 2a) (Part 2a) / (Part 2b) – Answer to the question and explanation of reasons on additional Impacts. (Yes/No or Not Known (?) or N/A)	(Part 3a) / (Part 3b) (only if Yes in part 2a) – Is a Significant Effect Likely from the additional impact? (Yes/No or Not Known (?) or N/A)
problems, which could be affected by the project?		
LAND USE		
Are there existing land uses or community facilities on or around the location which could be affected by the project? E.g. housing, densely populated areas, industry / commerce, farm/agricultural holdings, forestry, tourism, mining, quarrying, facilities relating to health, education, places of worship, leisure /sports / recreation.	N/A	N/A
Are there any plans for future land uses on or around the location which could be affected by the project?	N/A	N/A
LAND STABILITY & CLIMATE		
Is the location susceptible to earthquakes, subsidence, landslides, erosion, or extreme /adverse climatic conditions, e.g. temperature inversions, fogs, severe winds, which could cause the project to present environmental problems?	No. There are no proposed changes to the operation and modelled emissions from the Proposed Development.	Yes. The findings of the climate change assessment as detailed within Chapter 18: Climate Change and Sustainability, reported on the contribution of the Proposed Development to Scottish and UK Carbon Budgets. When taken in insolation with the Scottish Carbon Budget the assessment concludes that the Proposed Development would result in a 'major adverse' and significant impact from operational phase GHG as the Scottish Carbon Budget effectively reaches 0 megatonnes of CO_2 equivalent ($MtCO_2e$) during the lifetime of the operational phase of the Proposed Development. However the assessment goes on to recognise the need for investment in abated gas-fired generation capacity to provide reliable, dispatchable power remains vital for the ongoing decarbonisation of the Scottish power sector. These findings of the EIAR do not change based on changes to future baseline scenarios. The assessment however also compares existing emissions from the site with emissions from the Proposed Development. Whilst the timing of the existing Peterhead Power Station's closure is uncertain, the change of future baseline is currently being assessed due to the

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		need to meet security of demand requirements. The eventual phasing down and closure of the existing plant at Peterhead will be driven by a number of factors outside of SSE's control, including UK and Scottish Government policy, need for capacity and economic performance. Whilst keeping the existing station operational at higher capacity for longer will mean it represents a greater proportion of the Scottish Carbon Budget; this will be a direct result of the need for generation capacity to maintain security of supply and/or failure to deliver sufficient abated capacity within the timeline needed. Should the Proposed Development be progressed overall emissions from the site will still significantly reduce over the long term. However, it is recognised that should both plants operate simultaneously this will result in an emissions increase from approximately 1.29 $MtCO_2e$ to 1.54 $MtCO_2e$. This would represent 10.7% of the Scottish Carbon Budget in 2034, and 0.16% of the UK Carbon Budget for the same year.
CUMULATIVE EFFECTS		
Could this project together with existing and/or approved development result in cumulation of impacts together during the construction/operation phase?	No.	N/A
TRANSBOUNDARY EFFECTS		
Is the project likely to lead to transboundary effects?	No.	N/A

Source: adapted from the Planning Inspectorate checklist. https://www.gov.uk/government/publications/environmental-impact-assessment-screening-checklist