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13. Aquatic Ecology and Nature Conservation

13.1 Introduction

13.1.1 This chapter of the Environmental Statement (ES) identifies the potential impacts and effects on aquatic ecology and nature conservation that are to be considered as part of the Environmental Impact Assessment (EIA) of the Proposed Development. The assessment has been undertaken in accordance with best practice guidance published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2019) (the CIEEM guidance).

13.1.2 Chapter 4: Proposed Development and Chapter 5: Construction Programme and Management (ES Volume I, Document Ref. 6.2) provide a detailed description of the Proposed Development and the works required to implement it within the Site.

13.1.3 This chapter is related to aquatic ecology (specifically fish, macroinvertebrates, macrophytes and their habitats) only and excludes assessment of potential impacts and effects on water resources (see Chapter 9: Surface Water, Flood Risk and Water Resources), hydrology (see Chapter 10: Geology, Hydrogeology and Contaminated Land), terrestrial ecology (see Chapter 12: Terrestrial Ecology and Nature Conservation) and marine ecology (see Chapter 14: Marine Ecology and Nature Conservation) all ES Volume I (Document Ref. 6.2).

13.1.4 This chapter utilises data and information and cross references where required to the chapters outlined above in particular in relation to construction and decommissioning related water quality impacts and effects where relevant to aquatic ecology.

13.1.5 This chapter is supported by the following technical appendices, provided in ES Volume III (Document Ref. 6.4):

- Appendix 12A: Legislation and Planning Policy Relevant to Ecology;
- Appendix 12B: Ecological Impact Assessment Methodology;
- Appendix 12C: Preliminary Ecological Appraisal (PEA); and
- Appendix 13A: Aquatic Ecology Supplementary Desk Study and Field Survey Report.

13.1.6 The above appendices contain all of the Figures necessary to understand the findings of the ecological surveys undertaken for the Proposed Development. Other general ES Figures showing the location and layout of the Proposed Development are provided in ES Volume II (Document Ref 6.3).

13.2 Legislation and Planning Policy Context

Legislation

13.2.1 Detailed information on the legislation relevant to aquatic ecology features in relation to the Proposed Development is provided in Appendix 12A: Legislation and Planning Policy (ES Volume III, Document Ref. 6.4).

13.2.2 The following legislation is relevant to the scope of this chapter and has been taken into account in the assessment:

- The Conservation of Habitats and Species Regulations 2017 (as amended) (the Habitats Regulations);
- Wildlife and Countryside Act 1981 (as amended) (the 'WCA');
- Countryside and Rights of Way (CRoW) Act 2000;
- Natural Environment and Rural Communities (NERC) Act 2006 (as amended);
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017;
- Environmental Protection Act 1990;
- Invasive Alien Species (Enforcement and Permitting) Order 2019;
- The Salmon and Freshwater Fisheries Act (1975);
- Invasive Alien Species (Enforcement and Permitting) Order 2019; and
- The Eels (England and Wales) Regulations 2009.

Planning Policy

13.2.3 The Government's policy for delivery of major energy infrastructure that is of relevance to this chapter is set out in the following National Policy Statements (NPS):

- Overarching NPS for Energy (EN-1);
- Fossil Fuel Electricity Generating Infrastructure (EN-2); and
- Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4).

13.2.4 Together the above NPS require that, where the development concerned is subject to EIA, the applicant should:

- ensure that the ES clearly sets out any effects on internationally, nationally and locally designated sites of biodiversity or geological conservation importance, on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity (paragraph 5.3.3, NPS EN-1);
- show how the project has taken advantage of opportunities to conserve and enhance biodiversity interests (paragraph 5.3.4, NPS EN-1);
- include appropriate mitigation measures as an integral part of the proposed development. Where the applicant cannot demonstrate that appropriate mitigation measures will be put in place then appropriate

requirements should be attached to any consent and/or planning obligations entered into (paragraph 5.3.18 to 19, NPS EN-1);

- take account of likely environmental impacts resulting from air emissions (paragraph 2.5.6, NPS EN-2); and
- include an assessment of the biodiversity effects of the proposed gas supply pipeline routes and of the main alternative routes considered and include proposals for reinstatement of the pipeline route as close to its original state as possible (paragraph 2.21.3, NPS EN-4).

13.2.5 The policies set out in the National Planning Policy Framework (NPPF) (February 2019, updated 19 June 2019) are also important and relevant matters to the DCO Application. The NPPF sets out the Government's planning policies for England and how these are to be applied, and identifies overarching objectives, including environmental objectives (such as protecting and enhancing our natural environment and improving biodiversity). It introduces additional considerations including definitions of and requirements in relation to irreplaceable habitats which must be addressed in the development design and assessment process.

13.2.6 The Proposed Development includes infrastructure located within the administrative boundaries of Redcar and Cleveland Borough Council (RCBC) and in Stockton on Tees Borough Council (STBC). Therefore, the following local planning policies are relevant to the Proposed Development:

- Sustainable Development Policies SD1 and SD4 of the Redcar and Cleveland Local Plan adopted May 2018. These policies to relate to requirements for sustainable development, respecting and enhancing biodiversity features and protecting the integrity of Natura 2000 sites;
- Local Spatial Strategy Policy LS4 of the Redcar and Cleveland Local Plan adopted May 2018. The South Tees Spatial Strategy requires measures to protect European sites, to safeguard and improve sites of biodiversity interest particularly along the River Tees and the estuary, and to encourage integrated habitat creation and management;
- Natural Environment Policies N2 and N4 of the Redcar and Cleveland Local Plan adopted May 2018. These require the protection and enhancement of the Borough's green infrastructure network and green wedges, and biodiversity and geological resources, including avoidance of adverse impacts to internationally and nationally statutory nature conservation designations;
- Sustainable Development Policies SD5 and SD8 of the Stockton-on-Tees Local Plan adopted January 2019. These set out requirements for the conservation and enhancement of the natural environment, including designations, green infrastructure, priority habitats, ecological networks, woodland and priority species;
- Natural Environment Policy ENV5 and ENV6 of the Stockton-on-Tees Local Plan adopted January 2019. These set out requirements for the protection and enhancement of biodiversity, including maximising biodiversity gains within identified Biodiversity Opportunity Areas (BOAs) in the River Tees Corridor and Teesmouth; and

- Development Principle STDC7 of the Redcar and Cleveland South Tees Area Supplementary Planning Document (SPD) adopted May 2018 sets out expectations for natural environment protection and enhancement, including the requirement to comply with Redcar and Cleveland Local Plan Policy N4 (see above).

13.2.7 Additional planning policy and guidance of relevance to the Proposed Development and/or for interpretation of the above planning policy is given in the following documents:

- Biodiversity 2020: A strategy for England's wildlife and ecosystem services (Department for Environment, Food and Rural Affairs (Defra), 2011);
- Planning Practice Guidance: Natural Environment (Ministry of Housing, Communities and Local Government, 2019);
- Standing Advice issued by Natural England and Department for Environment, Food and Rural Affairs: Protected species: how to review planning applications (Natural England and Defra, 2016);
- Supplementary Planning Document 1: Sustainable Design Guide (Stockton-on-Tees Borough Council, 2011);
- Tees Valley Green Infrastructure Strategy (Tees Valley Joint Strategy Unit, 2008);
- Redcar and Cleveland's Green Space Strategy 2006-2016 (Redcar and Cleveland Partnership, 2006);
- The Tees Lowlands National Character Area (NCA) Profile (Natural England, 2013);
- A Biodiversity Audit of the North East (Brodin, 2001); and
- Priority Habitats and Species in the Tees Valley (Tees Valley Nature Partnership, 2012).

13.2.8 Further information on all policy and guidance relevant to aquatic ecology is provided in Appendix 12A: Legislation and Planning Policy (ES Volume III, Document Ref. 6.4).

13.3 Assessment Methodology and Significance Criteria

Impact Assessment and Significance Criteria

13.3.1 Ecological Impact Assessment (EcIA) is the process of identifying, quantifying and evaluating potential effects of development-related or other proposed actions on habitats, species and ecosystems and forms the ecological component of the wider EIA.

13.3.2 The EcIA detailed in this chapter has been undertaken in accordance with the CIEEM (2019). Full details of the approach applied are provided in Appendix 12B: Ecological Impact Assessment Methods (ES Volume III, Document Ref. 6.4) with an abridged overview provided below.

13.3.3 The aims of the ecology assessment are to:

- identify relevant ecological features (i.e. designated sites, habitats, species or ecosystems) which may be impacted;
- provide a scientifically rigorous and transparent assessment of the likely ecological impacts and resultant effects of the Proposed Development. Impacts and effects may be beneficial (i.e. positive) or adverse (i.e. negative);
- facilitate a scientifically rigorous and transparent determination of the consequences of the Proposed Development in terms of national, regional and local policies relevant to nature conservation and biodiversity, where the level of detail provided is proportionate to the scale of the development and the complexity of its potential impacts; and
- set out what steps would be taken to adhere to legal requirements relating to the relevant biodiversity and geological features concerned.

13.3.4 The principal steps in the CIEEM guidance can be summarised as:

- determine relevant baseline conditions, currently and those expected in future in the absence of the development;
- identify potential impacts on ecological features; and
- assess the likely effects on relevant ecological features, taking into account measures which have been incorporated into the design of the development to avoid, minimise, mitigate or compensate for adverse effects, or provide enhancement (benefits) where applicable.

13.3.5 The focus is on habitats and species that are 'relevant'. CIEEM (2019) makes it clear that there is no need to "carry out detailed assessment of features that are sufficiently widespread, unthreatened and resilient to project impacts and would remain viable and sustainable". Efforts should be made to safeguard wider biodiversity, and requirements for this have been considered throughout the design evolution process e.g. by avoiding impacts to ponds and watercourses, regardless of whether protected species have recorded.

13.3.6 To support focussed EcIA, there is a need to determine the scale at which the relevant ecological features are of value, with reference to the geographical scale at which each matter. The terms of reference used here are:

- International (generally this is within a European context, reflecting the general availability of good data to allow cross-comparison);
- National (Great Britain, but considering the potential for certain ecological features to be more notable (of higher value) in an England context relative to Great Britain as a whole);
- Regional (North East);
- County (North Riding of Yorkshire, County Durham);
- Borough (RCBC and STBC);

- Local (biodiversity features that do not meet criteria for valuation at a borough or higher level, but that have sufficient value to merit retention or mitigation e.g. for purposes of ensuring no net loss of biodiversity); and
- Negligible (common and widespread biodiversity features of such low priority that they do not require retention or mitigation at the relevant location to otherwise maintain a favourable nature conservation status).

13.3.7 In line with the CIEEM guidance the terminology used within the EcIA draws a clear distinction between the term 'impact' and 'effect'. For the purposes of the EcIA, these terms are defined as follows:

- Impact – actions resulting in changes to ecological features. For example, demolition activities leading to the removal of a building utilised as a bat roost; and
- Effect – outcome resulting from an impact acting upon the conservation status or structure and function of an ecological feature. For example, killing/injury of bats and reducing the availability of breeding habitat as a result of the loss of a bat roost may lead to an adverse effect on the conservation status of the population concerned.

13.3.8 When describing potential impacts (and where relevant the resultant effects) consideration is given to the following characteristics likely to influence this:

- Beneficial/adverse - i.e. is the change likely to be in accordance with nature conservation objectives and policy:
  - Beneficial (i.e. positive) - a change that improves the quality of the environment, or halts or slows an existing decline in quality, e.g. increasing the extent of a habitat of conservation value; and
  - Adverse (i.e. negative) - a change that reduces the quality of the environment, e.g. destruction of habitat or increased noise disturbance.
- Magnitude - the 'size', 'amount' or 'intensity' of an impact - this is described on a quantitative basis where possible;
- Spatial extent - the spatial or geographical area or distance over which the impact/effect occurs;
- Duration - the time over which an impact is expected to last prior to recovery or replacement of the resource or feature. Consideration has been given to how this duration relates to the relevant biodiversity and geological characteristics, for example a species' lifecycle. However, it is not always appropriate to report the duration of impacts in these terms. The duration of an effect may be longer than the duration of an activity or impact;
- Reversibility - i.e. whether the impact is temporary or permanent. A temporary impact is one from which recovery is possible, or for which effective mitigation is both possible and enforceable. A permanent effect is one from which recovery is either not possible, or cannot be achieved within a reasonable timescale (in the context of the feature being assessed); and

- Timing and frequency - i.e. consideration of the point at which the impact occurs in relation to critical life-stages or seasons.

13.3.9 For each ecological feature, only those characteristics relevant to understanding the effect and determining the significance are described. The determination of the significance of effects has been made based on the predicted effect on the structure and function, or conservation status, of relevant ecological features, as follows:

- Not significant - no effect on structure and function, or conservation status; and
- Significant - structure and function, or conservation status, is affected.

13.3.10 For significant effects (both adverse and beneficial) this is qualified with reference to the geographic scale at which the effect is significant (e.g. an adverse effect significant at a national level).

13.3.11 The CIEEM approach described in Appendix 12B: Ecological Impact Assessment Methods (ES Volume III, Document Ref. 6.4) broadly accords with the EIA methodology described in Chapter 2: Assessment Methodology (ES Volume I, Document Ref. 6.2). However, the matrix has not been used to classify effects as this would deviate from CIEEM guidance. In order to provide consistency of terminology in the final assessment, the findings of the CIEEM assessment have been translated into the classification of effects scale used in other chapters as outlined in Table 13-1. The category of 'Negligible' effects, defined in Chapter 2: Assessment Methodology (ES Volume I, Document Ref. 6.2) as an "*imperceptible effect to an environmental resource or receptor*", is analogous to the category of 'Neutral' as set out below.

Table 13-1: Relationship Between CIEEM Assessment Terms and those Used in Other Chapters

CIEEM guidance terms	Equivalent terminology used in other ES chapters (as set out in Table 2-1 of Chapter 2, ES Volume I, Document Ref. 6.2)	
Beneficial effect on structure/function or conservation status at Regional, National or International level	Significant (beneficial)	Major beneficial
Beneficial effect on structure/function or conservation status at Borough or County level		Moderate beneficial
Beneficial effect on structure/function or conservation status at Site or Local level	Not significant	Minor beneficial
No effect on structure/function or conservation status	Not significant	Neutral
Adverse effect on structure/function or conservation status at Site or Local level	Not significant	Minor adverse
Adverse effect on structure/ function or conservation status at Borough or County level	Significant (adverse)	Moderate adverse
Adverse effect on structure/function or conservation status at Regional, National or International level		Major adverse

Study Area

13.3.12 The Study Areas originally used to gather baseline data for this assessment, as described in Appendix 12C: PEA (ES Volume III, Document Ref. 6.4) were specified to support collation of sufficient data to meet worst-case data needs for robust ecological assessment in accordance with Rochdale Envelope principles. These Study Areas were often relatively precautionary and consequently have gradually been reduced as the design of the Proposed Development has been refined and fixed further.

13.3.13 The extent of the Study Area has been defined appropriately so that it accurately reflects the areas within which the Proposed Development could have an adverse effect on ecological features (the so called 'Zone of Influence (ZoI)'). This chapter therefore does not need to address any identified ecological features for which there is no likelihood of an adverse effect/outside the ZoI.

13.3.14 The relevance of each ecological feature identified has been considered case by case basis, as first considered in Appendix 12C: PEA and Appendix 13A: Aquatic Ecology Supplementary Desk Study and Field Survey Report (ES Volume III, Document Ref. 6.4) and detailed in Table 13-5 of this chapter.

13.3.15 This approach has applied professional judgement based on understanding of the ecology and relative sensitivities of the features concerned and the relevant aspects of the Proposed Development that are likely to interact with them. It has also considered relevant good practice guidance, the relative

nature conservation importance of the features concerned, and any implications arising from relevant legal protections.

13.3.16 It is important to recognise that the ZoI of the Proposed Development may also vary over time. The construction ZoI may be more or less than the operational ZoI. Typically, the ZoI is greatest during construction but there can be significant exceptions to this, particularly when considering potential air quality impacts and effects.

13.3.17 As the design of the Proposed Development evolved it was possible to refine the ZoI from the Proposed Development during construction, considering that the pathways for impacts vary depending of the type of works required. Consideration was also given to those waterbodies with potential hydrological links to waterbodies within the Site. Watercourses upstream of the Proposed Development were excluded unless adverse effects at or downstream of the Proposed Development were such that migratory species would be adversely affected. Within proximity of the PCC Site, the ZoI during construction was defined as within and up to 50 m from the PCC Site.

13.3.18 Where construction works for example within the Connection Corridors only involve above ground works using existing infrastructure, the ZoI was defined within the extents of the land likely to be Site required for the works. This approach is considered precautionary as the area required for construction is likely to be narrower than the proposed Site boundary.

13.3.19 In addition, requirements of regulators and other good practice guidance has also influenced the Study Areas adopted. While these sometimes over-estimate the likely ZoI, they are considered sufficiently precautionary to meet requirements for robust ecological impact assessment.

Sources of Information

13.3.20 The aquatic ecology baseline has been determined through a combination of desk study and field surveys, as summarised below.

13.3.21 The extent of the Study Areas applied during the desk study and field surveys are also identified, with further information provided in Appendix 13A (ES Volume III, Document Ref. 6.4). The approach to baseline development, field surveys and the wider EIA has been discussed with Natural England and other relevant stakeholders.

Desk Study

13.3.22 A desk study was carried out to identify nature conservation designations and protected and notable habitats and species potentially relevant to the Proposed Development. The desk study was carried out using the data sources detailed in Table 13-2 and is described further in Appendix 12C: PEA and Appendix 13A: Aquatic Ecology Supplementary Desk Study and Field Survey Report (ES Volume III, Document Ref. 6.4).

13.3.23 Protected and notable aquatic habitats and species include those listed under Schedule 5 of the WCA; Schedule 2 of The Habitat Regulations; and species and habitats of principal importance for nature conservation in England listed under Section 41 (S41) of the NERC Act. Other habitats and species have also been considered and assessed on a case by case basis,

e.g. those included in national, regional or local Red Data Books and Lists but not protected by legislation. This is consistent with the requirements of the CIEEM guidance (2019) and relevant planning policy.

13.3.24 Records of non-native controlled aquatic weed species, as listed under Schedule 9 of the WCA, were also collated and have been considered when assessing the potential ecological effects of the Proposed Development. Requirements for the control of such weeds is also driven by the WCA and related legislation. Therefore, while the weed species concerned are not relevant ecological features for the purposes of EcIA, there is still a need to consider them in terms of their potential relevance to delivery of legislative compliance, for their potential to contribute to the amplification of any adverse effects arising from the Proposed Development, or their potential to conflict with objectives for ecological mitigation, compensation and enhancement.

Table 13-2: Desk Study Area and Data Sources

Ecological Feature	Study Areas	Data Sources	Date Accessed
International statutory nature conservation designations	15 km	Multi-Agency Geographic Information for the Countryside (MAGIC) website, Joint Nature Conservation Committee (JNCC) Website (UK Protected Sites) http://jncc.defra.gov.uk/.	November 2019
National statutory nature conservation designations	15 km	MAGIC website, Natural England website.	November 2019
Local non-statutory nature conservation designations	2 km	Environmental Records and Information Centre (ERIC) North-East.	January 2020
Protected and notable habitats and species	1 km	Tees Valley Local Biodiversity Action Plan (BAP), Teesmouth and Cleveland Local BAP, Stockton-on-Tees BAP.	January 2020
Ponds and rivers	200 m	1:25,000 Ordnance Survey maps, Aerial photographs (Google Earth), MAGIC website.	November 2019
Fish	2 km	Environment Agency data requests for the Tees area, including the National Fish Populations Database (NFPD), Environment Agency (2009) River Tees Salmon Action Plan.	November 2019
Aquatic invertebrates	2 km	Environment Agency data for the Tees area.	November 2019
Macrophytes	2 km	Environment Agency data for the Tees area.	November 2019

Field Surveys

13.3.25 The scope of works for necessary aquatic habitat and species (fish, macroinvertebrate, macrophyte) surveys was determined through an initial programme (as access became available) of Phase I Habitat surveys and PEA, described in Appendix 12C: PEA (ES Volume III, Document Ref. 6.4).

13.3.26 The PEA identified the presence of 137 still and running waterbodies within the ZoI of the Proposed Development, initially defined as a 200 m radius around the Site. Of these, 9 waterbodies were artificial waterbodies, such as water storage tanks or cooling water ponds and were automatically scoped out of further surveys.

13.3.27 Further scoping for detailed aquatic surveys was then undertaken using a mixture of desk-based assessment, reviewing Ordnance Survey (OS) mapping and aerial photographs, and field scoping surveys, which were undertaken in February 2020 and June 2020. This allowed still waterbodies that intermittently dry out to be scoped out and therefore not requiring further detailed surveys. The site surveys were only undertaken on permanent waterbodies.

13.3.28 From this scoping process, which is detailed in Appendix 13A: Aquatic Ecology Supplementary Desk Study and Field Survey Report (ES Volume III, Document Ref. 6.4), 86 waterbodies were scoped out as either being dry or outside of the 200 m area from the Site (when this was reduced during the development of the project). An additional 31 waterbodies were scoped out given that there is no likelihood of impacts based on the updated scope of works. A total of 11 waterbodies were scoped in for further assessment and this is shown in more detail in Section 13.7: Likely Impacts and Effects.

13.3.29 For some of the waterbodies scoped into the assessment (Belasis Beck, Waterbody 97, Pond 113 and Pond 114), no detailed fish, macroinvertebrate or macrophyte surveys could be undertaken as access was not available, but assessments were undertaken on the basis of habitat and comparable local waterbodies and the potential for works to affect the ponds.

13.3.30 The field surveys undertaken to inform the EcIA are summarised in Table 13-3 below. Full details of the scope and methodology for each survey are provided in Appendix 13A: Aquatic Ecology Supplementary Desk Study and Field Survey Report (ES Volume III, Document Ref. 6.4).

Table 13-3: Summary of Ecological field Surveys Completed to Date

Ecological survey	Technical Appendix (ES Volume III, Document Ref. 6.4)	Survey scope
Preliminary Ecological Appraisal	12C	The Site.
Field scoping surveys	13A	Scoping of aquatic (freshwater) habitats (ponds, rivers and ditches) within 200 m of the Proposed Development Site, where access allowed.
Pond surveys (Predictive SYstem for Multimetrics (PSYM))	13A	Three ponds (Pond 3, Pond 9 and Pond 14) within vicinity of the PCC Site.

Ecological survey	Technical Appendix (ES Volume III, Document Ref. 6.4)	Survey scope
Fish	13A	Three ponds (Pond 3, Pond 9 and Pond 14) and two running waterbodies (The Mill Race and Dabholm Gut) within or in proximity to the PCC Site and Connection Corridors.
Aquatic macroinvertebrates	13A	Three ponds (Pond 3, Pond 9 and Pond 14) and three running waterbodies (The Fleet, The Mill Race and Dabholm Gut) within or in proximity to the PCC Site and Connection Corridors.
Macrophytes	13A	Three ponds (Pond 3, Pond 9 and Pond 14) within or in proximity to the PCC Site and Connection Corridors.

Use of the Rochdale Envelope

13.3.31 In accordance with the Planning Inspectorate (PINS) Advice Note 9 (PINS, 2018), the ES will present a robust yet reasonable worst case assessment of the potential impacts of the Proposed Development on terrestrial ecology, using Rochdale Envelope principles where a degree of flexibility needs to be maintained for certain aspects of the design. The worst case parameters for impact assessment are defined in Chapter 4: The Proposed Development, Chapter 5: Construction Programme and Management and Chapter 6: Alternatives and Design Evolution (ES Volume I, Document Ref. 6.2).

13.3.32 The exact nature of the Proposed Development and the scope of the necessary construction works is dependent, in some cases, on the condition of existing infrastructure. Investigations into the feasibility of using the existing infrastructure are ongoing and so for the purpose of the ES, the reasonable worst-case scenario has been assumed. Further information can be found in Chapter 5: Construction Programme and Management (ES Volume I, Document Ref. 6.2).

Consultation

13.3.33 Pre-application engagement has been ongoing with Natural England since 2017 (as the primary consultee on ecological and nature conservation matters, because of the proximity of the Proposed Development to a number of national and international conservation designations. This consultation is summarised below:

- July 2017 (Pre-Application engagement meeting);
- September 2017 (Methodology and scope review);
- March 2019 (Pre-Application engagement meeting);
- April 2019 (Pre-Application engagement meeting);
- February 2020 (Pre-Application engagement meeting); and

- July 2020 (Stage 2 consultation – PEI Report)

13.3.34 Consultation for the Proposed Development has been ongoing and commenced at the EIA Scoping Stage with the preparation of the EIA Scoping Opinion Report which was submitted in February 2019. A Scoping Opinion was received from the Planning Inspectorate in April 2019. (Appendix 1A: EIA Scoping Opinion, in ES Volume III, Document Ref. 6.4).

13.3.35 The Applicants also undertook a formal Section 42 and Section 47 consultation, which commenced at the same time as the publication of the Preliminary Environmental Information (PEI) Report in early July 2020 and ended in September 2020. The issues that have been raised through consultation, and how these have been considered and addressed within the design evolution of the Proposed Development and the EIA is set out where relevant within each of the topic chapters in the ES and where relevant in Chapter 6: Alternatives and Design Evolution (ES Volume I, Document Ref. 6.2).

13.3.36 Table 13-4 provides a summary of how comments raised to date in relation to aquatic ecology or general ecological matters have been considered and actioned where appropriate.

Table 13-4: Summary of Responses

Key Issue Raised / By Whom / Page No.	Response and Action, if appropriate
Scoping Opinion, 4.6.2, Receptors: The Scoping Report identifies the Teesmouth and Cleveland Coast SPA, potential SPA (pSPA) and Ramsar site as being located in proximity to the Proposed Development. The Inspectorate advises that NE is also proposing to extend the Teesmouth and Cleveland Coast Ramsar site (now a Ramsar site) and to enlarge the Teesmouth and Cleveland Coast SSSI. The ES should assess the potential impacts to these sites including the proposed extensions.	The extensions, which now form part of the statutory designation, have been fully considered within the EIA. Aspects of these designations and their respective extensions which are of relevance to terrestrial ecology are considered within this chapter and the supporting Appendix 12C – PEA (ES Volume III, Document Ref. 6.4) and Chapter 15: Ornithology considers the SPA and Ramsar in further detail.
Scoping Opinion p31-32, Study Area Paragraph 6.21 of the Scoping Report proposes to assess impacts from emissions to air on statutory designated ecological sites within 15 km of the proposed stacks, which is in line with Environment Agency (EA)/Defra guidance. However, paragraph 6.72 only identifies SSSIs within 5 km of the application site. For the avoidance of doubt, the Inspectorate considers that a study area of 15 km should be applied for all statutory designated sites in line with the EA/Defra guidance. The ES should identify all types of potential impact pathways to ecological receptors, including water, soil and air. The ES should justify the chosen study areas relevant to the ecological impact assessment, with reference to relevant guidance and the extent of the likely impacts. The Applicant should make effort to agree these study areas with relevant consultation bodies.	It is confirmed that this is the approach to be taken. Detailed air quality modelling has been completed and is reported in Chapter 8: Air Quality (ES Volume I, Document Ref. 6.2)) and its supporting Appendices (ES Volume III, Document Ref. 6.4). The relevant findings of the assessment are presented within this chapter.

Key Issue Raised / By Whom / Page No.	Response and Action, if appropriate
Scoping Opinion 4.6.4, Nationally and locally designated ecological sites: The Scoping Report identifies European sites and SSSIs in proximity to the Proposed Development. However, no National Nature Reserves (NNR) or locally designated ecological sites have been identified. The Inspectorate notes that the Teesmouth NNR, a number of local wildlife sites and the Saltholme RSPB Reserve are located within or in proximity to the application site. The ES should identify any such sites which could be impacted by the Proposed Development and assess any likely significant effects	All relevant local and national nature reserves have now been considered, with further information contained within Appendix 12C: PEA (ES Volume III, Document Ref. 6.4).
Scoping Opinion, 4.6.5, Baseline Surveys: It is unclear whether the Extended Phase 1 Habitat Surveys covered the entirety of the application site or just the Main Site. For the avoidance of doubt, the Inspectorate considers that Phase 1 data should be provided for the entirety of the application site. The coverage of species surveys should be sufficient to support a robust assessment of likely significant effects; survey effort should be clearly explained and justified in the ES.	Extended Phase 1 surveys and any associated constraints and limitations are reported in Appendix 12C: PEA (ES Volume III, Document Ref. 6.4). The coverage of the species surveys, as detailed in Appendices 12C to 12J (also ES Volume III Document Ref. 6.4), is seen as sufficient to support a robust precautionary assessment of likely significant effects. The results of these surveys and studies have informed the ecological impact assessment presented in this chapter.
Scoping Opinion, 4.6.7, Guidance: The Applicant proposes to undertake the ecology assessment in accordance with the 'Guidelines for Ecological Impact Assessment in the UK and Ireland' (CIEEM, January 2016) ('the CIEEM guidelines'). The Inspectorate notes that the CIEEM guidelines were updated in 2018 and advises that the most up-to-date version of the guidelines are utilised in the ES.	This chapter considers the CIEEM guidance 2019 updates, as described in more detail in Appendix 12B: Ecological Impact Assessment Methods (ES Volume III, Document Ref. 6.4).
Scoping Opinion, 4.6.11, Habitat gain/loss: The ES should identify and quantify all temporary and permanent habitat gains and losses by type (including any functionally linked land).	There will be no permanent or temporary aquatic habitat losses as the design of the Proposed Development no longer requires new open-trench crossings of aquatic habitats. Where crossings are required, they will be underground via horizontal directional drilling (HDD). A table summarising the permanent habitat losses and gains is provided in the standalone Indicative Landscape and Biodiversity Strategy (Document Ref. 5.12).
Scoping Opinion, 4.6.12, Invasive species: Surveys should be undertaken to identify the presence of any invasive species on the application site and any necessary eradication/control measures detailed in the ES.	The presence of any Invasive and Non Native Species (INNS) has been recorded during the characterisation of baseline conditions.
Terrestrial ecology: water dependent habitats and species, Environment Agency, letter response to Stage 2 Consultation dated 30 September 2020 Protected water dependant species and habitats are not fully surveyed. Therefore, no assessment of impacts and mitigation measures have been	Protected water-dependent species and habitats relevant to the impact assessment for the Proposed Development have been assessed in within Section 13.7: Likely Impacts and Effects of this chapter.

Key Issue Raised / By Whom / Page No.	Response and Action, if appropriate
submitted. As such we cannot comment on the impact of the scheme and will require these to be fully undertaken before the DCO is submitted.	
Receptors, PINS, scoping response: The Scoping Report figures show reservoirs close to the electrical connection corridors around Lazenby; however, these have not been identified as environmental receptors in Chapter 2 of the Scoping Report. Any likely significant effects on these receptors should be identified and assessed within the ES.	Potentially impacted water environment receptors have been re-considered within the baseline of this chapter of the ES, and potential impacts assessed fully as appropriate. The Electrical Connection Corridor was modified to remove the section near Lazenby.
Protected species, Natural England, letter response to Stage 2 Consultation dated 17 September 2020 Based on the information provided Natural England advises that the proposal has the potential to impact species protected by UK and EU legislation. We note that further species-specific surveys are being undertaken and will be used to inform the EIA, as well as any required protected species licence applications.	All relevant surveys are detailed in Appendix 13A: Aquatic Ecology Supplementary Desk Study and Field Survey Report (ES Volume III, Document Ref. 6.4). Potential impacts on relevant protected species are addressed in this chapter.
Buffer Zones from Watercourses, Environment Agency, Section 42 Consultation: Development that encroaches on watercourses can have a potentially severe impact on their ecological value. Encroachment from development activities has potential to cause habitat loss, disturbance and nutrient enrichment. The setback development area needs to maintain this corridor around any watercourses on site and should be maintained and enhanced as part of the development work.	Noted, incorporated into the design of the development for new corridors and by use of existing corridors for pipelines.
Environment Agency, Section 42 Consultation: With respect to geomorphology, detailed plans and designs should be submitted as part of the DCO in order to assess potential impacts to watercourses and wider WFD objectives.	As part of the Proposed Development, there are no new structures or over- water crossings proposed to watercourses relevant to this Chapter (for the River Tees crossing, refer to Chapter 14: Marine Ecology (ES Volume I, Document Ref. 6.2).Trenchless techniques will be used for crossing under the River Tees, the Fleet, Mill Race and a pond in Coatham Dunes.

13.4 Baseline Conditions

Existing baseline

13.4.1 The aquatic ecology features relevant to the Proposed Development are presented as Table 13-5 below. Those are aquatic ecology features considered to be of Borough or higher nature conservation value, as well as features of local value where they are considered important for the purposes of ensuring no net loss of biodiversity, and likely to be subject to significant impacts from the Proposed Development.

13.4.2 This chapter does not include assessment of any identified ecological features for which there is no likelihood of a significant adverse effect.

13.4.3 Waterbodies scoped in for the assessment of construction and decommissioning impacts are those:

- within the Site required for construction of the other Connections, where works are being undertaken above ground using existing infrastructure; and
- within 50 m of the PCC Site.

13.4.4 This is because there will be no direct impacts (i.e. habitat loss) on ponds and watercourses during construction, operation and decommissioning of the Proposed Development given that construction of the various Connections and the CO_2 Gathering Network will be mainly above ground using existing infrastructure. Where any new crossings of aquatic habitats are necessary (The Fleet, The Mill Race, Pond 18) e.g. Electrical Connection and the Gas Connection), new pipelines will be built using trenchless techniques (e.g. Horizontal Directional Drilling (HDD) or Auger bore).

13.4.5 However, those ponds and watercourses which are located in close proximity to the PCC Site (Pond 3, Pond 14) and within or in proximity to the CO_2 Gathering Network and the Water Connection (Pond 113, Pond 114, The Fleet, Dabholm Gut, The Mill Race, Belasis Beck, Waterbody 97) were scoped in as there is the potential for temporary indirect impacts on habitat and water quality (i.e. fine sediments, chemical spills) during construction and decommissioning (Chapter 9: Surface Water, Flood Risk and Water Resources, ES Volume I Document Ref. 6.2).

13.4.6 There will be potential impacts on the water quality of ponds in proximity to the PCC Site (Pond 3, Pond 9, Pond 14) via redeposition of atmospheric nitrogen emitted during operation (see Chapter 8: Air Quality and Chapter 9: Surface Water, Flood Risk and Water Resources ES Volume I, Document Ref. 6.2)

13.4.7 Other ponds and watercourses within 200 m of Site were scoped out as there will be no pathways for indirect impacts on water quality during construction, operation and decommissioning given the distance of these habitats from the areas required for the construction and operation of the Proposed Development and the nature of construction works required (i.e. above ground construction using existing infrastructure) and the lack of hydrological connectivity to watercourses within the Site. Watercourses upstream of the Proposed Development were excluded unless adverse effects at or

downstream of the Proposed Development were such that migratory species would be adversely affected.

13.4.8 For clarity, all aquatic ecology features present within 200 m of the Site are presented in Table 13-5 below.

Table 13-5: Summary of Aquatic Biodiversity Features and of Scoping for Further Assessment of Impacts and Effects

Relevant ecological feature	Description of feature	Relationship to the Proposed Development	Ecological value and status	See related Chapter or Appendix of the ES (Volume I or III)	Relevance to assessment (C = construction, O = operation*,D = decommissioning, n/r = not relevant)		Summary of scoping (signposting of relevant evidence)
					PCC Site	Proposed other Connection Corridors[1]	
*For the purposes of this assessment, operational and maintenance activities are considered as part of the 'Operation' category. Routine maintenance activities will be localised (largely restricted to the built footprint of the Proposed Development), small-scale and are likely to be trivial relative to the worst-case construction activities that will represent the peak in human disturbance arising from the Proposed Development. As such, if adverse disturbance effects are not predicted as a result of construction activities, then it should be assumed that maintenance activities will also not be adverse.							
International and National Statutory Nature Conservation Designations as first identified and screened within Appendix 12C: PEA (ES Volume III, Document Ref. 6.4).							
Teesmouth and Cleveland Coast SSSI	Designated interest features are not relevant to this chapter	Proposed On-shore CO_2 Export and Water Discharge Corridors are located within the SSSI. The SSSI is located 8 m north of the PCC	National, statutory protected	Appendix 12C: PEA Appendix 12H: Supplementary Habitat Information Chapter 12: Terrestrial Ecology	C, O, D	C	Scoped out, as although located in close proximity to the the Proposed Development the designated interest features are not relevant to this chapter. Assessment of the impacts from the Proposed Development is covered as relevant in Chapter 12: Terrestrial Ecology.
Lovell Hill Pools SSSI	Designated for its outstanding assemblage of	Located approximately	National, statutory protected	Appendix 12C: PEA	O	n/r	Scoped out, potential impacts from redeposition

Relevant ecological feature	Description of feature	Relationship to the Proposed Development	Ecological value and status	See related Chapter or Appendix of the ES (Volume I or III)	Relevance to assessment (C = construction, O = operation*,D = decommissioning, n/r = not relevant)		Summary of scoping (signposting of relevant evidence)
					PCC Site	Proposed other Connection Corridors[1]	
	dragonflies and damselflies, which are known to breed (and therefore use freshwater pond habitat) at the site	6.3 km south east of PCC		Chapter 12: Terrestrial Ecology			of nitrogen operational emissions where relevant are covered in Chapter 12: Terrestrial Ecology
Relevant Local Statutory and Non-Statutory Nature Conservation Designations as first identified and screened within Appendix 12C: PEA (ES Volume III, Document Ref. 6.4).							
There are no relevant local statutory and non-statutory designations where aquatic ecology is a reason for designation.							
Relevant habitats identified with reference to the information provided in Appendix 12C: PEA and 13A: Aquatic Supplementary Desk Study and Field Survey Report (ES Volume III, Document Ref. 6.4). Local or higher value habitats only, excluding habitats that are reasons for designation of the above nature conservation designations.							
Ponds (Pond 3, Pond 9, Pond 14, Pond 113 and Pond 114)	Pond 9 and Pond 14 are the only remaining perennial ponds within the Teesmouth and Cleveland Coast SSSI. Other ponds are small ponds typical of habitats present in the wider area. Where available, site baseline data	Within proximity (< 50m) to the PCC Site and the Site boundary for the CO_2 Gathering Network and Water Connection.	Up to District, UK BAP species	Appendix 12C: PEA, Appendix 13A: Aquatic Ecology Supplementary Desk Study and Field Survey Report and Chapter 9: Surface Water, Flood Risk and Water Resources	C, O, D	C, D	**Scoped in,** No o direct impacts (i.e. habitat loss) predicted but potential for temporary indirect impacts on habitat and water quality during construction and decommissioning. Potential indirect impacts on water quality during

Relevant ecological feature	Description of feature	Relationship to the Proposed Development	Ecological value and status	See related Chapter or Appendix of the ES (Volume I or III)	Relevance to assessment (C = construction, O = operation*,D = decommissioning, n/r = not relevant)		Summary of scoping (signposting of relevant evidence)
					PCC Site	Proposed other Connection Corridors[1]	
	indicated that they support a range of common and widespread fish, macroinvertebrate and macrophyte species, except for the near threatened ragged robin (*Lychnis flos-cuculi)* and European eel (*Anguilla anguilla*) eDNA, a UK BAP species, in Pond 3. All species recorded unlikely to be restricted in range in the local area. Given the past and current industrial use of the area, they are also considered likely to be of poor quality, as confirmed by water quality and macroinvertebrate						operation on ponds near the PCC Site.

Relevant ecological feature	Description of feature	Relationship to the Proposed Development	Ecological value and status	See related Chapter or Appendix of the ES (Volume I or III)	Relevance to assessment (C = construction, O = operation*,D = decommissioning, n/r = not relevant)		Summary of scoping (signposting of relevant evidence)
					PCC Site	Proposed other Connection Corridors[1]	
	data where baseline data was available.						
Other ponds	Twenty-nine permanent ponds within 200 m of the Site (Appendix 13A, Figure 13-A)	Within 200 m of the Site.		Appendix 13A: Aquatic Ecology Supplementary Desk Study and Field Survey Report	n/r	n/r	Scoped out, no direct impacts (i.e. habitat loss) and no pathways for indirect impacts
Watercourses (Dabholm Gut, The Fleet, The Mill Race, Belasis Beck and Drain (Waterbody 95-Holme Fleet and 97)	Dabholm Gut, The Mill Race and The Fleet are linear, historically realigned watercourses on the east bank of the River Tees. Belasis Beck and Holme Fleet are shallow and wide watercourses, flowing parallel to/culverted under an adjacent pipeline along the CO_2 Gathering Network, with shallow gradient.	Partially within the Site boundary for the construction of the CO_2 Gathering Network, Gas Connection, Water and Electrical Connection Corridor.	Up to District value, legally protected, UK BAP species	Appendix 12C: PEA, Appendix 13A: Aquatic Ecology Supplementary Desk Study and Field Survey Report and, Chapter 9: Surface Water, Flood Risk and Water Resources	n/r	C, O, D	**Scoped in**, no direct impacts (i.e. habitat loss) however, potential for temporary indirect impacts on habitat and water quality during construction, operation, and decommissioning.

Relevant ecological feature	Description of feature	Relationship to the Proposed Development	Ecological value and status	See related Chapter or Appendix of the ES (Volume I or III)	Relevance to assessment (C = construction, O = operation*,D = decommissioning, n/r = not relevant)		Summary of scoping (signposting of relevant evidence)
					PCC Site	Proposed other Connection Corridors[1]	
	Waterbody 97 is a linear drainage ditch along an existing pipeline along the CO_2 Gathering Network. Dabholm Gut receives the final effluent from Bran Sands WwTW. They are typical of other watercourses in the wider area. Where available, baseline data show that they support common and widespread fish, macroinvertebrate and macrophyte species, except for European eel (*Anguilla anguilla*) which are in Dabholm Gut. Species are unlikely to be restricted in range in the local area.						

Relevant ecological feature	Description of feature	Relationship to the Proposed Development	Ecological value and status	See related Chapter or Appendix of the ES (Volume I or III)	Relevance to assessment (C = construction, O = operation*,D = decommissioning, n/r = not relevant)		Summary of scoping (signposting of relevant evidence)
					PCC Site	Proposed other Connection Corridors[1]	
	Given the past and current industrial use of the Site, they are considered likely to be of poor water quality, as suggested by the macroinvertebrate data collected, where available.						
Other watercourses (Lackenby Channel, Kinkerdale Beck, Kettle Beck, Knitting Wife Beck, Dabholm Beck)	Several watercourses within 200 m of the Site.(Appendix 13A, Figure 13-A)	Within 200 m but outside of the Site boundary for construction of the other Connections.	Up to District	Appendix 12C: PEA, Appendix 13A: Aquatic Ecology Supplementary Desk Study and Field Survey Report and, Chapter 9: Surface Water, Flood Risk and Water Resources	n/a	n/r	Scoped out, no direct impacts (i.e. habitat loss) and no pathways for indirect impacts on water quality
Relevant species identified with reference to the information provided in Appendix 12C: PEA (ES Volume III, Document Ref. 6.4) and further detailed in Appendix 13A: Aquatic Ecology Supplementary Desk Study and Field Survey Report. Excludes marine species and birds (see Chapters 14 and 15 respectively for these in ES Volume I, Document Ref. 6.2).							
Fish	Species and communities of	Utilise ponds and rivers/stream	Up to District value, legally	Appendix 12C: PEA and Appendix	C, O, D	C, D	**Scoped in,** there will be no direct

Relevant ecological feature	Description of feature	Relationship to the Proposed Development	Ecological value and status	See related Chapter or Appendix of the ES (Volume I or III)	Relevance to assessment (C = construction, O = operation*,D = decommissioning, n/r = not relevant)		Summary of scoping (signposting of relevant evidence)
					PCC Site	Proposed other Connection Corridors[1]	
	ponds and watercourses within the ZoI of the Proposed Development. European eel (*Anguilla anguilla*) was recorded within Dabholm Gut and eDNA detected in Pond 3. No records of rare of notable species within the ZoI of the Proposed Development were returned from the desk study.	habitats in proximity to the PCC Site and / or within close proximity to the CO_2 Gathering Network and other Connections.	protected, UK BAP species	13A: Aquatic Ecology Supplementary Desk Study and Field Survey Report			impacts on fish, given that there is no need for the installation of new culverts or barriers to fish passage for the construction of the PCC Site, CO_2 Gathering Network and other Connections. However, potential indirect impacts on water quality of supporting habitats (those scoped in above).
Macroinvertebrate	Species and communities of aquatic habitats within the ZoI for the Proposed Development. Relatively common and widespread species recorded, typical of habitats present in the	Utilise ponds and rivers/stream habitats in proximity to the PCC Site and or in close proximity to the the CO_2 Gathering Network and other Connections.	Up to District value	Appendix 12C: PEA and Appendix 13A: Aquatic Ecology Supplementary Desk Study and Field Survey Report	C, O, D	C, D	**Scoped in,** there will be no direct impacts on macroinvertebrates . However, potential indirect impacts on water quality of supporting habitats (those scoped in above) during

Relevant ecological feature	Description of feature	Relationship to the Proposed Development	Ecological value and status	See related Chapter or Appendix of the ES (Volume I or III)	Relevance to assessment (C = construction, O = operation*,D = decommissioning, n/r = not relevant)		Summary of scoping (signposting of relevant evidence)
					PCC Site	Proposed other Connection Corridors[1]	
	wider area so there are no reasons to expect that these species are restricted in range in the local area. The desk-study returned records of two Nationally Scarce aquatic beetles *Cercyon littoralis* and *Noterus crassicornis* in ponds near Cotham Marsh and Seal Sands, however they are no longer in the ZoI of the Proposed Development. The species are not considered to be threatened and are typical of habitats present in the wider area, and so they not considered likely to be restricted in						construction, operation and decommissioning.

Relevant ecological feature	Description of feature	Relationship to the Proposed Development	Ecological value and status	See related Chapter or Appendix of the ES (Volume I or III)	Relevance to assessment (C = construction, O = operation*,D = decommissioning, n/r = not relevant)		Summary of scoping (signposting of relevant evidence)
					PCC Site	Proposed other Connection Corridors[1]	
	range in the local area.						
Macrophytes	Species and communities of aquatic habitats within the ZoI for the Proposed Development. Common and widespread species recorded, including the Near Threatened ragged robin (*Lychnis flos-cuculi*) in Pond 3. Though the species appears to have been recently declining in range (Stroh et. al, 2014), it is however still widespread in England and is not considered to be threatened. It is typical of habitats present in the wider area so no reasons to expect	Utilise ponds and rivers/stream habitats in proximity to the PCC Site and/ or in close proximity to the the CO_2 Gathering Network other Connections	Up to District value	Appendix 12C: PEA and Appendix 13A: Aquatic Ecology Supplementary Desk Study and Field Survey Report	C, O, D	C, D	**Scoped in,** there will be no direct impact on macrophytes. However, potential indirect impacts on water quality of supporting habitats (those scoped in above) during construction, operation and decommissioning.

Relevant ecological feature	Description of feature	Relationship to the Proposed Development	Ecological value and status	See related Chapter or Appendix of the ES (Volume I or III)	Relevance to assessment (C = construction, O = operation*,D = decommissioning, n/r = not relevant)		Summary of scoping (signposting of relevant evidence)
					PCC Site	Proposed other Connection Corridors[1]	
	that these species are restricted in range in the local area. No records of rare or protected species within the ZoI of the Proposed Development returned from the desk study.						
Controlled weed species	A single invasive non-native species listed on Schedule 9 of the Wildlife and Countryside Act (WCA, 1981) was recorded, floating pennywort *Hydrocotyle ranunculoides* within the Fleet.	Within the Fleet	No value, offence to cause to spread	Appendix 12C: PEA and Appendix 13A: Aquatic Ecology Supplementary Desk Study and Field Survey Report	C, D	C, D	Scoped out, no work will be undertaken on the Fleet so there is no potential for propagation during works

Future Baseline

Construction (2022-2026)

13.4.9 The future aquatic ecology baseline expected to be present for the period of 2022-2026 is likely to be similar to the current baseline as it is unlikely that there will be meaningful short-term changes to the aquatic ecology habitats within the ZoI of the Proposed Development and to the species and communities that inhabit these habitats.

13.4.10 It is not expected that there will be any changes in the morphology of watercourses in the short-term, as these will depend on the implementation of habitat restoration measures. As presented in Chapter 9: Surface Water, Flood Risk and Water Resources (ES Volume I, Document Ref. 6.2) the available water quality data obtained from the Environmental Agency demonstrates that the past industrial use of the Proposed Development area has resulted in contamination of watercourses by substances such as heavy metals and polyaromatic hydrocarbons (PAHs), which tend to accumulate in fine sediments. It is also unlikely that there will be meaningful changes in the water quality of the watercourses within the ZoI of the Proposed Development in the short-term.

13.4.11 The ponds present within the ZoI of the Proposed Development are likely to continue to be present. Minor changes in habitat extent, composition and structure might occur over time, but it is very unlikely that the water quality of the ponds will change in a way that is meaningful to aquatic organisms and communities in the short-term.

13.4.12 There might be changes locally in the distribution of the species present but given the current absence of protected macroinvertebrate or macrophyte species within the wider area see Appendix 13A: Aquatic Ecology Supplementary Desk Study and Field Survey Report (ES Volume III, Document Ref. 6.4), the likelihood of colonisation of potentially impacted habitats by rare or protected species is considered very low.

13.4.13 European eel (Anguilla anguilla) is present within the Dabholm Gut but given the existence of several culverts and barriers to passage from Dabholm Gut to its tributaries, it is unlikely that eels will move further upstream in the tributaries of Dabholm Gut (The Fleet, The Mill Race).

Operation (2026)

13.4.14 At the start of operation of the Proposed Development (2026), the aquatic ecology baseline is likely to be similar to the current baseline, given that, no significant short-term changes are expected in terms of the range and quality of the habitat present.

13.4.15 However, throughout the operational life of the project and up to 2051, changes are possible, although it is difficult to predict with certainty and to quantify the level of changes over the medium to long term.

13.4.16 The Water Framework Directive (WFD) sets objectives for waterbodies to attain ‘Good’ potential or status by 2027. Currently, the objectives for the Tees Estuary (South Bank) WFD waterbody, which Dabholm Gut, The Fleet and the Mill Race are part of, are to reach ‘Good’ overall potential and ‘Good’

potential for surface water and biological quality elements by 2027. Objectives for the 'Tees' WFD waterbody, of which Belasis Beck is a tributary, are to reach 'Good' potential for surface water supporting elements.

13.4.17 It is likely that through the action of new legislative requirements and ever more stringent planning policy and regulation and based on the assumption that WFD objectives for the WFD waterbodies are attained by 2027, there will be improvements in water quality for the above-mentioned watercourses. However, there are significant challenges such as adapting to a changing climate and pressures of population growth that could have an impact on achieving these objectives, and there is also the possibility that water quality of the watercourses might have improved by this date.

13.4.18 In terms of habitat quality, the Tees Estuary (South Bank) WFD waterbody (which includes The Fleet, The Mill Race and Dabholm Gut) and the Tees transitional WFD waterbody (of which Belasis Beck is a tributary) are currently classified as a 'heavily modified waterbody'. WFD waterbodies are classified as 'Heavily modified' when they have been physically modified to support uses which provide social and economic benefits. Generally, these modifications cannot be removed without major negative effects on those social and economic benefits. Therefore, habitat modifications and improvements for these watercourses will depend on a range of factors that are difficult to predict.

13.4.19 Assuming that there will be improvements in water quality, this could lead to changes in the structure and composition of fish, macrophyte and macroinvertebrate communities that inhabit the watercourses present in the ZoI of the Proposed Development. A wider range of species would be expected which could result in communities being of greater sensitivity to pollution impacts.

13.4.20 For ponds within Coatham Dunes and other ponds, factors likely to influence (positively or negatively) the integrity and nature conservation value of designations will depend on the suitability of land management regimes, population pressures (e.g. recreational use of sand dune habitats), and over the longer term climate change and anticipated improvements in air quality as pollutants decrease due to changes in technology and the types of emissions sources[1].

13.4.21 It is likely that current and former industrial land adjacent to the Site would be released for new development, e.g. in accordance with existing local plans and policy for regeneration of the South Tees Area. The extent of ecologically valuable pond habitats may decrease as a result of such development and therefore the relative nature conservation value of remaining areas of semi-natural habitat may increase over time.

13.4.22 Counter to this, implementation of planning policy and legal requirements (including the Redcar and Cleveland South Tees Area SPD and anticipated legal requirements to deliver substantive biodiversity enhancement) should as a minimum ensure that there is no net loss of biodiversity. Additionally, if implemented successfully as intended, it should also mean that future

[1] The UK's Clean Air Strategy (DEFRA, 2019), details commitments to monitor impacts of air pollution on habitats and reduce the levels of damaging deposition of reactive forms of nitrogen by 17% over England's protected priority habitats by 2030.

adjacent developments incorporate features of value for biodiversity with potential for small to moderate improvements in the future baseline over the operational life of the Proposed Development e.g. certain species may colonise or increase in number as a result of such enhancement. Policy STDC7 of the SPD requires measures to protect and enhance the biodiversity of the South Tees area in accordance with the evolving masterplan.

13.4.23 Changes in the distribution of some species would be likely to occur in line with changes in habitats as a result of ecological succession or other natural processes, but over the short term any such changes would be relatively minor.

13.4.24 In terms of controlled weed species, there is the potential for a spread to Dabholm Gut, of which The Fleet (where floating pennywort is currently present) is a tributary. It is also possible that the species will be present in a larger number of waterbodies because of human introduction.

Decommissioning (2051)

13.4.25 As discussed above, changes are likely to occur, and these will be reflected in the baseline expected at the decommissioning stage.

13.4.26 Strategic-level Climate Change Predictions (CCP), including UKCP18 (The Met Office, 2018) indicate that there is potential for sea level rise of up to 300 mm over the lifetime of the Proposed development (see Appendix 9A: Flood Risk Assessment, ES Volume III Appendices), and this may have an influence on the sensitivity of habitat and species features present at decommissioning.

13.4.27 The decommissioning baseline will be influenced by future land-use and nature conservation regimes. The processes identified for operation (above) will continue, with the balance between adverse effects and beneficial habitat improvements is unknown. This limits the assumptions that can be made for the purposes of this assessment. However, it should also be noted that the likely ZoI of decommissioning will be much smaller than operation, (air quality effects) and likely construction also.

13.4.28 Decommissioning may also proceed to different timeframes within different parts of the Site, and in particular the compressor and CO2 Gathering Network is likely to remain in operation after the PCC Site is decommissioned (to 2066+). Relevant ecological features will therefore depend on the location and timing of the relevant decommissioning activities, and overall impacts to relevant ecological features will be much reduced relative to those relevant at construction and operation.

13.5 Development Design and Impact Avoidance

Construction

13.5.1 The design process for the Proposed Development has included consideration of biodiversity constraints and has incorporated, where reasonably practical, measures to avoid and reduce the potential for adverse effects on these, in accordance with the ‘mitigation hierarchy’ see Appendix

12B: Ecological Impact Assessment Methods (ES Volume III, Document Ref. 6.4) and relevant planning policy.

13.5.2 As a result, the design for the Proposed Development does not require works to be undertaken directly within ponds or watercourses for the construction of the PCC Site or Connection Corridors, the latter being constructed above ground where possible, using existing infrastructure. Where there is the need for the installation of a new pipeline across an aquatic habitat (i.e. across the River Tees and Pond 18 for the CO2 Gathering Network, or across the Mill Race and the Fleet for Natural Gas Connection or the Electrical Connection), this will be done using trenchless technologies such as HDD, auger bore or tunnel.

13.5.3 These changes in the design for the Proposed Development mean that there will be no direct impacts (i.e. habitat loss) to aquatic habitats within the Site.

13.5.4 However, as briefly described in Table 13-5 above, the works have the potential for indirect impacts on habitat water quality (via uncontrolled site runoff and via accidental chemical spills during construction) on a certain number of aquatic habitats, where there is the need for works to be undertaken within proximity to or above such habitats. Nevertheless, it is important to note that where there is the need to work above a watercourse (Belasis Beck for the installation of the CO2 Gathering Network), this will be limited to very short stretches where the watercourse is already culverted under existing infrastructure. No work will be undertaken above open sections of watercourses.

13.5.5 In addition, the contractor will comply, as a minimum, with relevant environmental legislation at the time of construction and as a result the risk for potential adverse impacts on water quality during construction will be avoided, minimised or reduced. To allow pollutants to enter a watercourse would be in breach of the Environmental Permitting (England and Wales) Regulations 2016 and the Water Resources Act 1991 (as amended).

13.5.6 Avoidance of pollution of waterbodies during construction will be via compliance with the relevant Good Practice Guidance documents and the implementation of a range of pollution control measures as outlined in the Framework Construction Environmental Management Plan (CEMP) (see Appendix 5A, ES Volume III, Document Ref. 6.4). These measures will be included in the Final CEMP, in accordance with the principles set out in industry guidelines including the CIRIA report 'C532: Control of water pollution from construction sites'.

13.5.7 These measures will include but are not limited to:

- the creation of buffer zones along relevant waterbodies. If the buffer zone has to be reduced, impermeable liners and bunds will need to be used to prevent materials entering watercourses;
- the management of construction site runoff through, for example the development of temporary drainage system; an appropriate timing of works to avoid earthworks being undertaken during wet weather periods; the creation of buffer zones around watercourses, and the storage of soils and sediments at a minimum 20 m away from watercourses; and

- the management of spill risk through, for example storage of chemicals in self bunded leak proof containers; regular inspection of plant, machinery and vehicles; and provision of impermeable areas for refuelling, oiling and degreasing.

13.5.8 After the implementation of these mitigation measures, with which the contractor will comply, the residual impacts on habitat and water quality of ponds, watercourses and on the species and communities they support are only considered to be negligible, and, in the very unlikely event of an incident occurring, it is expected that the impacts would be short-term and reversible.

Operation

13.5.9 There will be no direct impacts to the aquatic habitat and species during operation of the Proposed Development.

13.5.10 Mitigation features are incorporated into the design of the Proposed Development design in order to avoid, minimise and reduce potential adverse indirect impacts on the water quality of aquatic habitats during the operation of the Proposed Development.

13.5.11 These are detailed in Appendix 5A: Framework CEMP (ES Volume III, Document Ref. 6.4) and will be included in the Final CEMP. They will notably include:

- a suitable surface water drainage system, which will focus on the PCC Site (drainage will not be required for the other Connections) and will provide interception, conveyance and treatment of surface water runoff. The proposed drainage system is to include the use of sustainable drainage systems (SuDS) to provide treatment of runoff to ensure potential adverse effects on water quality are avoided. Details on any future drainage philosophy will be discussed, refined and agreed in consultation with the Environment Agency and other statutory agencies as required;
- a strategy for handling and the disposal of chemicals used at the site, which will include paved and kerbed/bunded storage areas to ensure containment of chemical spillage and leaks;
- a site Emergency Response Plan (prepared for Regulation 9 of the Control of Major Accident Hazards (COMAH) Regulations (2015) for dealing with emergency situations involving loss of containment of hazardous substances; and
- the conveyance of foul water to Marske-by-the-Sea WwTW which will treat the wastewater before the effluent is discharged to the sea. This is subject to Northumbrian Water Limited (NWL) having sufficient capacity and would be subject to NWL's existing Environmental Permit conditions.

13.5.12 After the implementation of these mitigation measures and considering that all site routine runoff will be directed to the Tees Bay, and that ammonia-based process water will be either treated at an on-site water treatment plant or off-site at Bran Sands WwTW, the indirect impacts on aquatic habitats and on the species and communities they support will be negligible. In the unlikely

event that an incident happened, such as a malfunction at the WwTW, it is expected that any impacts would be relatively short-term and reversible.

13.5.13 Air emissions of NOx from the Proposed Development (where they have the potential to impact on aquatic ecology) will occur during operation of the Proposed Development. As detailed in Chapter 8: Air Quality (ES Volume I, Document Ref. 6.2), the management of construction phase emissions, including dust and particulates, and the application of adequate mitigation measures detailed in Appendix 5A: Framework CEMP (ES Volume III, Document Ref. 6.4) will be managed through the Final CEMP.

Decommissioning

13.5.14 Decommissioning will remove all above ground infrastructure, but any buried pipelines will be left in situ. Therefore, there will be no direct impacts to aquatic habitats given that there will be no requirement to remove or disturb habitats to remove buried infrastructure, and no species associated with these habitats will be affected.

13.5.15 Requirements to remove above ground infrastructure means that decommissioning activities will be predominantly restricted to within the built footprint of the Proposed Development.

13.5.16 As is the case during the construction phase, during the decommissioning phase there will be the potential for temporary impacts on water quality through accidental chemical spills and uncontrolled site runoff to aquatic habitats located in proximity to the works. However, a range of pollution control and mitigation measures similar to those during construction will be put in place to avoid, reduce or minimise the risks. These will include a similar range of measures to those defined in the CEMP and will form part of a Decommissioning Environmental Management Plan (DEMP) (see Section 13.8: Mitigation and Enhancement Measures).

13.6 Likely Impacts and Effects

Construction

13.6.1 After having considered development design and impact avoidance measures as outlined in Section 13.6: Development Design and Impact Avoidance, it is considered that there will be:

- no direct impacts to aquatic habitats, such as disturbance to the bank, channel or bed, because no open-trench crossings are required for construction of the various Connections and for the PCC Site. Where new pond or watercourse crossings are needed, these connections are to use existing pipe racks, sleeper tracks, culverts and existing pipe bridges, or HDD; and
- no hydrological or morphological impacts on aquatic habitats are expected during construction (see Chapter 9: Surface Water, Flood Risk and Water Resources in ES Volume I, Document Ref. 6.2).

13.6.2 There is a potential risk of indirect impacts from surface runoff from construction areas (i.e. fine sediments) and impacts on water quality from potential pollution incidents (i.e. chemical spills) thereby having potential

effects on aquatic habitats, where there are requirements for works taking place above or in proximity to aquatic habitats.

13.6.3 The impact assessment described below assumes that the contractor will comply with relevant legislation and will adhere and implement pollution control measures defined in Appendix 5A: Framework CEMP (ES Volume III, Document Ref. 6.4) but the risk is considered further for the following features:

- Pond 3 and Pond 14 for construction at the PCC Site;
- Dabholm Gut, Belasis Beck, Unnamed Drain (Waterbody 97), Holme Fleet, 113 and 114 for the construction of the CO_2 Gathering Network; and
- The Fleet and the Mill Race for the construction of the CO_2 Gathering Network, the Natural Gas Connection, the Water Connection and the Electrical Connection.

Habitats

Ponds

13.6.4 There will be no direct impacts (i.e. habitat loss) on ponds during the construction of the PCC Site, CO_2 Gathering Network and various Connections.

13.6.5 Where construction works have to be undertaken in close proximity to the PCC Site (Pond 3, Pond 14), CO_2 Gathering Network (, Pond 113, Pond 118), potential indirect impacts on habitat (i.e. fine sediments) and water quality (i.e. chemical spills) are considered to be negligible with the implementation of pollution control measures defined in Appendix 5A: Framework CEMP (ES Volume III, Document Ref. 6.4) and will be included in the Final CEMP.

13.6.6 These ponds are typical of other pond habitats present in the wider area and considered to be of more than District value. Given the past and current industrial use of the Site, is considered likely that these ponds are of poor water quality, as suggested by the macroinvertebrate data collected during baseline site surveys (where available), which included a range of species which are adapted to poor water quality and sedimentation and would not be sensitive to short term increases in sediment, if this occurred. An incident such as a spill of fuel or lubricant could have a greater impact, but Appendix 5A: Framework CEMP (ES Volume III, Document Ref. 6.4) includes preparations for pollution response, such as having spill-kits in working areas, which would minimise the risk of an adverse effect on the ponds. These measures will be included in the Final CEMP.

13.6.7 There will be negligible impacts on habitat (i.e. from fine sediments) and water quality (i.e. from chemical spills) on pond habitats which are considered likely to be relatively resilient to such impacts. Therefore, the effect on their nature conservation value is assessed as not significant (neutral).

Watercourses

13.6.8 There will be no direct impacts (i.e. habitat loss) on watercourses during the construction of the PCC Site, CO_2 Gathering Network and various Connections.

13.6.9 Above ground construction works using existing infrastructure has to be undertaken in close proximity to watercourses for the construction of the CO_2 Gathering Network (Dabholm Gut, Belasis Beck, Unnamed Drain (Waterbody 97), The Fleet, The Mill Race) and Water Discharge Corridor (The Fleet, The Mill Race, Dabholm Gut). In areas where work is required above the watercourses for the installation of the CO_2 Gathering Network (Belasis Beck), the watercourse is already culverted under the existing pipeline infrastructure. Therefore, with the implementation of pollution control measures defined in Appendix 5A: Framework CEMP (ES Volume III, Document Ref. 6.4) and to be included in the Final CEMP, the potential impacts on water quality are considered to be negligible.

13.6.10 With the exception of Belasis Beck, which appears to be a more natural watercourse, other watercourses are largely linear channels, having been historically modified, with a substrate largely dominated by fine sediments (see Chapter 9: Surface Water, Flood Risk and Water Resources, ES Volume I, Document Ref. 6.2). Given the past and current industrial use of the Site, it is considered likely that they are of poor water quality, as suggested by the macroinvertebrate data collected during baseline site surveys (where available, which included a range of species adapted to poor water quality and sedimentation.

13.6.11 There will be minor indirect impacts on habitat (i.e. fine sediments) and water quality (i.e. chemical spills) on watercourses which are considered likely to be relatively resilient to such impacts. Therefore, the effects on nature conservation from the Proposed Development are considered to be not significant (neutral).

Species

Fish

13.6.12 There will be no direct impacts to fish as there will be no works undertaken on the bank, channel or bed of their habitats. There is no need for the construction of new culverts and there will be no temporary or permanent barriers to fish movement within the watercourses. All watercourse and pond crossings required for construction of the various Connection Corridors will be above ground using existing infrastructure (CO_2 Gathering Network, Water Discharge Corridor), or underground using trenchless techniques (Electrical Corridor, Natural Gas Corridor).

13.6.13 Desk-based assessment and site surveys undertaken have demonstrated that fish species present within ponds and watercourses within the construction ZoI of the Proposed Development are relatively common, widespread and unlikely to be restricted in the local area.

13.6.14 European eel (*Anguilla anguilla*), a UK BAP species, was however recorded in Dabholm Gut, along the route of the CO_2 Gathering Network and eDNA suggested that the species might also be present in Pond 3, in the vicinity of the PCC Site.

13.6.15 As discussed above, there will be no direct impacts to fish and no potential for significant effects from the Proposed Development on fish habitats and their water quality. Therefore, the Proposed Development is considered to be

not significant (neutral) regarding effects on fish species and communities, including the eel population of Dabholm Gut.

13.6.16 Impacts on fish in the River Tees and estuary are assessed in Chapter 14: Marine Ecology (ES Volume I, Document Ref. 6.2).

Macroinvertebrates

13.6.17 There will be no direct impacts on macroinvertebrates during construction and the assessment above demonstrates that there is no potential for significant effects from the Proposed Development on macroinvertebrate habitats and water quality from indirect construction impacts.

13.6.18 Desk-based assessment and site surveys undertaken have demonstrated that macroinvertebrate species within ponds and watercourses present within the construction ZoI of the Proposed Development are:

- relatively common, widespread and typical of habitats present in the wider area - therefore, there is no reason to expect that these are restricted in range in the local area; and
- dominated by species considered to be relatively tolerant to pollution – therefore communities are likely to be insensitive to impacts on water quality, in the event that any minor incidents occur.

13.6.19 The effect on macroinvertebrate species is assessed to be not significant (neutral), given the absence of direct impacts on macroinvertebrates and on their water quality.

Macrophytes

13.6.20 There will be no direct impacts on macrophytes during construction and the assessment above demonstrates that there is no potential for significant effects from the Proposed Development on macrophyte habitats and their water quality from indirect construction impacts.

13.6.21 Desk-based assessment and site surveys undertaken have demonstrated that macrophyte species within ponds and watercourses present within the construction ZoI of the Proposed Development are common, widespread and unlikely to be restricted in range in the local area.

13.6.22 The effect on macrophytes is assessed to be not significant (neutral), due to the absence of direct impacts on macrophytes, their habitats and water quality.

Operation

13.6.23 During the operation phase, there will be no direct impacts on aquatic habitats and species present within the operational ZoI of the Proposed Development.

13.6.24 Effluent will be discharged to Tees Bay via the outfall, but will be treated prior to discharge (including the potential option for transportation of process water to Bran Sands WwTP and return for discharge) and therefore, there is no potential for indirect impacts on habitat or water quality of ponds within proximity to the PCC Site (Pond 3, Pond 14).

13.6.25 There is no hydrological connectivity to watercourses or watercourses near the PCC Site, and therefore there is no potential for impacts on water quality.

13.6.26 However, the assessment below considers the potential for indirect impacts on water quality of aquatic habitats through atmospheric deposition of nitrogen emitted from the PCC Site on ponds (Pond 3, Pond 9, Pond 14), which are adjacent to the PCC Site.

13.6.27 Foul water from the PCC Site will be sent and treated at the Marske- by-the Sea WwTW, where it will be treated before the effluent being discharged to the Tees Estuary. This is subject to NWL having sufficient capacity and would be subject to NWLs existing Environmental Permit conditions, and therefore potential impacts are considered to be negligible and the effects on aquatic ecology are assessed as not significant (neutral).

Habitats

Ponds

13.6.28 Ponds located within proximity to the PCC Site (Pond 3, Pond 9, Pond 14) have the potential to be impacted by re-deposition of atmospheric nitrogen emitted during operation of the Proposed Development.

13.6.29 An assessment of atmospheric deposition has been undertaken in Chapter 8: Air Quality (ES Volume I, Document Ref. 6.2). Chapter 9: Surface Water, Flood Risk and Water Resources (ES Volume I, Document Ref. 6.2) assesses in detail the potential effects on water quality of Pond 14, based on water quality monitoring undertaken between October 2020 and January 2021 and considers that the potential level of nutrient enrichment for Pond 14 during operation will be negligible.

13.6.30 No detailed assessment was made for other ponds; however, baseline data indicates that both Pond 3 and Pond 9 are in the latter stages of succession to swamp, with high trophic rank scores, indicative of macrophyte communities typical of nutrient-rich ponds. Trophic rank scores for these ponds were similar to Pond 14. Furthermore, in ponds and lowland watercourses nutrient-limitation on plant growth is usually due to lack of phosphate rather than nitrogen.

13.6.31 The effect on ponds from the operation of the Proposed Development is assessed to be not significant (neutral).

Watercourses

13.6.32 In the case where treated wastewater may be discharged on Dabholm Gut (from the existing consented outfall for the Bran Sands WwTP) this will be subject to NWL's existing Environmental Permit conditions. Given this, it is considered that as the wastewater from the PCC Site will be treated before being discharged to Dabholm Gut, no deterioration in water quality of the watercourse is expected. As such, the potential impacts of the Proposed Development on water quality of the watercourse would be negligible and the effect on Dabholm Gut is assessed to be not significant (neutral).

Species

13.6.33 There will be no direct impacts from operation of the Proposed Development to fish, macroinvertebrate, macrophytes or their habitats. In addition, as

discussed above, indirect impacts on the habitats and water quality of the habitats that support those species are considered not significant. Therefore, the effect of the Proposed Development during operation on fish, macroinvertebrate, macrophytes during operation is assessed to be not significant (neutral).

Decommissioning

13.6.34 There will be no direct impacts to aquatic habitats given that there will be no requirement to remove or disturb habitats to remove buried infrastructure, and no species associated with these habitats will be affected.

13.6.35 However, there is the potential temporary and indirect impacts on aquatic habitats and their water quality, via accidental pollution or uncontrolled site runoff, but will be limited to those located in close proximity to the built footprint of the Proposed Development and avoided or mitigated by procedures during the works.

13.6.36 Decommissioning activities will be conducted in accordance with the appropriate guidance and legislation at the time of closure of the Proposed Development. A Decommissioning Environmental Management Plan (DEMP) will be produced and agreed with the Environment Agency. The DEMP will consider in detail all potential environmental risks and contain guidance on how risks can be removed, mitigated, or managed. This is discussed further within Chapter 4: Proposed Development (ES Volume I, Document Ref. 6.2).

13.6.37 Therefore, as is the case during the construction phase, it is considered that potential indirect impacts on aquatic habitats will be negligible, after appropriate mitigation is embedded into the design of the Proposed Development.

13.6.38 Although the type and location of aquatic habitats potentially impacted will be largely the same as those potentially impacted during construction, it is not possible to identify relevant aquatic ecology features in terms of species or communities. However, it is considered that some watercourses might have improved in water quality and be of greater value and sensitivity in comparison to current baseline conditions (see Section 13.5). Ecological surveys will be commissioned as appropriate to inform the scope of the DEMP.

13.6.39 Given the absence of direct impacts on aquatic and the absence of potential for significant effects on aquatic ecology features, the effect of the Proposed Development during decommissioning on aquatic ecology is assessed to be not significant (neutral).

13.7 Mitigation and Enhancement Measures

Construction

13.7.1 Given the absence of likely significant effects from the Proposed Development on aquatic habitats, species and communities during construction, operation and decommissioning no additional mitigation in

addition to the embedded mitigation (as outlined in Section 13.5: Development Design and Impact Avoidance) is considered necessary.

13.7.2 An Environmental or Ecological Clerk of Works (ECoW) would be present during construction as appropriate to supervise and instruct the implementation of mitigation measures outlined in Appendix 5A: Framework CEMP (ES Volume III, Document Ref. 6.4) and which will be included in the Final CEMP.

Operation

13.7.3 Given the findings of the above impact assessment, mitigation measures are not considered necessary during the operation of the Proposed Development. Compliance with relevant permits (to be agreed with relevant regulators post-consent) and Requirements of the draft DCO will be sufficient to manage the potential for adverse ecological effects.

Decommissioning

13.7.4 Any necessary mitigation requirements would be determined and agreed at a future date prior to decommissioning. As part of this process, the Applicants would provide a DEMP. Relevant habitat and species surveys would be undertaken to inform the specification of relevant working methods and mitigation in the DEMP. This is discussed further within Chapter 4: Proposed Development (ES Volume I, Document Ref. 6.2).

Enhancement

13.7.5 An Indicative Landscape and Biodiversity Strategy (Document Ref. 5.12) has been prepared and submitted with the DCO Application. This sets out the landscape and biodiversity mitigation and enhancement proposals including a storm water attenuation pond which could be designed so that it is also suitable for freshwater and/or wetland flora and fauna.

13.8 Limitations or Difficulties

13.8.1 Baseline conditions and relevant ecological features have been determined using appropriate methods as outlined in Section 13.3 of this chapter. All habitats and species have been valued in accordance with the precautionary principle, i.e. the maximum likely nature conservation value has been applied based on the information available to inform decision-making on this.

13.8.2 The outbreak of the coronavirus (COVID-19) pandemic in Spring 2020 and the subsequent government advice regarding workplace health and safety requirements has influenced the scope and approach to the ecological surveys planned for 2020. As a result, for some of the waterbodies relevant to the assessment, a detailed fish, macroinvertebrate or macrophyte surveys could not be undertaken as access was not available. These have been evaluated for nature conservation based on professional judgement using aerial photographs, and an assessment of the range of species likely to occur within those habitats, based on historic records for fish, macroinvertebrate and macrophyte species returned from the desk-study.

13.8.3 For the purposes of worst-case assessment, it has been assumed that all semi-natural habitats present in these areas within proximity of the PCC Site might be impacted during construction.

13.8.4 The Connection Corridors have been broadly defined to allow flexibility on the selection of final connection routes and methods. In almost all cases, final construction corridors will be of no greater width than 35 m, and consequently would be much narrower than the land allowed for within the Site boundary around these areas. Given that construction of the Connection Corridors does not require any open-trench work, it is reasonable to assume that all aquatic habitats within the construction corridors will be retained, but it is necessary to assume they might be affected during construction via accidental pollution, which will be mitigated through the implementation of pollution control measures detailed in Appendix 5A: Framework CEMP (ES Volume III, Document Ref. 6.4) and which will be included in the Final CEMP.

13.8.5 Where the assessment of impacts from the construction, operation and decommissioning of the Proposed Development is subject to worst-case assumptions or is subject to limitations associated with ongoing modelling or ground investigations, this has been made clear in the text in the relevant sections of this chapter.

13.9 Cumulative Effects

13.9.1 There are several developments for which construction will overlap with the construction phase for the Proposed Development and which are in proximity to features scoped in this assessment. However, no likely significant cumulative effects are identified given the conclusions presented in the ES for the Proposed Development in isolation, and the additional considerations presented in Chapter 24: Cumulative and Combined Effects (ES Volume I, Document Reference 6.2).

13.10 Residual Effects and Conclusions

13.10.1 As discussed in Section 13.6: Likely Impacts and Effects, no significant effects were identified on aquatic habitat, species and communities during the construction or operational phases of the Proposed Development. Therefore, no additional mitigation is necessary besides the current design of the Proposed Development, impact avoidance strategy and embedded mitigation.

13.11 References

CIEEM (2019). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine.* Version 1.1. Winchester: Chartered Institute of Ecology and Environmental Management.

Department of Energy and Climate Change (DECC) (2011). *Overarching National Policy Statement for Energy (EN-1)*. London: The Stationary Office.

Defra (2011*). Biodiversity 2020: A strategy for England's wildlife and ecosystem services*. London: The Stationery Office.

Institute of Environmental Management and Assessment (IEMA) (2013). *Mitigation – Applying Best Practice* [Online]. Available at: https://transform.iema.net/article/mitigation-applying-best-practice

JNCC (1999). *Species status Assessment project* published by Joint Nature Conservation Committee [Online]. Available from: http://jncc.defra.gov.uk/default.aspx?page=3352.

Planning Inspectorate (2012) *Advice Note 9: Rochdale Envelope*. Version 2, republished April 2012. Bristol: The Planning Inspectorate.

Redcar and Cleveland Borough Council (2018). Redcar and Cleveland Local plan [Online]. Available at: https://www.redcar-cleveland.gov.uk/resident/planning-and-building/local-plan/areagrowth/Local%20Plan%20Adopted%20May%202018.pdf.