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17.0 CULTURAL HERITAGE

17.1 Introduction

17.1.1 This chapter of the Preliminary Environmental Information (PEI) Report provides an initial assessment of potential cultural heritage impact as a result of the Proposed Development. For the purposes of this chapter cultural heritage comprises, archaeology, built heritage and historic landscape.

17.1.2 This chapter is supported by the following figures (PEI Report, Volume II) and appendix (PEI Report, Volume III):

- Figure 17-1: Location of Designated Heritage Assets;
- Figure 17-2: Location of Non-Designated Heritage Assets;
- Figure 17-3: Location of Cultural Heritage Events;
- Figure 17-4: Historic Landscape Character; and
- Appendix 17A: Cultural Heritage Desk-Based Assessment (DBA).

17.2 Legislation, Planning Policy and Guidance

Legislative Background

17.2.1 The following legislation is relevant to this cultural heritage assessment.

The Infrastructure Planning (Decisions) Regulations (2010)

17.2.2 The Infrastructure Planning (Decisions) Regulations (2010) (HMSO, 2010) sets out the duties of the Secretary of State (SoS) in the Development Consent Order (DCO) process which includes having regard to the desirability of:

- preserving listed buildings, their setting or any features of special architectural or historic interest which they possess;
- preserving or enhancing the character or appearance of conservation areas; and
- preserving scheduled monuments and their settings.

The Planning (Listed Buildings and Conservation Areas) Act (1990)

17.2.3 The Planning (Listed Buildings and Conservation Areas) Act 1990 (HMSO, 1990) sets out the principal statutory provisions concerning the listing of buildings and designation of conservation areas, and provisions that must be considered in the determination of any application affecting listed buildings or conservation areas.

17.2.4 It requires the SoS to hold a list of buildings of special architectural or historical interest, which are accorded statutory protection. In addition, it expects Local Planning Authorities (LPAs) to designate conservation areas which are parts of their area considered to be *“of special architectural or historic interest, the character or appearance of which is desirable to preserve or enhance and design”*.

17.2.5 Section 66 of the Act states that in considering whether to grant planning permission for development which affects a listed building or its setting, the LPA, or the SoS, shall

have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses. By virtue of Section 1(5) of the Act a listed building includes any object or structure within its curtilage.

- 17.2.6 Section 72 of the Act establishes a general duty on a LPA or the SoS with respect to any buildings or other land in a conservation area to pay special attention to the desirability of preserving or enhancing the character or appearance of a conservation area.

The Ancient Monuments and Archaeological Areas Act (1979)

- 17.2.7 The Ancient Monuments and Archaeological Areas Act 1979 (HMSO, 1979) states that sites assessed to be of national importance may be included within the Schedule of Monuments. These sites are afforded statutory protection and Scheduled Monument Consent is required before any works are carried out which would have the effect of demolishing, destroying, damaging, removing, repairing, altering, adding to, flooding or covering up a Scheduled Monument. This Act also provides for the designation of areas of archaeological interest in which statutory provisions for access to construction sites for the purpose of carrying out archaeological works apply.

Planning Policy Context

- 17.2.8 This preliminary assessment has been undertaken taking into account relevant national, regional and local planning policy, as summarised below.

National Planning Policy

National Policy Statement (NPS) for Energy (EN-1) (2011)

- 17.2.9 The National Policy Statements (NPSs) for energy infrastructure set out the Government's policy for delivery of major energy infrastructure (Department for Energy and Climate Change, 2011). The Overarching NPS for Energy (EN-1) published in 2011 is of relevance to the cultural heritage assessment (refer to Section 5.8 Historic Environment).
- 17.2.10 Section 5.8 Historic Environment of the NPS recognises that the construction, operation and decommissioning of energy infrastructure has the potential to result in adverse impacts on the historic environment. Paragraph 5.8.2 defines the historic environment as, *"all aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, landscaped and planted or managed flora."* The NPS states that as part of the ES, the applicant should describe the significance of heritage assets; carry out an appropriate desk-based assessment and, where such desk-based research is insufficient to properly assess the interest, a field evaluation. Paragraph 5.8.10 states the applicant should ensure the impact of proposed development on the significant of heritage assets can be understood from the submitted application documents.

Draft National Policy Statements

17.2.11 The Government is currently reviewing and updating the Energy NPSs to reflect its policies and strategic approach that is set out in the Energy White Paper (December 2020), and to ensure that the planning policy framework enables the delivery of the infrastructure required for the country's transition to net zero carbon emissions. As part of the review process, the Government published Draft Energy NPSs for consultation in September 2021 and later revised versions on 30th March 2023. The details of these provisions are subject to consultation. However, these emerging documents and any subsequent formal adoption of new NPSs for energy infrastructure have been considered where relevant during the production of this PEI Report. A summary of the relevant draft NPSs is below.

Draft Overarching NPS for Energy (EN-1) (2023)

17.2.12 Section 5.9 of the Draft NPS (EN-1) (DESNZ, 2023) relates to the historic environment. The Draft NPS states the applicant should undertake an assessment of any likely significant heritage impacts of the proposed development as part of the EIA. The applicant should provide a description of the significance of heritage assets affected by the proposed development, including any contribution made by their setting, and the level of detail should be proportionate to the importance of the assets and sufficient to understand the potential impact on their significance. A desk-based assessment should be carried out and, where heritage interest needs to be assessed more fully, a field evaluation.

Draft National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (2023)

17.2.13 Paragraph 2.13.17 of the Draft NPS (EN-4) states "Dredging can also affect water quality and resources. Other potential impacts include chemical pollution, and morphological changes, exposure to contaminants and adverse effects on heritage assets."

17.2.14 Additional dredging, particularly at RBT Quayside for delivery vessels and mooring arrangements is not anticipated to be required for the Proposed Development therefore this policy is not considered or applied further in the assessment.

Draft NPS for Electricity Networks Infrastructure (EN-5) (2023)

17.2.15 Paragraph 2.2.10 of the Draft NPS (EN-5) refers to obligations on transmission and distribution licence holders under Section 9 of the Electricity Act 1989, in formulating proposals for new electricity networks infrastructure, to "have regard to the desirability of preserving... sites, buildings and objects of architectural, historic or archaeological interest; and ...do what [they] reasonably can to mitigate any effect on any such ...features, sites, buildings or objects". Paragraph 2.9.25 of the Draft NPS states that where the undergrounding of electrical connections forms part of a proposed development, the disruptive effects to archaeological and heritage sites should be recognised.

National Planning Policy Framework (NPPF) (2021)

- 17.2.16 Although the NPPF is not the principal policy against which the Proposed Development will be evaluated, due regard is given to this policy in the assessment of archaeological and cultural heritage effects.
- 17.2.17 Notably Section 16: Conserving and Enhancing the Historic Environment of the NPPF sets out the Government’s planning policies for the historic environment. The NPPF sets out the importance of being able to assess the significance of heritage assets that may be affected by a development. Significance is defined in Annex 2 as being, *“the value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic”*. The significance of a heritage asset is not only derived from an asset's physical presence, but also from its setting. The setting of a heritage asset is defined in Annex 2 as, *“the surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve”*.
- 17.2.18 Paragraph 194 of the NPPF states that in determining applications, LPAs should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets’ importance and no more than is sufficient to understand the potential impact of the proposal on their significance. Similarly, paragraph 195 includes a requirement on LPAs, having assessed the particular significance of any heritage asset that may be affected by a proposal, to take this into account when considering the impact of a proposal on a heritage asset.
- 17.2.19 Paragraphs 199 to 203 of the NPPF introduce the concept that heritage assets can be harmed or lost through alteration, destruction or development within their setting. This harm ranges from less than substantial to substantial. With regard to designated assets, paragraph 199 states that great weight should be placed on its conservation, irrespective of whether any potential harm is considered to be substantial or less than substantial. The paragraph goes further to say that the more important the asset, the greater the weight should be on its conservation. In paragraph 200, a distinction is made in respect of those assets the NPPF identifies as being of the highest significance (e.g. scheduled monuments, Grade I and Grade II* listed buildings) where substantial harm to or loss should be wholly exceptional.
- 17.2.20 With regard to non-designated assets, paragraph 203 states that the effect of the application on the significance of the asset should be taken into account in determining the application. A balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset.

Local Planning Policy

Redcar and Cleveland Local Plan (2018) (RCBC, 2018a)

- 17.2.21 Policy HE1 of the Redcar and Cleveland Local Plan, adopted 2018, relates to development affecting the setting of a conservation area and states that, *“development within or otherwise affecting the setting of a conservation area will only be permitted where it preserves or enhances the character or appearance of the conservation area”*. Policy HE2 of the Plan relates to heritage assets and requires
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development proposals to preserve or enhance the significance of designated heritage assets, including its setting. The policy states that development would only be permitted if it preserved or enhances the significance of a designated heritage asset; protects its immediate setting, including trees, hedges, walls and fencing, and retains historic plot boundaries. In relation to non-designated heritage assets, the policy states that in determining applications that would result in substantial harm to, or total loss of, a non-designated heritage asset or its setting, *“the applicant will be required to demonstrate that the benefits of the development would outweigh any harm or loss of the heritage asset, based on its significance”*.

- 17.2.22 Policy HE3 aims to protect important archaeological sites from inappropriate development. The policy states that, *“development that may affect a known or possible archaeological site, whether designated or non-designated, will require the results of a desk-based assessment to be submitted as part of the planning application. An archaeological evaluation may also be required to identify the most appropriate course of action”*.

South Tees Area Supplementary Planning Document (SPD) (2018) (RCBC, 2018b)

- 17.2.23 Development Principle STDC8 of the SPD states that the Council will, in consultation with the local community and key stakeholders, identify industrial heritage assets which are appropriate and viable to retain as part of the development of an industrial heritage trail. Proposals which would result in unacceptable harm to the significance of specific retained assets will not be supported. Proposals that will affect a designated or non-designated heritage asset or its setting, should be in accordance with the requirements of the Redcar and Cleveland Local Plan Policy HE2.

Stockton-on-Tees Local Plan (2019)

- 17.2.24 Policy HE2 of the Stockton-on-Tees Local Plan, adopted 2019, states that *“proposals should conserve and enhance heritage assets, including their setting, in a manner appropriate to their significance. Where development will lead to harm to or loss of significance of a designated or non-designated heritage asset the proposal will be considered in accordance with Policy SD8, other relevant Development Plan policies and prevailing national planning policy”*.

Hartlepool Local Plan (2018)

- 17.2.25 The Hartlepool Borough Council Local Plan was adopted in 2018. Policy HE1 relates to heritage assets and states that any development proposals that has an impact on an asset and its setting is required to preserve or enhance its value, appropriate to its significance, be of a design that has a positive impact on the asset and ensure the sensitive and viable use of the asset. Policy HE2: Archaeology, states that an assessment will be required to support development proposals that may affect sites of archaeological interest, and that the assessment should inform potential mitigation strategies. Policy HE3: Conservation Areas states that development proposals need to demonstrate that they will conserve or positively enhance the character of a conservation area. Policy HE4: Listed Buildings and Structures states that the Borough Council will ensure harm is not caused to the significance of a listed buildings through inappropriate development within its setting. Policy HE5 which

deals with local listed structures states that, “where a proposal affects the significance of a non-designated heritage asset, a balanced judgment should be weighed between the scale or the harm or loss against the public benefits of the proposal”.

Planning Practice Guidance (PPG) for the Historic Environment (2019)

- 17.2.26 The PPG for the historic environment (MHCLG, 2019) provides further advice and guidance that expands the policy outlined in the NPPF. It expands on terms such as ‘significance’ and its importance in decision making. The PPG clarifies that being able to properly assess the nature, extent and the importance of the significance of the heritage asset and the contribution of its setting, is crucial to understanding the potential impact and acceptability of development proposals (paragraph 007; Reference ID: 18a-007-20190723).
- 17.2.27 The PPG states that in relation to setting a thorough assessment of the impact on setting needs to take in to account, and be proportionate to, the significance of the heritage asset under consideration and the degree to which proposed changes enhance or detract from that significance and the ability to appreciate it (paragraph 013; Reference ID: 18a-013-20190723).
- 17.2.28 The PPG discusses how to assess if there is substantial harm. It states when assessing if a proposal causes substantial harm, it is the impact on the asset’s heritage significance that is important (paragraph 018; Reference ID: 18a-018-20190723).
- 17.2.29 The NPPF indicates that any degree of harm should be considered alongside any public benefits that can be delivered by development. The PPG states that these benefits should flow from the proposed development and should be of a nature and scale to be of benefit to the public, and not just a private benefit, and would include securing the optimum viable use of an asset in support of its long-term conservation (paragraph 020; Reference ID: 18a-020-20190723).

Other Relevant and Guidance

- 17.2.30 The following guidance has been taken into account during the preparation of this preliminary cultural heritage assessment.

Historic Environment Guidance

- 17.2.31 Historic England has published a series of Good Practice Advice (GPA) of which those most relevant to this assessment are GPA2 - Managing Significance in Decision-Taking in the Historic Environment (Historic England, 2015), GPA3 - The Setting of Heritage Assets (Historic England, 2017) and Advice Note 12: Statements of Heritage Significance (Historic England, 2019).
- 17.2.32 GPA2 (Historic England, 2015) emphasises the importance of having a knowledge and understanding of the significance of heritage assets likely to be affected by the development and that the “*first step for all applicants is to understand the significance of any affected heritage asset and, if relevant the contribution of its setting to its significance*”.

17.2.33 GPA3 (Historic England, 2017) provides detail on the setting of heritage assets and provides general advice on understanding setting, and how it may contribute to the significance of heritage assets and allow that significance to be appreciated. The document provides advice on how views contribute to setting and provides a broad approach to assessing the impact of a Proposed Development on the setting of heritage assets, by outlining a series of steps that can be applied proportionately to the complexity of the case.

17.2.34 Advice Note 12 (Historic England, 2019) outlines a recommended approach to assessing the significance of heritage assets in line with the requirements of NPPF. It includes a suggested reporting structure for a 'Statement of Heritage Significance', as well as guidance on creating a statement that is proportionate to the asset's significance (heritage value) and the potential degree of impact of a Proposed Development. The Advice Note also offers an interpretation of the various forms of heritage interest that an asset can possess i.e., its archaeological, architectural, artistic and historic interest, based on the terms provided in the NPPF Annex 2: Glossary (MHCLG, 2021) as follows:

- Archaeological Interest – there will be archaeological interest in a heritage asset if it holds, or has the potential to hold, evidence of past human activity worthy of expert investigation at some point.
- Architectural and Artistic Interest – these are interests in the design or general aesthetics of a place. They can arise from conscious design or fortuitously from the way the heritage asset has evolved. More specifically, architectural interest is an interest in the art or science of the design, construction, craftsmanship and decoration of buildings and structures of all types. Artistic interest is an interest in other human creative skills, such as sculpture.
- Historic Interest – An interest in past lives and events (including pre-historic). Heritage assets can illustrate or be associated with them. Heritage assets with historic interest not only provide a material record of our nation's history but can also provide meaning for communities derived from their collective experience of a place and can symbolise wider values such as faith and cultural identity.

Chartered Institute for Archaeologists (CifA) Standard and Guidance for Historic Environment Desk-Based Assessment

17.2.35 The baseline assessment set out in Appendix 17A: Cultural Heritage Desk-based Assessment (PEI Report, Volume III) has been undertaken in accordance with guidance published by the Chartered Institute for Archaeologists (CifA), specifically the Standard and Guidance for Historic Environment Desk-Based Assessment (CifA, 2020).

Institute of Environmental Management and Assessment (IEMA) Principles of Cultural Heritage Impact Assessment in the UK

17.2.36 The Principles of Cultural Heritage Impact Assessment in the UK (IEMA, 2021) is a guide to good practice in cultural heritage impact assessment published jointly by IEMA, the Institute of Historic Building Conservation (IHBC) and CifA. The document

provides guidance on understanding cultural heritage assets and evaluating the consequences of change.

17.2.37 Understanding cultural heritage assets is split into three stages: Description, Significance and Importance. The description arrives at a factual statement that establishes the nature of the asset. The heritage values of the asset are then analysed (the guidance stresses that these include but are not limited to aesthetic, historic, scientific, social or spiritual values) and a statement of cultural significance given. Finally, the importance of the asset is assessed, and a conclusion drawn as to the level of protection that the asset merits in planning policy and cultural heritage legislation.

17.3 Assessment Methodology and Significance Criteria

17.3.1 This section presents the following:

- the methodology behind the baseline assessment including the definition of an appropriate Study Area;
- the methodology and terminology used in the assessment of effects; and
- identification of the information sources that have been consulted throughout preparation of this chapter.

Study Area

17.3.2 The Study Area has been defined to capture the historic environment baseline data correlating to the predicted impacts from the Proposed Development.

17.3.3 The Study Area for capturing data relating to non-designated heritage assets (archaeological sites, findspots, locally listed buildings) is 1 km from the Proposed Development Site (Figure 17-2: Location of Non-Designated Heritage Assets (PEI Report, Volume II)). This Study Area is assessed as proportionate and relevant for identifying cultural heritage assets that may be physically impacted by the Proposed Development, including buried assets outside of the Proposed Development Site that may extend into it. In addition, the Study Area provides relevant information relating to previous archaeological fieldwork events and studies that, collectively, provide a contextual baseline for the Proposed Development Site in line with the guidance set out in ClfA guidance (ClfA, 2020).

17.3.4 The Study Area for capturing data relating to designated heritage assets (World Heritage Sites, scheduled monuments, listed buildings, conservation areas, registered parks and gardens, registered battlefields) is 5 km from the Proposed Development Site. The extent of this Study Area has been informed by an understanding of the area's topography and the nature of the Proposed Development. It is assessed to be appropriate for identifying assets whose setting may change because of the construction, operational, or decommissioning activities of the Proposed Development. This larger Study Area has been further informed by the Zone of Theoretical Visibility (ZTV) shown on Figure 16-5: Zone of Theoretical Visibility and Representative Viewpoint Locations (PEI Report, Volume II), accompanying Chapter 16: Landscape and Visual Amenity (PEI Report, Volume I), and from the results of the heritage site visit conducted in Spring 2023.

Significance Criteria

- 17.3.5 This section presents the methodology used for determining the magnitude of impact and significance of effect to heritage assets as a result of the construction, operation and decommissioning of the Proposed Development.
- 17.3.6 The principles of impact assessment methodology rest upon independently evaluating the value of heritage assets and the magnitude of impact upon that value. By combining the value of the heritage asset with the predicted magnitude of impact, the significance of the effect arising from the Proposed Development can be determined.

Sensitivity Criteria

- 17.3.7 The sensitivity of a heritage asset is determined by a combination of its heritage value and its susceptibility to change, either as a result of physical changes or arising from changes to its setting. The criteria for determining an asset's value and its susceptibility to change are set out in Table 17-1 and Table 17-2.

Assessing Heritage Value

- 17.3.8 The value of a heritage asset (its heritage significance) is guided by its designated status but is derived also from its heritage interest.
- 17.3.9 Annex 2: Glossary of the NPPF (NPPF, 2021) defines value as *“the value of a heritage asset to this and future generations because of its heritage interest”*, which comprises archaeological, architectural, artistic and historic interest. The value of a heritage asset can therefore be defined by the sum and understanding of its heritage interests. Each identified heritage asset can be assigned a value in accordance with the criteria set out in Table 17-1. The results of statutory consultation and engagement also contribute to the assessment of value. Regional variations, contribution to regional research agenda, and individual qualities of heritage assets are also taken into account.
- 17.3.10 Whilst it is recognised that all designated assets are considered to be of national importance, a distinction in value is made in Table 17-1 between Grade I and Grade II* graded assets and those at Grade II. This reflects the separation of the grades in paragraph 200 of the NPPF which makes a distinction between Grade II listed buildings and registered parks and gardens, and other heritage assets which it considers to be of *“the highest significance”*, notably scheduled monuments, Grade I and Grade II* listed buildings, and Grade I and Grade II* registered parks and gardens.

Table 17-1: Criteria for Determining the Significance (Heritage Value) of Heritage Assets

VALUE	CRITERIA
High	World Heritage Sites; Grade I and Grade II* Listed Buildings; Grade I and Grade II* Registered Parks and Gardens; Scheduled Monuments;

VALUE	CRITERIA
	Registered battlefields; Conservation areas (of demonstrable high value, i.e., high number of Grade I and II* buildings; diverse and high-quality buildings); Non-designated heritage assets that can be shown to have demonstrable national or international importance.
Medium	Grade II listed buildings; Conservation areas (majority Grade II buildings displaying regional and local characteristics and styles); Grade II Registered Parks and Gardens; Locally listed buildings as recorded on a local authority list; Non-designated heritage assets that can be shown to be of regional importance; Historic Townscapes with historic integrity in that the assets that constitute their make-up are clearly legible; Averagely well-preserved historic landscape character areas with reasonable coherence, time-depth or other critical factors.
Low	Non-designated buildings, monuments, sites or landscapes that can be shown to be of limited or local interest only; Assets whose values are compromised by poor preservation or survival of contextual associations to justify inclusion into a higher grade; Historic landscape character areas whose value is limited by poor preservation and/or poor survival of contextual associations.
Very Low	Assets whose values are entirely compromised by poor preservation, or survival, or that have little or no contextual associations to justify inclusion into a higher grade; Historic landscape with no or little surviving historic interest.

Magnitude of Impact

- 17.3.11 Having identified the value of the heritage asset, the next stage in the assessment is to identify the level and degree of impact to an asset arising from the Proposed Development. Potential impacts to heritage assets may arise during construction, operation or decommissioning and can be temporary and reversible or permanent. An impact can occur to the physical fabric of a heritage asset or arise from changes to its setting. If the impact harms the heritage interest(s) of an asset, then this is likely to affect its value (its heritage significance).
- 17.3.12 The level and degree of impact (impact rating) is assigned with reference to the criteria as set out in Table 17-2. The magnitude of impact arising from the Proposed Development takes into account embedded and good practice mitigation measures that have been developed as part of the design process (refer to Section 17.5).

Table 17-2: Criteria for Determining the Magnitude of Impact on Heritage Assets

MAGNITUDE OF IMPACT	IMPACT DESCRIPTION
High	Changes to the heritage interests of an asset such that the value of the asset is totally altered or destroyed; Comprehensive change to, or total loss of, elements of setting that would adversely affect the ability to understand and appreciate the asset, resulting in likely harm to its value.
Medium	Change such that the value of the asset is significantly altered or modified; Changes such that the setting of the asset is noticeably different, resulting in changes in our ability to understand and appreciate the value of the asset.
Low	Changes to heritage interests such that the value of the asset is slightly affected; Changes to setting that result in changes in the ability to understand and appreciate the value of the asset.
Very Low	Changes to the heritage interest(s) of an asset that hardly affect its value; Changes to the setting of an asset that have little change to the ability to understand and appreciate the value of the asset.
No Impact	No change to a heritage asset, including changes to its setting, and no change to its value.

Significance of Effect

17.3.13 An assessment to classify the cultural heritage effect, having taken into consideration any relevant embedded mitigation, is determined by cross-referencing between the significance (heritage value) of the asset (Table 17-1) and the magnitude of impact (Table 17-2). The resultant effect is determined using the matrix detailed in Table 17-3. Where the assessment indicates that there would be no impact to a heritage asset, this is classified as no impact and no effect.

Table 17-3: Criteria for Determining the Significance of Effect

VALUE OF HERITAGE ASSET	MAGNITUDE OF IMPACT				
	HIGH	MEDIUM	LOW	VERY LOW	NO IMPACT
High	Major	Major	Moderate	Minor	No Effect
Medium	Major	Moderate	Minor	Negligible	No Effect
Low	Moderate	Minor	Negligible	Negligible	No Effect
Very low	Minor	Negligible	Negligible	Negligible	No Effect

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- 17.3.14 As outlined in Chapter 2: Assessment Methodology (PEI Report, Volume I), major and moderate (adverse or beneficial) effects are considered to be significant, whilst those that are minor (adverse or beneficial) or negligible are considered not significant.
- 17.3.15 Where significant effects are predicted, if appropriate, additional mitigation is required and therefore proposed, as set out in Section 17.7. Additional mitigation may reduce the magnitude of the impact, and therefore reduce the overall significance of the effect (for example from moderate to minor).
- 17.3.16 Within the NPS EN-1, Section 5.8 Paragraphs 5.8.14–5.8.15, and NPPF Section 16 Paragraphs 199–204 impacts affecting the value of heritage assets are considered in terms of harm, and there is a requirement to determine whether the level of harm amounts to ‘substantial harm’ or ‘less than substantial harm’.
- 17.3.17 There is no direct correlation between the classification of effect as reported herein and the level of harm caused to heritage significance. The PPG, revised in 2019, states that it is the degree of harm to the asset’s significance rather than the scale of the development that is to be assessed.

Sources of Information/Data

- 17.3.18 The following data sources have been reviewed as part of the preparation of the DBA. This sets out the baseline conditions for heritage assets within the Proposed Development Site and Study Area and is presented in Appendix 17A: Cultural Heritage Desk-based Assessment (PEI Report, Volume III):
- Tees Archaeology Historic Environment Record (HER) for information relating to non-designated heritage assets, previous fieldwork events and reports, and historic landscape data (Tees Archaeology, 2023);
 - Redcar and Cleveland HER for information relating to non-designated heritage assets, fieldwork events and historic landscape data Historic environment and heritage management (RCBC, 2023a);
 - National Heritage List for England (NHLE) for designated heritage assets datasets (NHLE, 2023);
 - existing heritage assessment reports undertaken within the 1 km study area for other development proposals, including those to support Net Zero Teesside DCO;
 - Defence of Britain Database archive (Archaeology Data Service, 2023);
 - Ordnance Survey (OS) historic mapping data (National Library of Scotland, 2023);
 - National Collection of Aerial Photographs (National Collection of Aerial Photography, 2023);
 - Cambridge Air Photos (University of Cambridge, 2023);
 - the results of previous geotechnical site investigations for the Proposed Development Site;
 - conservation area appraisals and buildings on the local list accessed from LPA websites (RCBC, 2023b; HBC, 2023; Middlesborough Council, 2023; STBC, 2023);



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- online sources including British Geological Survey (BGS) for geological data (BGS, 2023).

Consultation

17.3.19 An EIA Scoping Opinion was requested from the Inspectorate in April 2023. A response was received on 17th May 2023. A high-level summary of responses to the Scoping Opinion relevant to cultural heritage is outlined in Table 17-4.



Table 17-4: Responses to Scoping Comments

CONSULTEE	DATE AND METHOD OF CONSULTATION	SUMMARY OF CONSULTEE COMMENTS	SUMMARY OF RESPONSE/ HOW COMMENTS HAVE BEEN ADDRESSED
Historic England	9 th May 2023 Scoping Opinion	<p>In line with the advice in the National Planning Policy Framework (NPPF 2021) and the relevant National Policy Statements (NPS), we would expect the Environmental Statement to contain a thorough assessment of the likely effects the proposed development might have upon those elements which contribute to the significance of these assets.</p> <p>We would like to draw attention to the specific NPS documents and their policies in relation to the historic environment. We would expect to see these referred to in the cultural heritage section of the ES to show how the application complies with them.</p> <p>Our initial assessment broadly tallies with the baseline conditions set out in the scoping report. We concur that there are no highly designated heritage assets within the red-line boundary. However, we note that there are circa 700 non-designated heritage assets both within the boundary and the defined 1km study area.</p> <p>The proposed pipeline across the Tees will be bored and therefore will not impact any</p>	<p>The assessment presented herein comprises a preliminary assessment of likely effects associated with the Proposed Development. The Historic England comments in the Scoping Opinion have been reviewed and will be taken into account when preparing the final assessment to be reported in the ES.</p> <p>The relevant NPS documents are referenced in this preliminary assessment and will also be included in the ES.</p> <p>Noted.</p> <p>Noted.</p>



CONSULTEE	DATE AND METHOD OF CONSULTATION	SUMMARY OF CONSULTEE COMMENTS	SUMMARY OF RESPONSE/ HOW COMMENTS HAVE BEEN ADDRESSED
		<p>maritime heritage assets in this area. We concur that it is unlikely that there will be any significant impacts on marine cultural heritage by this proposal as noted in 6.11.18 and consequently that marine heritage can be scoped out.</p> <p>It is clear that the terrestrial cultural heritage must be scoped into the EIA as there could be impacts to known heritage assets. At present the potential for currently unrecorded heritage assets is not known and should also be included in the assessment.</p> <p>We expect the Environmental Statement to consider the potential impacts on non-designated features of historic, architectural, archaeological or artistic interest, since these can also be of national importance and make an important contribution to the character and local distinctiveness of an area and its sense of place.</p> <p>We expect the assessment to clearly demonstrate that the extent of the proposed study area is of the appropriate size to ensure that all heritage assets likely to be affected by</p>	<p>The potential for currently unrecorded heritage assets is presented in Section 17.9 of Appendix 17A (PEI Report, Volume III).</p> <p>This preliminary assessment, and the ES, does and will consider potential impacts to non-designated heritage assets.</p> <p>The rationale for the Study Area is set out in Section 17.3 of this preliminary assessment.</p>



CONSULTEE	DATE AND METHOD OF CONSULTATION	SUMMARY OF CONSULTEE COMMENTS	SUMMARY OF RESPONSE/ HOW COMMENTS HAVE BEEN ADDRESSED
		<p>this development have been included and can be properly assessed.</p> <p>It is important that the assessment is designed to ensure that all impacts are fully understood. Pre-determination archaeological evaluation such as geophysical surveys and other evaluation techniques may assist with determination of archaeological potential and ground truthing of desk-based data.</p> <p>The assessment should also take account of the potential impact associated activities (such as construction, servicing and maintenance, and associated traffic) might have upon perceptions, understanding and appreciation of the heritage assets in the area. The assessment should also consider, where appropriate, the likelihood of alterations to drainage patterns that might lead to in situ decomposition or destruction of below ground archaeological remains and deposits and can also lead to subsidence of buildings and monuments.</p> <p>We suggest that the applicant should seek advice from and liaise closely with the Local Planning Authority’s Heritage / Archaeology Advisors for this application.</p>	<p>Geotechnical data has been used to determine archaeological potential for the Main Site as set out in Section 17.7 of Appendix 17A (PEI Report, Volume III). Geophysical survey is proposed for parts of the Hydrogen Pipeline Corridor and the results will be included in the ES.</p> <p>These matters will be considered in the ES, alongside potential impacts arising from construction noise, dust and vibration.</p> <p>Consultation with the LPA’s Heritage / Archaeology Advisors will continue during the preparation of the ES.</p>



CONSULTEE	DATE AND METHOD OF CONSULTATION	SUMMARY OF CONSULTEE COMMENTS	SUMMARY OF RESPONSE/ HOW COMMENTS HAVE BEEN ADDRESSED
Hartlepool Borough Council - Tees Archaeology	9 th May 2023 Scoping Opinion	Tees Archaeology agrees with the proposed scoping methodology for cultural heritage and agree that a cultural heritage DBA will be produced.	Noted.
RCBC	9 th May 2023 Scoping Opinion	No comment from archaeology advisor to RCBC	Noted.
The Inspectorate	17 th May 2023 Scoping Opinion	The Applicant intends to scope out direct impacts to marine cultural heritage assets during construction and operation of the Proposed Development. The Scoping Report states that no construction works are proposed in areas below MHWS where marine heritage assets are likely to be located and more highly concentrated. The Inspectorate agrees that based on the information provided, construction and operation of the Proposed Development is unlikely to give rise to significant effects from direct impacts to marine cultural heritage assets and is therefore content for this matter to be scoped out.	Noted.
The Inspectorate	17 th May 2023 Scoping Opinion	The Applicant proposes to scope out direct impacts to heritage assets located in the River Tees as construction methodologies such as HDD or Micro-bored Tunnel (MBT) will be	Noted.



CONSULTEE	DATE AND METHOD OF CONSULTATION	SUMMARY OF CONSULTEE COMMENTS	SUMMARY OF RESPONSE/ HOW COMMENTS HAVE BEEN ADDRESSED
		<p>utilised to minimise disturbance to sensitive receptors during construction of the hydrogen pipeline beneath the river. The Inspectorate agrees that based on the information provided, construction and operation of the Proposed Development is unlikely to give rise to significant effects from direct impacts to marine cultural heritage assets in the River Tees and therefore agrees that this matter can be scoped out.</p>	
The Inspectorate	17 th May 2023 Scoping Opinion	<p>The Scoping Report states that a desk-based assessment would be produced. No reference is made to whether any further surveys are required to inform the archaeological baseline. The Inspectorate is of the opinion that should the desk-based assessment identify the need for further investigation, such as geophysical survey, monitoring of geotechnical ground investigations or trial trenching, the Applicant should make every effort to agree the scope of such activities with relevant consultation bodies. The results and assessment of effects to archaeology should be clearly presented within the ES along with a description of any uncertainties or assumptions applied, and</p>	<p>Geophysical survey to enhance the baseline and inform the ES is planned for July/ August 2023. The results of the geophysical survey will inform the scope of any additional evaluation, including trial trenching. The resulting fieldwork reports will be submitted with the ES.</p>



CONSULTEE	DATE AND METHOD OF CONSULTATION	SUMMARY OF CONSULTEE COMMENTS	SUMMARY OF RESPONSE/ HOW COMMENTS HAVE BEEN ADDRESSED
		confirmation of any further survey and evaluation required and how this would be secured.	
The Inspectorate	17 th May 2023 Scoping Opinion	The ES should clearly describe how the final study areas have been defined according to sensitivity of receiving heritage assets and potential impacts during construction and operation of the Proposed Development. The Applicant should seek agreement with the relevant consultation bodies regarding the study areas used to inform the assessment and evidence this in the ES.	The Applicant will seek agreement on the study areas with the relevant consultation bodies, which will be confirmed in the ES.
The Inspectorate	17 th May 2023 Scoping Opinion	Indirect impacts to marine cultural heritage assets, such as temporary and permanent changes to their setting during construction and operation of the Proposed Development respectively, have not been explicitly identified in the Scoping Report. The ES should consider the potential for indirect impacts to marine heritage assets to give rise to likely significant effects or provide a justification as to why they would not experience significant effects.	Potential temporary and permanent changes to the settings of marine heritage assets, such as submerged wrecks and obstructions, as a result of the construction and operation of the Proposed Development will be included in the ES.



CONSULTEE	DATE AND METHOD OF CONSULTATION	SUMMARY OF CONSULTEE COMMENTS	SUMMARY OF RESPONSE/ HOW COMMENTS HAVE BEEN ADDRESSED
The Inspectorate	17 th May 2023 Scoping Opinion	The ES should also assess effects to historic landscape character where significant effects are likely to occur.	The ES will include assessment of impact to the historic landscape character where significant effects are likely to occur.



Use of the Rochdale Envelope

- 17.3.20 To ensure a robust assessment of the likely significance of the environmental effects of the Proposed Development, the EIA is being undertaken adopting the principles of the 'Rochdale Envelope' approach where appropriate in line with The Planning Inspectorate's guidance (The Planning Inspectorate, 2012). This involves assessing the maximum (or where relevant, minimum)/realistic worst-case parameters for the elements where flexibility needs to be retained (building dimensions or operational modes for example).
- 17.3.21 The Rochdale Envelope approach has been adopted in this preliminary assessment, ensuring that the worst case is assessed. As outlined in Chapter 4: Proposed Development (PEI Report, Volume I), only trenchless methods (such as Horizontal Directional Drilling (HDD) or Micro Bored Tunnelling (MBT)) are being considered for the Hydrogen Pipeline Corridor crossings of Greatham Creek and the River Tees. Apart from these crossings, the worst-case for cultural heritage assumes that open-cut trench construction would be used to construct some sections of the following:
- CO₂ Export Corridor;
 - Hydrogen Pipeline Corridor;
 - Natural Gas Connection Corridor;
 - Water Connections Corridor;
 - Electrical Connection Corridor; and
 - Other Gases Connection Corridor.
- 17.3.22 Open cut trench construction methods have the potential to physically remove buried heritage features, therefore, where this method of construction is proposed, it has the potential to result in the permanent loss of heritage assets within the construction footprints. For further detail regarding the proposed construction methodologies, please refer to Chapter 4: Proposed Development (PEI Report, Volume I) and Chapter 5: Construction Programme and Management (PEI Report, Volume I).
- 17.3.23 The maximum construction duration represents the worst case for the length of temporary impacts arising from changes to the setting of heritage assets. The worst-case scenario is therefore represented by the sequential and continuous construction of Phase 1, which is likely to last approximately three years, followed by Phase 2 construction which will last for up to three years. This worst-case scenario does not mean that all heritage assets would be impacted continuously for the maximum construction duration, but rather is a recognition that an impact to a heritage asset may occur, temporarily, during this period.
- 17.3.24 The reasonable worst-case operational scenario is measured by the level of permanent change to the setting of heritage assets. As such, the greatest magnitude of change to the setting of heritage assets is represented by the presence of the operational Proposed Development (both Phase 1 and Phase 2).
-



17.3.25 It is assumed there would be no additional permanent impacts to heritage assets during the Proposed Development decommissioning phase as all impacts of this nature would have occurred during the construction phase. Therefore, the reasonable worst-case decommissioning scenario is measured only by the level of change to the setting of assets, which is represented by temporary activities associated with the decommissioning of the Proposed Development and would likely be no greater than the temporary setting effects predicted during construction.

17.4 Baseline Conditions

Existing Baseline

17.4.1 This section presents a summary of the existing baseline conditions for cultural heritage relevant to this preliminary assessment. Detailed baseline information, including the results of a site walkover survey of parts of the Proposed Development Site and a description of its setting, is set out in the DBA presented in Appendix 17A: Cultural Heritage Desk-based Assessment (PEI Report, Volume III). Reference should be made to Figures 17-1 to 17-4 (PEI Report, Volume II). Heritage assets and features from the HER and NHLE are identified in the baseline text by reference number.

Geology and Topography

17.4.2 The solid geology beneath the Proposed Development Site, including the connection corridors, comprises Redcar Mudstone Formation, Penarth Mudstone and Mercia Mudstone. The superficial geology beneath the Main Site comprises Blown Sand and Tidal Flat Deposits of sand and silt (BGS 1:50,000 Digital Geological Map of Great Britain).

Historic Landscape

17.4.3 The character of the landscape within the 1 km Study Area is dominated by the area's industrial heritage, particularly on the reclaimed land to the north and south of the River Tees. The saltmarshes which would have been exploited for resources throughout the history of human habitation in the area still form the boundary between agricultural land and the sea. Pockets of saltmarsh exist to the north of the Tees with fewer areas surviving on the river's south banks. The fields beyond the saltmarsh and industrial zones are indicative of post-World War II amalgamation of earlier, smaller fields into larger land parcels to accommodate more intensive farming practices, whilst small villages and farmsteads outside of settlement areas are indicative of the area's agricultural heritage.

Summary of Archaeological and Historical Background

Palaeolithic

17.4.4 Palaeolithic activity tends to be represented in archaeological record by finds of flint tools and/or the waste flint associated with the production of such, either as individual pieces or larger scatters of material tool. These tools were used for hunting and processing animals, and the environment of the River Tees would have been a perfect environment for hunting. Recent land reclamation activities within the Study Area may well have destroyed much of the archaeological evidence of this period.

However, it is possible that deeply buried deposits of this period do survive and have the potential to contain information about this period.

Mesolithic

- 17.4.5 During the Mesolithic period, the Tees Estuary was occupied by extensive saltwater marsh and would have been a focal point for hunting and fishing activities (Daniels, 2014). Intertidal peat beds, a submerged Late Mesolithic forest, and evidence of occupation (Batchelor et al, 2012) have been recorded to the north of the Tees Estuary at Hartlepool and Seaton Carew. Intertidal peat beds have also been recorded at Redcar (Carter, 2014). Mesolithic and Neolithic worked flints were recovered during fieldwalking of the fields between Kirkleatham and Yearby, on the edge of the 1 km Study Area and included a section of a blade and a transverse arrowhead (HER 1701). A fragment of Beaker pottery (HER 240) was found in a field to the south-west of Kirkleatham, approximately 590 m south of the Hydrogen Pipeline Corridor.

Neolithic and Bronze Age

- 17.4.6 Approximately 500 m north-east of the Main Site is the record for 'Coatham Man' (HER 6798), consisting of fragments of human skull which were radiocarbon dated to the Early Neolithic period.
- 17.4.7 To the north-west, north of the Tees Estuary, the Hydrogen Pipeline Corridor crosses fields within Cowpen Marsh, where previous assessment reports have identified evidence of Bronze Age midden deposits (HER 1817) exposed during excavations at Fore Marsh, just outside of the Proposed Development Site, and medieval salt mounds. The salt marshes would have provided excellent hunting grounds for early prehistoric groups. The midden feature was preserved beneath estuarine clays and above a peat deposit dated to 4-5,000 years before present. The midden contained well-preserved horse, cattle and sheep bones, all containing butchery marks. The feature is indicative of Bronze Age groups using the marshes for temporary activities and suggests that more permanent settlement, evidence of which is rare in the archaeological record, may have been in the vicinity of the marsh.
- 17.4.8 Within the wider 5 km Study Area, Early Bronze Age settlement archaeology has been recorded at Eston Nab hillfort which is a scheduled monument (NHLE 1011273) and comprises a palisaded settlement. The Bronze Age is also represented in the archaeological record by funerary monuments, and a cluster of funerary monuments from this period the majority of which are scheduled monuments, are present on Eston Hills.

Iron Age

- 17.4.9 During the Iron Age this area of Britain was within the territory of the Brigantes tribe. Recent research in the Tees Valley has identified the Iron Age communities as a discrete cultural group within the larger Brigantes tribe, with a cultural identity that was distinctly different to the tribes to the north and south of the valley (Sherlock, 2012).
- 17.4.10 Cropmark evidence of Iron Age settlement in the 1 km Study Area includes a farmstead at Foxrush Farm in Dormanstown (159), located approximately 550 m east

of the Water Connection Corridor, and part of a beehive quern stone found at Kirkleatham (1043), located approximately 750 m south-east of the Hydrogen Pipeline Corridor. This evidence demonstrates that the valley and floodplain of the River Tees continued to be used for settlement and crop growing.

- 17.4.11 There is no evidence recorded on the HER for Iron Age or Roman activity within the Proposed Development Site north of the Tees, but activity is recorded in Seaton Carew, approximately 3.4 km north-east of the Proposed Development Site. It is likely that the resources provided by the salt marsh environment would have been exploited during these periods but transient activities, such as hunting and fishing, do not generally leave trace archaeological evidence.

Roman

- 17.4.12 Approximately 2 km west of the Hydrogen Pipeline Corridor is the site of a purported Roman road running from Billingham north-west to Sedgfield, where it possibly connected to Cade's Road (Mason, 2020). The road is purported due to an association with a possible military installation or port in the Billingham or Middlesbrough area (Mason, 2020).

- 17.4.13 Six records on the HER from the Roman period are located within the Proposed Development Site comprising, 9068, 9437, 9438, 9439, 9502 and 9523. They are grouped together and located within the Hydrogen Pipeline Corridor, to the west of the Main Site. These all relate to a Roman settlement site at Saltholme, discovered during a programme of archaeological works undertaken in 2019 (1470, 1468, 1498 and 1497). The work revealed a series of enclosures as well as pits, postholes and ditches. The settlement also included two stone-lined cist burials, the remains of three corn dries and finds including the base of a rotary quern, a trumpet brooch and pottery. The work demonstrated the presence of a large farmstead engaged in domestic and agricultural activities.

Early Medieval

- 17.4.14 The early medieval period is one of the least archaeologically visible across Britain, with evidence from this period restricted, almost exclusively, to burial and religious centres. It was during this period that new settlements and settlement patterns emerged, many churches and villages were established, field systems changed, and open-field agriculture was introduced.
- 17.4.15 The villages of Greatham and Cowpen Bewley are not mentioned in the Bolden Book. However, the Church of St. John the Baptist in Greatham, a Grade II* listed building (1263522), has fragments of sculptured masonry, dating to the 8th and 12th centuries, built into its north aisle wall and late-12th century nave arcades which suggests a community was established at this place during the medieval period.
- 17.4.16 Medieval material culture, derived from the archaeological record, is generally sparse across the region. Documentary evidence records that large tracts of the countryside were devastated by Scottish raids during the 14th to the 16th centuries which, coupled with plague and famine, resulted in a decrease in population and tenure (Surtees, 1816) and the reduction in the area's population may be one of the reasons for the very small quantities of medieval pottery noted in the archaeological record. The

decrease in population is articulated in the archaeological record by the site of the deserted medieval village of West Coatham (355), which is located within the Water Connections Corridor. However, despite population decrease and settlement contraction, small villages such as Greatham and Cowpen Bewley, remained part of the medieval landscape alongside individual farmsteads.

- 17.4.17 Agriculture would have been the principal means of subsistence, but other industry such as salt production is also documented in the archaeological record. The extraction of salt from seawater was a major industry in the medieval period and numerous salt mounds, identified as earthworks, have been recorded from historical maps and aerial photographs around Coatham Marsh. The sites of several salt mounds within the Hydrogen Pipeline Corridor (3759; 3760; 3751; 3752; 3753; 3754; 3755 and 3756) are marked on early editions of OS maps but there are no visible remains surviving within the Proposed Development Site.
- 17.4.18 The layout of the village of Cowpen Bewley follows the traditional Norman form of two rows of properties on either side of a broad green. The earthwork remains of the village's medieval origins, including three tofts at the eastern end of the southern row of properties, are recorded as assets 604 and 624 whilst asset 3612, to the north of the village, appears to represent a raked at midden to the rear of a property. A number of assets within and around Greatham attest to the medieval origins of this village. The village is recorded initially as two-rows of cottages with a green, followed by infilling at the southern end of the green and a further planned row added to the north of the village (602).
- 17.4.19 The medieval village of Kirkleatham is recorded as having a Church in the Domesday survey, and a Chancery with 12 priests was endowed in 1348, the site of which is currently not known. Assets (489, 5134, 4807, 169, 1426, 1802 and 1801) relate to archaeological features associated with the medieval village (principally ridge and furrows and boundary ditches) along with find sites of pottery and worked stone. Ridge and furrow remains extend south and west beyond Kirkleatham and towards the fields around Lazenby And Lackenby and contribute to the setting and value of the area. The small medieval village of Lackenby is recorded in Domesday as having a population of only one household. The remains of the medieval village survive as a small number of enclosure earthworks (4478) with areas of associated ridge and furrow (1082 and 372) within its hinterland.

Post-Medieval to Modern

- 17.4.20 The dissolution of the monasteries (1536) and enclosure of the land (1750 onwards) would have had the biggest impact on the society during the early parts of the post-medieval period. There is little evidence for planned parliamentary enclosure within the Study Area with only Marske (1756) and Kirkleatham (1850) receiving parliamentary awards (British History online, 2023) suggesting the enclosure of the land within the Study Area was likely undertaken by Private Act. Mapping appears to indicate that by 1811, the majority of the Study Area was enclosed (North Yorkshire County Council, n.d.), with common pasture and moorland only remaining around the edges of settlements at Coatham and at the foot of the Eston Hills. The enclosure of land farming practices intensified which assisted in supporting the burgeoning



- industrial development of the area and the associated increase in population. Maps from the late 1800s show a large increase in the number of farms and farmsteads in the region (such as Marsh Farmhouse and Cottage (NHLE 1160308), garden wall (NHLE 1139619) and stable and barn (NHLE 1139620)).
- 17.4.21 The discovery of iron ore in the Eston Hills in 1850 created an industrial boom in the area, leading to the growth of iron works in the area and attracting people into the region to work at the new foundries. Transport and communication (significantly rail and docks) underwent major development to support this industry. Many of the small medieval settlements in the Study Area saw significant growth, either as towns supporting this activity (such as Kirkleatham and Greatham), or as coastal tourist resorts (such as Redcar and Coatham). Hand in hand with this, the construction of reclamation walls and banks dried out former marshlands and mudflats, reclaiming land to be turned over to the region's industrial development and to increase its agricultural output, as well as making the River Tees more navigable and suitable for heavy shipping.
- 17.4.22 To the west of the River Tees, 4172 represents the line of the Stockton and Hartlepool Railway – a branch line linking West Hartlepool to the main line of the Clarence Railway near Billingham. Construction began in 1839 (opening in 1841), with the purpose of moving passengers (often workers) and freight from Hartlepool to ports and industry along the River Tees. The line still operates a limited service today. A section of the railway line runs through part of the Hydrogen Pipeline Corridor, along the western edge of the Main Site. The railway also connected the Greatham Salt and Brine Company factory (1887) (1222), which is also located within the northern section of the Hydrogen Pipeline Corridor.
- 17.4.23 The Greatham Salt and Brine Company factory became the Cerebros Saltworks in 1903 and ceased salt production in 1970, although it continued food production until 2007. The site was demolished in 2012 and now exists as a large area of overgrown hardstanding and rubble within the Hydrogen Pipeline Corridor.
- 17.4.24 A signal box (4783) was constructed in 1889 at the site of Greatham Station (4586) which itself opened in 1841 opposite the Greatham Salt and Brine Company works. The station closed to traffic in 1991 and whilst the platform remains, all buildings have been demolished. The signal box (a tower with a control room at the first floor) is still in operation. Both the signal box and the site of the station are located within the Hydrogen Pipeline Corridor.
- 17.4.25 The industries of the North-East were strategic targets during the Second World War and the vast majority of the cultural heritage assets within the Study Area, which date to this period, relate to the Second World War, and include anti-aircraft batteries, anti-landing obstacles, search light batteries, pillboxes, section posts, mortar emplacements, air raid shelters, barracks, command posts, storage areas and bombing decoy sites. Bomb craters have been recorded across Cowpen Marsh resulting from attacks on the industries of the Tees area.

Future Baseline

- 17.4.26 The general approach to defining future baseline is described in Chapter 2: Assessment Methodology (PEI Report, Volume I).
- 17.4.27 For buried archaeological remains within the Proposed Development Site, the future baseline is expected to be the same as the current baseline. Buried archaeological remains are a static resource, which have reached equilibrium with their environment and do not change (e.g., decay or grow) unless their environment changes because of human or natural intervention. For above ground heritage assets, there may be some decay over time in the absence of the Proposed Development as they near the natural end of their design lifespan.

17.5 Proposed Development Design and Impact Avoidance

- 17.5.1 The Proposed Development design has evolved to take into consideration heritage assets within the Proposed Development Site and Study Area, and to minimise impacts on the historic environment.
- 17.5.2 This section describes the embedded and good practice mitigation measures for cultural heritage that have been incorporated into design of the Proposed Development or assumed to be in place before undertaking the preliminary assessment.

Construction

- 17.5.3 The following design and impact avoidance measures are of relevance to the Proposed Development construction phase:
- refining the routing of connections, where practicable, to avoid known heritage assets;
 - proposed use of existing pipeline infrastructure and established corridors, as far as is practicable in the design in order to avoid impacts to known and previously unrecorded heritage assets;
 - siting as much of the Hydrogen Pipeline Connection in an existing above ground, pipeline racking network, thereby avoiding impacts to potential buried archaeological remains;
 - proposed use of trenchless technologies, including Horizontal Directional Drilling (HDD) or Micro-Bored Tunnel (MBT) for the connections (crossing of the River Tees and Greatham Creek as well as some other parts of the Hydrogen Pipeline Corridor) to avoid impacts to known and previously unrecorded heritage assets;
 - use of brownfield sites or existing hard standing areas, where practicable within the Proposed Development Site for construction laydown areas; and
 - lighting required during the construction stage of the Proposed Development will be designed, positioned, and directed to prevent or minimise light spill.
- 17.5.4 A Framework Construction Environmental Management Plan (CEMP) will be included within the ES which will accompany the DCO Application which will set out the key

measures to be employed during the Proposed Development construction phase to control and minimise the impacts on the environment. The CEMP will set out how impacts upon heritage assets will be managed during construction. An Outline CEMP has been prepared and is presented within Appendix 5A: Outline CEMP (PEI Report, Volume III). A Final CEMP will be prepared by the construction contractor in accordance with the Framework CEMP prior to construction. The submission, approval, and implementation of the Final CEMP will be secured by a Requirement of the draft DCO.

Operation

- 17.5.5 In line with the design and impact avoidance measure during the construction stage, lighting required during the operational stage of the Proposed Development will be designed, positioned, and directed to prevent or minimise light spill. There are currently no other embedded mitigation measures identified for cultural heritage assets applicable to the operational stage of the Proposed Development. Potential measures may be identified as the design evolves and, if so, these will be highlighted in the ES.

Decommissioning

- 17.5.6 A Decommissioning Environmental Management Plan (DEMP) would be prepared by the Applicant which would consider in detail all potential environmental risks on the Proposed Development Site and contain guidance on how risks can be removed or mitigated, including impacts upon the setting of heritage assets.
- 17.5.7 No other mitigation measures have been identified for cultural heritage assets applicable to the Proposed Development decommissioning stage. Potential measures may be identified as the design evolves and, if so, will be highlighted in the ES.

17.6 Likely Impacts and Effects

- 17.6.1 This section presents the results of the preliminary assessment of cultural heritage effects taking into account the embedded and good practice mitigation measures as described in Section 17.5.
- 17.6.2 In undertaking this preliminary assessment, it is noted that a number of heritage assets have been scoped out of the assessment where the Applicant's site visit confirmed they would experience no change as a result of the Proposed Development. A summary of the rationale for the scoping out of heritage assets will be included in a gazetteer which will be submitted with the ES.
- 17.6.3 Heritage assets included in this preliminary assessment are referenced by either their HER identification number or, for designated heritage assets, by the identification number allocated by the NHLE.

Construction

- 17.6.4 The construction of the Proposed Development may result in physical impacts to heritage assets, resulting in a permanent loss of heritage value, or may result in impacts to heritage assets through temporary change to their setting as a result of

construction activities. The principal components of the Proposed Development and their potential impacts upon heritage assets during construction are discussed below.

The Main Site

Potential Permanent Impacts

- 17.6.5 There are no designated heritage assets located within the Main Site.
- 17.6.6 The site of a former 19th century tramway (5712) extends into the Main Site. In addition, the site of South Gare Breakwater (5663) and tramway which ran along its course (5708), both dating to the late-19th century, extend partially into the northern section of the Main Site. This asset is also no longer extant and is recorded from historical map evidence only. Earthworks associated with the breakwater are visible to the north-west of the Main Site, but do not extend into it. The route of the tramway (5708) is marked by a footpath to the north-west of the Main Site, but there is no evidence to suggest survival of the tramway within it.
- 17.6.7 The Main Site has been developed extensively since the late-19th century which is likely to have removed all trace of the breakwater and tramway features that appear on 19th century map evidence. These features therefore survive only as documentary evidence on historical maps. They have a level of historic interest as features that are indicative of the area's industrial heritage, but as there are no surviving remains of the features within the Main Site, they have no archaeological interest. Construction of the Proposed Development will not affect their historic interest and will therefore result in no impact and no effect.
- 17.6.8 The baseline information, presented in Appendix 17A: Cultural Heritage Desk-based Assessment (PEI Report, Volume III), indicates that the potential for previously unrecorded archaeological remains to be present within the Main Site is very low. The results of site investigations within the Main Site records made ground, principally consisting of slag-dominant material, with an average depth of between 4 m and 5 m across the site, up to a maximum of 7 m depth. The made ground overlies post-glacial sand and glacial till deposits, but deposits with an organic content were not present.

Potential Temporary Impacts

- 17.6.9 Marsh Farmhouse and cottage (NHLE 1160308), garden wall (NHLE 1139619) and stable and barn (NHLE 1139620) are located approximately 1.4 km east of the Main Site. The buildings are all Grade II listed and their heritage value, which is Medium in accordance with the criteria in Table 17-1, derives from their historical and architectural interest. The building group, as an example of the type of dispersed farmstead that was characteristic of the area in the late-18th and 19th centuries, also contributes to their heritage value.
- 17.6.10 The farmhouse, which dates to the mid-18th century, with 19th and 20th century additions, occupies an area at the head of Coatham Marshes, a space between the arable landscape of the south, heavy industry to the west, and the sea to the north. Its historic interest derives, in part, from its relationship with both the land and the sea. The main architectural interest of the farmhouse, barn and stable is as a



relatively cohesive example of vernacular buildings constructed on a local scale, using local materials and built in a local style. The addition of a later cottage on the eastern side of the farmhouse buildings demonstrates that the building use has seen adaptation and represents change throughout its life.

- 17.6.11 The barn and stable represent the functional setting of the farmhouse and the walled garden provides its aesthetic and domestic setting. Historically, the agricultural landscape to the south of the building group would have represented the principal setting of the buildings. However, the landscape around the buildings has been much altered and is no longer in agricultural use so no longer contributes to, or helps articulate, the buildings' heritage interests. An appreciation of the buildings' historical relationship with the sea has also been lost, or at least eroded significantly, by the presence of building and structures to the north of the farmhouse which detract from its setting. The presence of industrial buildings and infrastructure to the west of the asset group, within the Proposed Development Site, is partially obscured by the presence of an earthen bund but noise from these existing industrial activities is noticeable from the building group and, even though a quiet noise environment is not critical to appreciate the function of the building group, the invasive noises further detract from its setting. The principal setting of the building group which makes an appreciable positive contribution to its value is therefore the associative relationships of the buildings with each another.
- 17.6.12 The wider landscape does not make a positive contribution to the assets' setting and does not add to an appreciation of the assets' function. The construction of the Proposed Development therefore is unlikely to introduce a level of change that will impact the assets' historic and architectural interests such as to harm their value. The construction of the Proposed Development is therefore assessed to result in no impact to the heritage interests or value of the building group, and no effect.
- 17.6.13 The location of Marsh Farmhouse and cottage is identified as a noise receptor (noise receptor H5) in Chapter 11: Noise and Vibration (PEI Report, Volume I) and is illustrated on Figure 11-1 (PEI Report, Volume II). The preliminary noise assessment in Chapter 11 predicts a negligible change in noise levels at Marsh Farmhouse, when compared to baseline levels, as a result of construction activities at the Main Site, and a negligible effect (refer to Table 11-24 of Chapter 11). The change in noise levels would be imperceptible within the baseline setting and existing noise environment of Marsh Farmhouse and associated buildings and would constitute no impact to their heritage value and no effect.
- 17.6.14 Potential impacts arising from noise and vibration will be reassessed in ES to capture any potential changes in construction methodologies following submission of the preliminary assessment.

Natural Gas Connection Corridor

Potential Permanent Impacts

- 17.6.15 There are no designated heritage assets located within the Natural Gas Connection Corridor. There is one record on the HER located partially within the corridor, being

the site of the 19th century Normanby Jetty to South Gare reclamation wall (5602). The reclamation wall is no longer extant.

- 17.6.16 The site of the asset survives only as documentary evidence on historical maps. It has a level of historic interest as part of the area's industrial heritage, but as there are no surviving remains of the wall within the area, it has no archaeological interest. Construction of the Natural Gas Connection Corridor will not affect the asset's historic interest. The construction of the Proposed Development is therefore assessed to result in no impact and no effect.

Potential Temporary Impacts

- 17.6.17 There are no heritage assets in proximity to the Natural Gas Connection Corridor with the nearest asset being Marsh Farmhouse and cottage (NHLE 1160308), garden wall (NHLE 1139619) and stable and barn (NHLE 1139620), approximately 0.8 km to the north-east. Construction within the Natural Gas Connection Corridor would not introduce noticeable change within the setting of the building group (as defined above) and activities will be obscured by an intervening earthen bund. There will therefore be no impact to the building group, resulting in no effect.
- 17.6.18 The preliminary noise assessment in Chapter 11: Noise and Vibration (PEI Report, Volume I) predicts a negligible effect from an increase in noise levels at Marsh Farmhouse (noise receptor H5), when compared to baseline levels, as a result of the construction activities within the Natural Gas Connection Corridor. The change in noise levels would be imperceptible within the baseline setting and existing noise environment of Marsh Farmhouse and associated buildings and would constitute no impact to their heritage value and no effect. Potential temporary impacts arising from construction noise will be reassessed in the ES.

Hydrogen Pipeline Corridor

Potential Permanent Impacts

- 17.6.19 The Hydrogen Pipeline Corridor extends across the Tees Valley with the construction type comprising a mixture of above ground, below ground trenches and trenchless technologies, such as HDD and MBT. The construction of below ground trenches, and the excavation of launch and receptor shafts for HDD and MBT, has the potential to result in permanent impacts to buried archaeological remains that may be present.
- 17.6.20 On the southern banks of the Tees River, within the Hydrogen Pipeline Corridor, there are several records on the HER that relate to riverside features that are no longer present. The features are annotated on 19th century map evidence and follow the line of a former reclamation wall (6046). They comprise, from north to south:
- dolphin mooring bollards (6059 and 6058);
 - seventh buoy navigation light (6057);
 - eighth buoy scarp beacon navigation light (6056); and
 - beacons/navigation lights (6065, 6051 and 6050).



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- 17.6.21 These features are no longer present within the Hydrogen Pipeline Corridor. They have limited historic interest as map evidence features of the area's industrial and maritime heritage. Construction of the Hydrogen Pipeline Corridor will not affect the assets' historic interest and will therefore result in no impact and no effect.
- 17.6.22 At the eastern edge of the Hydrogen Pipeline Corridor and to the south-west of Coatham Marsh is a series of medieval salt mound features that relate to salt production. The extraction of salt from seawater was a major industry in the medieval period and numerous salt mounds, identified as earthworks, have been recorded from historical maps and aerial photographs around Coatham Marsh. The site of the salt mounds within Hydrogen Pipeline Corridor are marked on early editions of OS maps but there are no visible remains surviving within the Hydrogen Pipeline Corridor. The records within the Hydrogen Pipeline Corridor comprise, 3759; 3760; 3751; 3752; 3753; 3754; 3755 and 3756.
- 17.6.23 Map evidence from the 20th century and aerial imagery shows that the area of the salt mounds has been developed significantly since the 1900s and is currently occupied by light industry and road networks. Furthermore, there is no evidence of the salterns from light detection and ranging (LiDAR) imagery. The salterns have the potential to be of regional importance, and therefore Medium heritage value, deriving from their archaeological and historical interest associated with salt production. However, due to the history of development and ground disturbance in this area, there is unlikely to be any subsurface remains associated with historical salt production. The documentary records have a level of historical interest, as indicators of the type of industry that supported communities during the medieval period, but there is unlikely to be any surviving archaeological interest. It is assessed therefore that the construction of the Hydrogen Pipeline Corridor will have no impact on the value of these assets resulting in no impact and no effect.
- 17.6.24 The sites of Coatham Iron Works (5709) and Redcar Iron Works (5711) are located within the northern section of the Hydrogen Pipeline Corridor. There is no evidence for any surviving components of Coatham Iron Works, but the DBA identified features associated with Redcar Iron Works within the Hydrogen Pipeline Corridor. The remains, identified from aerial imagery and LiDAR only, appear to represent foundation remains associated with furnaces and railway sidings. A site walkover and visual inspection of the remains would be required to confirm the degree of survival, and hence their heritage value, and this will be completed for the ES. However, based on the desk-based evidence, the remains are assessed to be at least of local importance and Low value. The construction of the Hydrogen Pipeline Corridor has the potential to permanently remove a proportion of these remains but will not remove them entirely. This constitutes a Medium magnitude of impact, resulting in a Minor Adverse effect which is not significant.
- 17.6.25 The sites of other assets within the Hydrogen Pipeline Corridor that have been recorded from 19th century historical map evidence, but are no longer present within the Hydrogen Pipeline Corridor, include:
- Lazenby Railway Station (5688);

- Lackenby Railway Station (5647);
 - a section of training wall which began at Normanby Jetty and extended to the South Gare (5602);
 - Unnamed spoil ground (5652) and brick yard (5653);
 - Annealed Concrete Works (5659); and
 - the site of a World War II bombing decoy located within Wilton Chemical Works (3628).
- 17.6.26 All of these features are no longer present within the Hydrogen Pipeline Corridor and due to the history of development within the area, there is no potential for subsurface remains associated with the features to be present. Furthermore, the sites of these assets are located in an area of the Hydrogen Pipeline Corridor that will be housed above ground. All the assets have limited historic interest as map evidence records of the area's industrial, maritime and military defence heritage. Construction within the Hydrogen Pipeline Corridor will not affect the assets' historic interest and will therefore result in no impact and no effect.
- 17.6.27 To the north of the Tees River the Hydrogen Pipeline Corridor passes through an area of reclaimed land that was formerly salt marsh, through the lands around Greatham Marsh, and extends as far as the fields around Cowpen Bewley and south of Greatham village. Features recorded on the HER in the vicinity of Greatham Creek and within the Hydrogen Pipeline Corridor include a World War II section post (6903). The asset is identified from aerial photographs but is recorded in the HER as having been demolished. The Proposed Development will therefore have no impact on this asset, resulting in no impact and no effect.
- 17.6.28 A 19th century former harbour on the south side of Greatham Creek (4683) is recorded in the area. The form of the harbour is still evident and appreciable from aerial imagery; it is formed from two sets of slag retaining walls which are still present within the site. The harbour is adjacent to Greatham Creek. The construction of the hydrogen connections in this section of the Hydrogen Pipeline Corridor would utilise trenchless techniques and avoid impacting the harbour. The Proposed Development will therefore have no impact and no effect.
- 17.6.29 There is extensive evidence of activity in the area during World War II as a result of the defensive position of the coastline. The site of another former World War II Section Post (6902) or similar defensive building is located on the south side of Greatham Creek. It is visible on aerial photographs of 1946 and 1972 which, at magnification, show a sub-rectangular building with turned in entrances at the north-west and north-east corners. Remains of the Section Post are still visible on modern aerial imagery.
- 17.6.30 Potential remains of a pillbox (4684) are recorded in the HER as being located on the south side of Greatham Creek, at the western end of a small harbour (4683). The remains comprised the base of a small square building and was constructed of the same type of reinforced concrete used elsewhere for similar structures. Remains of the pillbox are not visible on modern aerial imagery, but it is unlikely that any

surviving remains have been removed and hence are possibly still present within the Proposed Development Site.

- 17.6.31 A spigot mortar post (3289), described from a survey dated 1993 as comprising the remains of a buried column of reinforced concrete, is located on the south side of Greatham Creek. Remains of the spigot mortar are not visible on modern aerial imagery, but it is unlikely that the buried remains have been removed and are still in situ within the Proposed Development Site.
- 17.6.32 To the south of Greatham Creek and east of Seaton Carew Road, the HER records the location of a World War II light machine gun rifle post pillbox (985) at the north end of an unfinished railway embankment. Modern aerial imagery shows that the structure is still surviving within the Proposed Development Site.
- 17.6.33 Approximately 54 m south of the pillbox is a World War II Station Post (6092) built into the side of the unfinished railway embankment. The remains of the structure, which are visible on modern aerial imagery, comprise four walls around a central space.
- 17.6.34 Another World War II pillbox (3287) is recorded on the HER in an area of scrubby saltmarsh to the east of Billingham Community Fire Station. Aerial imagery shows that the pillbox, which retains its mounting column for an anti-aircraft gun, is still present.
- 17.6.35 The typology of the pillboxes (4684), (985) and (3287) (Type 23 or variants of Type 23) are relatively uncommon and their condition, varying from foundation remains only to upstanding walls, is generally poor. Their heritage value, which is assessed to be Low, derives from their historical interest as features that contribute to the history of wartime defence in the region and also archaeological interest from the mode of their construction which can be varied and a reflection of local building materials. The heritage value of the remaining World War II structures and features, the Station Post (6092) and section post (6902) and spigot mortar (3289), are also assessed to be of Low heritage value, deriving from their historical interest and lower level of archaeological interest. In line with the measures set out in Section 17.5, the routeing of the connections required within the Hydrogen Pipeline Corridor, which would be housed below ground in this section of the corridor, will avoid upstanding remains of these assets, thereby avoiding any impact to their historical and archaeological interests, and their heritage value. The Proposed Development will therefore result in no impact and no effect.
- 17.6.36 The site of a World War II bombing decoy (4366) is located approximately 500 m south-east of the Station Post (6092). The feature is recorded on the HER as a fire-based decoy, designed to replicate the furnace gases of the industries that were located across the Tees valley during World War II. Modern aerial imagery suggests that this feature does not survive within the site and its former location is currently occupied by an area of hardstanding and the asset is no longer present. The Proposed Development will therefore have no impact and no effect on this asset.
- 17.6.37 A section of the Greatham Creek Branch of the North Eastern Railway (8717) is located approximately 270 m east of the pillbox. The railway is still in use, passing



through the Proposed Development Site on a north to south alignment. It will not be physically impacted by the construction of the Proposed Development resulting in no impact and no effect.

- 17.6.38 The HER has entries for a cluster of records at the site of an operational energy plant, Saltholme Statera, to the west of the A1185 and within the Hydrogen Pipeline Corridor. The records relate to evidence from archaeological evaluation and excavation of Romano-British settlement and comprise three Roman corn driers (9439); a small assemblage of Roman pottery (9523) dating between the 2nd and 4th centuries; two Roman stone-lined cist burials (9437); ditches and enclosures (9068); a 1st to 2nd century trumpet brooch (9502) and the base of a rotary quern stone (9438). The archaeological investigations focussed within the area of the development which currently occupies the site, and there is potential for additional features relating to the Romano-British settlement to extend into the Hydrogen Pipeline Corridor.
- 17.6.39 Previously unrecorded archaeological settlement remains from this period have the potential to be of Low to Medium heritage value, depending on their complexity and preservation level. Their heritage value derives from their historical and archaeological interests because of the contribution their evidence could make to local and regional research agenda. The section of the Hydrogen Pipeline Corridor in the vicinity of the known settlement will be located underground and therefore its construction could result in the permanent loss of the archaeological remains and therefore the permanent loss of heritage value. This would constitute a High magnitude of impact resulting in a Major Adverse effect, which is Significant.
- 17.6.40 The moat (5156) that surrounded the medieval Manor House at Belasis is located within the Hydrogen Pipeline Corridor, approximately 1.3 km south-west of the Romano-British settlement. The moat is now backfilled and is a non-designated heritage asset. The asset derives its value, which is assessed to be Low, from its historical interest for its association with the medieval manor of Belasis. The backfilling of the feature is likely to have compromised the preservation of structural remains and waterlogged deposits, but the asset may have limited archaeological interest if deeply buried structural components and deposits survive beneath the backfill material. The asset is located within a section of the Hydrogen Pipeline Corridor that will be housed above ground in existing conduit. As such, there will be no impact to the site of the asset resulting in no effect.
- 17.6.41 Two records on the HER to the north of Cowpen Bewley comprise a find spot of a Roman silver denarius (1458), and the site of the Cowpen Bewley Brick and Tile Yard. The coin, found by a metal detectorist, has been removed from this location and the brick and tile yard has been built over and its site is occupied largely by the A1185 carriageway. The Proposed Development will therefore have no impact on these records, and no effect.

Potential Temporary Impacts

- 17.6.42 The northern edge of Cowpen Bewley Conservation Area extends into the Hydrogen Pipeline Corridor. The conservation area, although small and arranged in a linear



layout, has an open, quiet and rural character due to the large central green which the houses face onto and through which Cowpen Lane passes. Views within the conservation area are framed by the linear layout of the buildings and views out towards the landscape beyond the village are only possible from the outer limits of the conservation area. The landscape outside the settlement core comprises fields, many of which display the characteristic pattern of ridge and furrow that provide a tangible link between the medieval landscape and the medieval origins of the village. The heritage value of the conservation area, which is Medium, derives from its historical origins as a medieval settlement and its rural setting contributes to this appreciation and understanding. The conservation area also derives its value from its layout which is clearly legible as medieval in origin, and from the architectural qualities of its buildings which demonstrate local distinctiveness and character.

- 17.6.43 The Hydrogen Pipeline Corridor is located to the north of the conservation area, falling partially within its boundaries and also taking in the ridge and furrow fields on the northern limits of the conservation area. The Proposed Development Site is located approximately 65 m from the settlement core, and it is possible that construction activities, noise and potentially dust may be visible and audible from within the core of the village. This may introduce a slight change within its setting that is incongruous to its quiet, rural character but would not affect the ability to appreciate the architectural qualities of its buildings and the historical relevance of its layout. The magnitude of impact is therefore assessed to be Low which would result in a temporary Minor Adverse effect which is Not Significant.
- 17.6.44 The preliminary noise assessment in Chapter 11: Noise and Vibration (PEI Report, Volume I) predicts a minor effect from increased noise levels when compared to baseline levels, as a result of the construction activities within the Hydrogen Pipeline Corridor, in the vicinity of Cowpen Bewley village (refer to Chapter 11, Table 11-25, noise receptor H1). This would represent slight change within the baseline setting of Cowpen Bewley Conservation Area but would not impact its character or heritage value. This would therefore constitute a Very Low impact, resulting in a temporary Negligible effect.
- 17.6.45 Greatham Conservation Area is located approximately 2 km from the Hydrogen Pipeline Corridor, which represents the closest component of the Proposed Development. The conservation area is separated from the Proposed Development by later housing on the outskirts of the village, fields, intervening hedgerows and a railway. The intervening settlement is likely to preclude any intrusion from the Proposed Development into the appreciation of the conservation area, including visual, noise and dust intrusion. Due to the distance involved it is assessed there will be no impact to the conservation area during construction and therefore no effect.
- 17.6.46 Kirkleatham Conservation Area, to the south of the River Tees, is located approximately 263 m from the edge of the Hydrogen Pipeline Corridor, this section of which will be housed above ground. The value of the conservation area derives from the history, quality and diversity of its buildings' architectural styles which date to the 17th and 18th centuries and range from Queen Anne through Baroque, Rococo and Palladian to Gothic. The high number of highly graded listed buildings,



comprising five Grade I, six Grade II* and 12 Grade II listed buildings, also contribute to its heritage value which is assessed to be High. The experience of the conservation area is intimate and enclosed, due to the prominence of mature woodland and planting along its edges, which creates a secluded feeling and emphasises the importance of internal views. This experience is an important component of the area's setting and contributes to its heritage value.

- 17.6.47 The intimate and enclosed setting of the conservation area will likely preclude any experience of the construction of the Hydrogen Pipeline Corridor from within the area. Construction activities may be appreciable when entering and leaving the conservation area to the south-west, but these activities will be viewed within the context of the existing Wilton Complex and will not therefore be out of place with the current setting. It is assessed therefore that there will be no impact to the conservation area's heritage value during construction and no effect.
- 17.6.48 Due to the distance of Greatham Conservation Area from the Hydrogen Pipeline Corridor, and the screening from mature woodland around Kirkleatham Conservation Area (noise receptor H3), the noise and vibration impacts during construction of the Hydrogen Pipeline Corridor are predicted to result in a negligible effect to both assets (Chapter 11: Noise and Vibration, Table 11-25 (PEI Report, Volume I)). This would constitute no impact to the character and heritage values of both conservation areas, resulting in no effect.

Electrical Connection Corridor

Potential Permanent Impacts

- 17.6.49 Heritage assets recorded on the HER that are located within both the Electrical Connection Corridor and the Hydrogen Pipeline Corridor have been assessed as part of potential impacts arising from the Hydrogen Pipeline Corridor.
- 17.6.50 Grangetown signal box (4782), which was constructed in 1954, is located within the Electrical Connection Corridor on the side of the railway to the north-east of the site of Grangetown Station (4360). The signal box is still in use and will be avoided by all components of the Proposed Development, resulting in no impact and no effect.
- 17.6.51 The railway station at Grangetown (4360), formerly known as Eston Grange opened in November 1885, replacing Eston Junction station (4358) to the west, which is outside of the Proposed Development Site. The name change to Grangetown occurred in 1902. The road which led to the station is still in place and named as Grangetown Station Road, but there are no standing buildings surviving, and the area is occupied by a local road network and railway lines. The site of the railway station survives as documentary evidence only but has no surviving archaeological interest or value. As such, the construction of the Electrical Connections will result in no impact to the former station, resulting in no effect.
- 17.6.52 The site of a brick field (5649) shown on second edition OS maps to the south-west of Lackenby Station and the site of Old Clay Pits (5646), an area of extensive quarrying mapped on 19th century OS maps, are recorded on the HER as being within the Electrical Connection Corridor. Both former assets are no longer present with the site of the brick field now occupied by railway lines and a road network, and the quarry

pits occupied by an area of modern quarrying and spoil heaps adjacent to the Southbank Steelmaking Plant. Both former assets survive only as mapped features on documentary evidence and have no surviving archaeological interest or value. The construction of the Electrical Connection will therefore result in no impact to the former assets, resulting in no effect.

Potential Temporary Impacts

- 17.6.53 There are no heritage assets in proximity to the Electrical Connection Corridor whose setting could experience change during construction. As such, there will be no temporary effects during construction to the heritage value of heritage assets.

Water Connection Corridor

Potential Permanent Impacts

- 17.6.54 There are no designated heritage assets within the Water Connection Corridor and only one asset recorded on the HER.
- 17.6.55 To the south of the site of the medieval salt mounds (located within the Hydrogen Pipeline Corridor) and located within the Water Connection Corridor is a record for the deserted medieval village of West Coatham (355). The settlement is noted in documentary evidence from 1236, which records the village being engaged in salt production. Earthworks associated with the village are visible on the OS map dated 1884, but the site has been developed extensively through the late-19th and 20th centuries and surface features are no longer present.
- 17.6.56 Due to the extent of historical development and ground disturbance there is a low potential for deeply buried features associated with the village to be present, such as wells and waterholes. If they were present, the features would represent heavily truncated remains with few contextual associations and their heritage value is therefore assessed to be Very Low. The removal of any surviving remains as a result of the Proposed Development would constitute a High impact, as it would represent total loss of any remaining archaeological interest. However, due to the likely low heritage value of the remains, this would result in a Minor Adverse effect, which is Not Significant.

Other Gases Connection Corridor (O₂ and N₂)

- 17.6.57 The Other Gases Connection Corridor is located within the Hydrogen Pipeline Corridor, and the assumed construction methodologies are the same. As such, potential permanent and temporary impacts to heritage assets associated with the Other Gases Connection Corridor will be the same as those reported for the Hydrogen Pipeline Corridor and are not repeated here.

Operation

- 17.6.58 There will be no additional physical impacts to buried heritage assets during the Proposed Development's operational stage, as any potential impacts will have occurred during the construction phase. As such, the assessment of impact during Proposed Development operation focusses on the magnitude of change to a heritage asset's setting as a result of the physical presence of the Proposed Development,

including components of the operational development that may result in aural intrusion to setting.

- 17.6.59 The connection corridor pipelines will either be housed in a below-ground conduit or housed in existing above ground racking. During the operational phase, therefore, the pipelines will either not be visible or represent no change to the character of an area or to the setting of a heritage asset. The most visually prominent components of the operational development will be the flare and the Production Facility, located on the Main Site. The Main Site is located on the edge of a heavily industrial area of Teesside; an area that has been occupied by industrial structures since the 19th century and which has also seen multiple changes as industries and technologies adapted and advanced.
- 17.6.60 The Production Facility will be designed to operate 24 hours a day, seven days a week and external lighting will be used at the facility to provide safe working conditions during its operation. Lighting would be designed, positioned and directed to prevent or minimise light disturbance to sensitive receptors and low-energy fittings would be used where possible. The presence of the Production Facility will represent a new building amongst the cluster of existing industrial buildings in this part of the Tees Valley. Its presence will represent a change in views of this area, but the change will not be incongruous with the area's existing character.
- 17.6.61 Eston Nab hillfort scheduled monument (NHLE 1011273) is located approximately 6.55 km south of the Main Site. The heritage value of the asset, which is High, derives from its archaeological interest for the information it could provide relating to Bronze Age society and hillfort construction methods. The asset also has historical interest as a long-standing and visually prominent feature of Eston Hills. The asset's associative relationship with other monuments on Eston Hills, largely comprising Bronze Age funerary monuments, is a significant part of its setting. Its visual prominence and the ability to have long-ranging, uninterrupted views from the fort, a strategic feature of a defended settlement, also contribute highly to its setting. The operational development would not change the asset's immediate setting, which is defined by the remnants of its outer defensive circuit and the remnant prehistoric landscape on Eston Hills. Rather, the operational development would be viewed as part of the mid-ground cluster of industrial complexes that include cooling towers, chimneys and plumes. Beyond the cluster of industrial works, long-range views towards the coastline and the North Sea would not change. As the operational development would not be incongruous to the asset's setting, its presence would result in no change; therefore, the operational development would result in no impact and no effect.
- 17.6.62 Marsh Farmhouse and cottage (NHLE 1160308), garden wall (NHLE 1139619) and stable and barn (NHLE 1139620) are located approximately 1.4 km east of the Main Site. Their heritage value, which is Medium in accordance with the criteria in Table 17-1, derives from their historical and architectural interest. The building group, as an example of the type of dispersed farmstead that was characteristic of the area in the late-18th and 19th centuries, also contributes to their heritage value. The assessment has already confirmed that the wider landscape does not make a positive



contribution to the assets' setting and does not add to an appreciation of the assets' function. The operational development will introduce a new built component in the area around the asset group but will not represent a change that will impact the assets' historic and architectural interests, nor will it harm their value. The operational Proposed Development is therefore assessed to result in no impact to the heritage interests or value of the building group, and no effect.

- 17.6.63 Kirkleatham Conservation Area is located approximately 4 km south-east of the Main Site. The experience of the conservation area is intimate and enclosed, due to the prominence of mature woodland and planting along its edges, which creates a secluded feeling and emphasises the importance of internal views. This experience is an important component of the area's setting and contributes to its heritage value.
- 17.6.64 The intimate and enclosed setting of the conservation area will likely preclude any experience of the Proposed Development from within the area. Views towards the Main Site are not possible from either within the conservation area or from its northern edge, due to the mature treelined boundary along Kirkleatham Lane. There will be no change to the character or setting of the area as a result of the operational Proposed Development resulting in no impact and no effect.
- 17.6.65 Coatham Conservation Area is located approximately 2.6 km east of the Main Site. The heritage value of the conservation area, which is assessed as Medium in accordance with the criteria set out in Table 17-1, is defined by the architectural and historical interest of its individual buildings and settlement form. The experience of the conservation area is articulated by the two-storey Victorian and Edwardian houses which dominate the area's character and which frame views within and out of the area. Views from the western edge of the area, away from the conservation area, will include views of the Production Facility in the Main Site in the background. The introduction of the Production Facility into this view will not be incongruous with the area's existing character which takes in the remaining components associated with the site's former blast furnace. This change will not affect the ability to appreciate the architectural character of the conservation area, which is experienced from within the conservation area, and will not affect any key views. It is assessed therefore that there will be no impact to the value of the conservation area, resulting in no effect.
- 17.6.66 Seaton Carew Conservation Area is located approximately 4.8 km north-west of the Main Site. The central part of the conservation area comprises 2-storey buildings on either side of The Front with shops at ground level. Views here are dominated by the colourful buildings on both sides, many of which are in neutral tones but several that are coloured in bright blues and pinks, and which evoke the spirit of the seaside holiday destination. The northern and southern parts of the conservation area are made up of coherent rows of two and three-storey buildings, some with open views of the sea, and of designed public spaces. These areas provide extensive views across the North Sea, of the Headland to the north and the Cleveland Hills to the south.
- 17.6.67 The value of the conservation area, which is assessed to be Medium, derives from the historic interest of its development from a fishing village into a seaside resort, and from the architectural interest of its buildings which, while of varied design, are



unified by their restricted scale and range of materials. However, many of the buildings appear to be in a poor state of repair which does detract from the experience of the area. On a clear day, the Production Facility at the Main Site will be visible, seen against the backdrop of the existing industrial structures within the Wilton Complex. The introduction of the Production Facility into this view will not represent a noticeable change and will not affect the character or heritage significance of the conservation area. It is assessed therefore that there will be no impact from the Proposed Development, resulting in no effect.

17.6.68 Yearby Conservation Area is located approximately 5.2 km south of the Main Site. The layout of Yearby is based on a typical medieval form; comprising two rows of houses arranged either side of a principal through road. The buildings within the village consist of single and two-storey 18th century cottages and farm buildings. The setting of Yearby is defined by the arable landscape it sits within, however the landscape has changed significantly and the former medieval layout of burgage plots and small strip fields has been replaced by large, enclosed fields as a consequence of 18th and 19th century enclosure and modern farming practices. Views within the conservation area are framed by the linear layout of the buildings, although long-range views out over the surrounding fields and the Eston Hills beyond are possible to the south, from the southern edge of the area. Views to the north and north-east, towards the Main Site, are precluded by mature planting which frames the northern edges of the village. The conservation area derives its value, which is Medium, from the historical legibility of its planned form, and from the architectural interest of its buildings which demonstrate local distinctiveness and character.

17.6.69 The mature planting along the northern edge of the conservation area will likely preclude views of the Production Facility and the distance from the Production Facility will preclude any changes to the character and setting of the conservation area arising from any aural intrusion. It is assessed therefore that there will be no impact to the conservation area, and no effect.

Decommissioning

17.6.70 Decommissioning impacts will be temporary and associated activities are assumed to be similar to construction impacts (movement of traffic and machinery, potential for noise and dust). The impacts will not be greater than those reported during construction. In addition, decommissioning will be undertaken within the same footprint used during construction and therefore any impact to buried cultural heritage remains that could have occurred will have occurred during construction and will have been mitigated as required.

17.6.71 The Proposed Development will have a design life of 25 years. It is assumed for this preliminary assessment that, at the end of its operating life, all above-ground components of the Proposed Development would be decommissioned and removed. It is assumed that prior to the removal of plant and equipment, all residues and operating chemicals will be cleaned out from the plant and disposed of in an appropriate manner. Removal of above ground structures may enhance the setting of heritage assets.

17.6.72 The design of the Proposed Development is ongoing and additional mitigation strategies, not related to heritage assets, may therefore be agreed in response to the emerging design. The ES will where possible consider any further potential impacts that may arise from decommissioning as a result of the presence of mitigation strategies, such as landscape planting, that may still be in place after the facility's decommissioning.

17.7 Mitigation and Enhancement Measures

Construction

17.7.1 Known heritage assets have been avoided by design (embedded mitigation). The design process is still ongoing and further opportunities to avoid, where feasible, heritage assets identified from baseline surveys carried out for the Proposed Development, will inform the emerging design. Where it is not practicable to avoid heritage assets, which will principally comprise below-ground archaeological remains, essential mitigation will be secured through a programme of archaeological evaluation and mitigation, consisting of excavation and recording, which will be carried out prior to construction. This strategy will be suitable for previously unrecorded archaeological remains within the Proposed Development Site, such as potential Romano-British settlement archaeology that may be present within a section of the Hydrogen Pipeline Corridor that will be located underground.

17.7.2 All programmes of archaeological investigation will be carried out in accordance with a Written Scheme of Investigation (WSI) that has been agreed with the relevant archaeology officer/s and approved in writing by the relevant LPAs.

17.7.3 Some parts of the Proposed Development Site are not suitable for traditional archaeological evaluation measures due to the nature of the ground conditions. For example, the Main Site is located on made ground comprising slag-dominant material which would preclude archaeological geophysical survey. The depths of the made ground, which average 4.7 m deep, would also preclude safe archaeological trial trenching. Waterlogged and high-moisture content deposits, which represent the soil environment in the vicinity of Greatham Creek, would also not be suitable ground conditions for geophysical survey or trial trenching. Therefore, it is recommended that a protocol is adopted to mitigate potential impacts to previously unknown archaeological assets that may be encountered during construction. The protocol will be included in the Framework CEMP and will include procedures for the reporting, protection and management of unexpected archaeological discoveries. The following wording is currently proposed, which remains subject to ongoing discussion and refinement:

- Any archaeological remains not previously identified which are revealed when carrying out the authorised development must be retained in situ and reported to the relevant LPA, as soon as reasonably practicable from the date they are identified.
- No construction operations are to take place within 10 m of the remains referred to in sub-paragraph (i) for a period of 14 days from the date of any notice served

under sub-paragraph (i) unless otherwise agreed in writing by the relevant LPA in consultation with any other relevant heritage stakeholders as required.

- If the relevant LPA determines in writing that the archaeological remains referred to in sub-paragraph (i) require further investigation or mitigation, no construction operations are to take place within 10 m of the remains until provision has been made for such mitigation or the further investigation and recording of the remains in accordance with details to be submitted in writing to, and approved in writing by, the relevant LPA in consultation with any other relevant body as required.

17.7.4 The adoption of this protocol will ensure the safeguarding during construction of unexpected archaeological remains.

Operation

17.7.5 As no significant adverse heritage effects have been identified, there is currently no need for additional mitigation measures during the operation of the Proposed Development. However, as the Proposed Development design progresses this assessment will be updated for the ES and the need for additional mitigation reconsidered.

Decommissioning

17.7.6 It is assumed for the purpose of this assessment that there will be no additional impacts to buried cultural heritage assets during decommissioning activities. Decommissioning will be undertaken within the same footprint used during construction and therefore any impact to buried heritage assets would have occurred, and have been mitigated, at the construction phase. As such, there is no need for additional mitigation measures for the Proposed Development decommissioning stage. However, as the Proposed Development design progresses, this assessment will be updated for the ES and the need for additional mitigation reconsidered.

17.8 Limitations and Difficulties

17.8.1 A heritage walkover of some parts of the Proposed Development Site still needs to be undertaken. Such walkover surveys will be completed to inform the assessment to be reported in the ES and any additional heritage assets identified will be included in the updated assessment as applicable.

17.9 Residual Effects and Conclusions

17.9.1 Based upon the worst-case scenario, a Major Adverse (Significant) effect has been identified on potential archaeological remains associated with Romano-British settlement within the Hydrogen Pipeline Corridor. The mitigation measures described in Section 17.7, comprising a programme of archaeological evaluation and excavation in advance of construction, will ensure that the significant effect is mitigated to a level where no residual significant effects occur. The details of the evaluation and mitigation will be agreed with the archaeology officer for the relevant LPA and defined within the ES. The implementation of the agreed evaluation and



mitigation will be secured through a WSI agreed with the archaeology officers for the relevant LPAs. No other significant adverse heritage effects are anticipated as a result of the Proposed Development.

17.10 References

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