

South Tees Development
Corporation
Prairie Site Remediation
Ecological Impact Assessment

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This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

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Ove Arup & Partners Ltd
Central Square
Forth Street
Newcastle upon Tyne NE1 3PL
United Kingdom
www.arup.com

ARUP

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Executive Summary

Ove Arup and Partners Ltd (Arup) have been commissioned by South Tees Development Corporation (STDC) to complete an Ecological Impact Assessment (EcIA) in connection with a planning application for the proposed remediation of the Grangetown Prairie Site. The proposed development site is approximately 53ha.

A desk study identified all internationally and nationally designated sites within 5km, non-statutory designated sites within 2km and protected and notable species within or immediately adjacent to the proposed development site. An ecological walkover of the proposed development site was undertaken in May 2020 to update and clarify the existing Preliminary Ecological Appraisal (PEA) habitat data within the proposed development site.

The proposed development site does not have any designated nature conservation sites within or immediately adjacent to the red line boundary, however, there are designated nature conservation sites within 2-5km of the proposed development site. These comprise of the Teesmouth and Cleveland Coast Special Protection Area (SPA), Ramsar site, National Nature Reserve (NNR) and Site of Special Scientific Interest (SSSI). All of these designated sites were scoped in for further assessment.

Due to the potential for an impact to an internationally important site, a Habitats Regulations Assessment (HRA) has been completed. The report concluded there will be no adverse effects on the Teesmouth and Cleveland Coast SPA and Ramsar as a result of the proposed development. Other than a Construction Environmental Management Plan (CEMP) and Phasing Plan, no other specific mitigation is deemed required. With the implementation of these mitigation measures it is considered that there will be no adverse effects to the Teesmouth and Cleveland Coast SSSI and NNR.

The proposed development site contains 'Open Mosaic Habitat on Previously Developed Land' (OMH) which is a Habitat of Principle Importance (HoPI) for nature conservation. This habitat was scoped in for further assessment. The habitats within the proposed development site provide suitable habitat for a locally important breeding bird assemblage as well as the Species of Principle Importance (SoPI) common toad (*Bufo bufo*), brown hare (*Lepus europeaus*), dingy skipper (*Erynnis tages*) and grayling butterfly (*Hipparche semele*). All of these species, including herring gull (*Larus argentatus*), lapwing (*Vanellus vanellus*), linnet (*Linaria cannabina*) and skylark (*Alauda arvensis*) were scoped in for further assessment.

Although many of the individual habitats within the proposed development site are not assessed further within the EcIA, the collective loss of them is considered in the Biodiversity Net Gain (BNG) assessment.

In terms of the BNG assessment, without mitigation, the proposed development is likely to result in a biodiversity loss of 173.58 biodiversity units. Off-site compensation is likely to be necessary in order to achieve a BNG.

Due to the loss of all habitats within the proposed development site, including the OMH and the ponds within the proposed development site, it is considered that there is the potential for a significant adverse effect to OMH, the breeding bird assemblage, as well as the population of common toad, and dingy skipper.

It is not possible for direct mitigation to be identified for the loss of habitat value (excluding any protected species) given the nature of the works proposed and the purpose of the application proposals. Instead, to address the significant residual adverse effects identified in this EcIA, STDC is committed to delivering compensation in due course through the Environment & Biodiversity Strategy.

Due to the sub-optimal foraging and breeding habitat within the proposed development site, it is considered that there will be no significant impact to the populations of herring gull, lapwing, linnet, skylark, brown hare and grayling butterfly.

It is recommended that:

- The proposed development site is managed through a CEMP and a Phasing Plan; and
- To ensure legal compliance, the proposed development will need to ensure measures to control invasive plant species and avoid disturbing breeding birds are implemented.

The Environment & Biodiversity Strategy will seek to identify opportunities for compensation in the STDC area and beyond, for a range of measures, including:

- Compensation for the loss of 1.44ha of OMH, in line with an agreed biodiversity metric, with suitable habitat monitoring and maintenance plans put in place;
- Suitable ponds and wet grassland habitat creation designed to support common toad, as compensation for the loss of common toad breeding habitat, with suitable habitat monitoring and maintenance plans put in place;
- Suitable habitat creation to support bird species that comprise the affected breeding bird assemblage; and
- Suitable habitat creation to support dingy skipper.

1 Introduction

Ove Arup and Partners Ltd (Arup) have been commissioned by South Tees Development Corporation (STDC) to complete an Ecological Impact Assessment (EcIA) in connection with a planning application for the proposed remediation of the land zone area referred to as Grangetown Prairie¹ (hereafter referred to as the 'proposed development'). The proposed development site is approximately 53ha and is centred at National Grid Reference (NGR) NZ 54668 21458.

The red line boundary for the proposed development is illustrated in Appendix A.

Ecological surveys of the proposed development site have been completed in order to inform this assessment. The surveys used to inform the overall baseline ecological conditions of the proposed development site are detailed in Section 4.4.

The aim of this document is to:

- Identify and describe all likely significant ecological effects associated with the proposed development;
- Identify the baseline biodiversity value of the proposed development site in line with the current Natural England Biodiversity Net Gain (BNG) metric;
- Identify a compensation strategy to address any likely significant ecological effects;
- Provide an assessment of the significance of any residual effects; and
- Set out the requirements for post-construction monitoring.

¹ South Tees Development Corporation (November 2019) South Tees Regeneration Master Plan. <https://www.southteesdc.com/wp-content/uploads/2020/01/South-Tees-Master-Plan-Nov-19.2.pdf> Accessed 12 May 2020.

2 Proposed Development Description

2.1 Proposed Development Site Overview

The proposed development site is located within the STDC land zone known as Grangetown Prairie¹. The Grangetown Prairie site is largely vacant but has a long history of iron and steel work uses and was extensively occupied by buildings and freight rail infrastructure. Former uses included the Cleveland Iron and Steel Works, where the heavy end operations (coke ovens, iron making and steel making) were located along the western periphery of the Grangetown Prairie site, with mills dominating the central and eastern zones.

The Holme Beck is located within the proposed development site and runs along the eastern boundary of Eston Road continuing up through the proposed development site. The Holme Beck is largely culverted through the proposed development site but is open for approximately 150m on the south end of Eston Road near the A66 junction. Where open, Holme Beck consists of vertical sides made of stone.

Two other culverted watercourses run through the proposed development site, the Cross Connector, which enters the proposed development site in the south east and connects to the second culverted watercourse, the Knitting Wife Beck which runs along the eastern boundary of the proposed development site. These culverts are illustrated in Appendix A2.

The proposed development red line boundary (see Appendix A) overlaps with the red line boundary for a separate proposed development known as 'Eston Road Highway Scheme.' The Eston Road Highway Scheme is currently the subject of a planning application submission.

2.2 Proposed Development

The proposed development is the remediation of the proposed development site. This will include the removal and/or treatment of contaminated soils and the removal of redundant structures within the proposed development site to prepare the area for future developments. Soils stored in other areas of the STDC site may be used within the proposed development site.

The proposed development may include the daylighting of the Holme Beck, the Cross Connector and/or Knitting Wife Beck culverts. At this time, there are no preliminary designs for this daylighting or details of the extent to which the watercourse may be daylighted.

It is worth noting that in addition to this development proposal, the Eston Road Highway Scheme (see section 2.1), includes daylighting of a section of the Holme Beck Culvert alongside Eston Road.

The proposed remediation works and estimated dig depths are illustrated in Appendix A2.

2.3 Construction

Relevant components of the proposed development construction include:

- Removal and replacement of contaminated soils to a depth of up to 2.5 metres below ground level (mbgl);
 - Materials that have been excavated and require remediation of contaminants will be segregated and treated to make suitable for re-use. Treatment of these materials will take place within a designated area of the proposed development site where hardstanding remains in situ;
- Removal of old structures and obstructions, including the filling in of old basements and removal and flattening of the redundant railway line;
 - Excavated structures and obstructions will be segregated by material type (i.e. concrete will be segregated from brick) before being crushed and graded for reuse;
- Removal of existing vegetation within the proposed development site;
- Excavations will be backfilled and compacted to an agreed criterion;
- Where materials such as scrap metals or highly contaminated soils can not be treated, these will be removed from the proposed development site and taken to a licensed treatment facility; and
- Potential in-channel works to open up and daylight the Holme Beck, Cross Connector and/or Knitting Wife Beck culverts.

These elements of construction are likely to lead to:

- Generation of some dust, which will be controlled by standard environmental management control methods (e.g. wheel washing and road brushing) to be defined within the Construction Environmental Management Plan (CEMP);
- Generation of noise and vibration, which will be temporary and avoided or minimised through implementation of the CEMP. The CEMP would include restrictions and targets for specific work activities, including monitoring. If required, appropriate mitigation measures to deal with any noise and vibration impacts would be put in place around the proposed development site;
- Any groundwater recovered from excavations will be treated as required and disposed of under duty of care and using best practice guidelines;
- Emissions from on-site plant and construction vehicles, which would have a minor adverse, temporary effect on the environment and require no mitigation other than standard best practice for construction sites; and
- A low risk of leachates or the escape of products/by-products that may constitute a contaminant in the environment, to be managed through best practice construction management techniques in line with the CEMP.

3 Legislation, Planning Policy and Guidance

Details on the relevance of this legislation, planning policy and guidance is given in Appendix B.

3.1 Legislation

Legislation relevant to this assessment comprises:

- The Conservation of Habitats and Species Regulations 2017²;
- Wildlife and Countryside Act (WCA) 1981 (as amended)³; and
- Natural Environment and Rural Communities (NERC) Act 2006⁴.

In addition to this legislation, the Environment Bill 2019-2021⁵ is currently going through Parliament. The Bill is due to make provision about targets, plans and policies for improving the natural environment. Specifically, Section 6, part 88 and Schedule 15 of the current draft make provision for biodiversity gain to be a condition of planning permission in England. There is likely to be a duty on developers to submit a biodiversity gain plan to a local planning authority, which should include [amongst other elements], BNG calculations and evidence of a 10% net gain in biodiversity.

Biodiversity net gain is not yet mandated through adoption of the Environment Bill, however, it is in line with the current aspirations of the Environment and Biodiversity Strategy being developed by STDC, where achievable subject to detailed investigations of on and off-site opportunity for habitat enhancement schemes.

Until the Environment Bill is enacted and reflected in national policy, full weight should be given to the policies of the Redcar and Cleveland Local Plan, 2018⁶.

² The National Archives: The Conservation of Habitats and Species Regulations 2017. <http://www.legislation.gov.uk/ukxi/2017/1012/contents/made> Accessed 6 May 2020.

³ The National Archives: Wildlife and Countryside Act 1981 <http://www.legislation.gov.uk/ukpga/1981/69/contents> Accessed 6 May 2020.

⁴ National Archives: Natural Environment and Rural Communities Act 2006. <http://www.legislation.gov.uk/ukpga/2006/16/contents> Accessed 6 May 2020.

⁵ DEFRA (2020) Environment Bill 009 2019-21. <https://publications.parliament.uk/pa/bills/cbill/58-01/0009/20009.pdf/>. Accessed 18 June 2020.

⁶ Redcar and Cleveland Borough Council [RCBC] (May 2018) Local Plan Adopted May 2018. <https://www.redcar-cleveland.gov.uk/resident/planning-and-building/strategic%20planning/Documents/Local%20Plan%20Adopted%20May%202018.pdf> Accessed 6 May 2020.

3.2 Planning Policy

Statutory and non-statutory planning policies relevant to this assessment comprise:

- Redcar and Cleveland Borough Council (RCBC) Local Plan (statutory policy)⁶;
- South Tees Supplementary Planning Document (SPD), 2018 (non-statutory policy / material planning consideration); and
- National Planning Policy Framework (NPPF)⁷ (non-statutory policy / material planning consideration).

3.3 Guidance

Guidance relevant to this assessment comprises:

- South Tees Regeneration Masterplan¹;
- South Tees Area Supplementary Planning Document (SPD)⁸;
- Birds of Conservation Concern (BoCC)⁹; and
- Tees Valley Local Biodiversity Species List¹⁰.

⁷ Department for Communities and Local Government (2012) National Planning Policy Framework. <https://www.gov.uk/government/publications/national-planning-policy-framework--2> Accessed 6 May 2020.

⁸ RCBC (2018) South Tees Area SPD. <https://www.redcar-cleveland.gov.uk/resident/planning-and-building/local-plan/Pages/South-Tees-Area-SPD.aspx> Accessed 6 March 2020.

⁹ Eaton M.A., Aebischer N.J., Brown A.F., Hearn R.D., Lock L., Musgrove A.J., Noble D.G., Stroud D.A. and Gregory R.D. (2015) Birds of Conservation Concern 4: The population status of birds in the United Kingdom, Channel Islands and Isle of Man. *British Birds* 108, 708–746.

¹⁰ Tees Valley Nature Partnership (2018) Tees Valley Local Biodiversity Species. <https://teesvalleynaturepartnership.org.uk/wp-content/uploads/2019/05/TV-Local-Biodiversity-species-list.pdf> Accessed 20 May 2020.

4 Methodology

This section sets out the ecological features to be considered in this assessment. It sets out the methods and resources to be used and establishes the zone of influence (ZoI) for surveys and assessments.

It is important to consider the effects on the baseline ecological conditions in the context of the proposals, which are to create development opportunities on previously developed land through its remediation, clearance of below ground remnants and filling of voids. It is not an application for final development, rather it will facilitate final development schemes to come forward in due course.

4.1 Scope of the Assessment

The following features were considered as part of the assessment:

- Designated sites, including statutory and non-statutory designated sites;
- Legally protected species¹¹;
- Habitats of principal importance (HoPI) for conservation of biodiversity¹²; and
- Species of principal importance (SoPI) for conservation biodiversity¹².

The ZoI for a project is the area over which ecological features may be subject to significant effects as a result of the proposed project and associated activities.

For the purposes of this assessment, the features considered and their ZoI were:

- Internationally important designated sites within 5km of the proposed development site¹³;
- Sites of Special Scientific Interest (SSSI) and National Nature Reserves (NNR) within 5km of the proposed development site;
- Non-statutory designated sites, such as Local Nature Reserves (LNR) and Local Wildlife Sites (LWS) within 2km of the proposed development site; and
- Legally protected species, HoPI and SoPI within the proposed development site or immediately adjacent.

4.2 Consultation

A steering group was established to discuss the wider Environment and Biodiversity Strategy for the STDC Regeneration Masterplan. The first of these meetings was held on 12 March 2020 and was attended by representatives from STDC, Faithful and Gould (F+G), Industry Nature Conservation Association (INCA), Natural England (NE), RCBC, Environment Agency, Arup and

¹¹ As protected under the Conservation of Habitats and Species Regulations 2017 or the Wildlife and Countryside Act 1981 (as amended).

¹² As listed on Schedule 41 of the NERC Act 2006.

¹³ European designated sites within 20km of the proposed development site are assessed within the Habitats Regulations Assessment (HRA).

Lichfields. This planning application was not discussed at the meeting, however principles of the wider strategy, which are relevant to the planning application, were discussed.

4.3 Desk Study

A desktop review of the following sources of information was carried out to identify designated sites, notable habitats and protected and notable species recorded within 2-5km of the proposed development site:

- **Preliminary Ecological Appraisal (PEA): Grangetown Prairie**¹⁴ – A PEA was conducted by INCA in May 2018 and covered the wider Grangetown Prairie site, which included the proposed development site;
- **PEA: Holme Beck**¹⁵ – A PEA was conducted by INCA in February 2020 and assessed the condition of the non-culverted sections of the Holme Beck within the proposed development site;
- **INCA 2020 Nesting Bird Checks** – Results from nesting bird checks undertaken on the 4th, 19th and 26th May 2020 were provided to understand the bird assemblage of the proposed development site;
- **Natural England Open Data**¹⁶ – This website was consulted to identify statutory designated sites within 5km of the proposed development site such as Special Areas of Conservation (SAC) and Special Protection Areas (SPA)¹⁷; and
- **Environmental Records Information Centre North East (ERIC NE)** – Records were received on 11 May 2020 and included data on protected species, internationally designated sites, statutory and non-statutory designated sites within 2km of the proposed development site. Records of protected and notable species from within the last ten years were considered representative of the status of biodiversity in the local area in the baseline review.

¹⁴ INCA (May 2018) Preliminary Ecological Appraisal Grangetown Prairie. Received 22 January 2020.

¹⁵ INCA (February 2020) Preliminary Ecological Appraisal Holme Beck. Received 5 May 2020.

¹⁶ Natural England Open Data. <https://naturalengland-defra.opendata.arcgis.com/> Accessed June 4 2020.

¹⁷ A search of internationally designated sites within 20km of the proposed development site was undertaken to inform the HRA. This is discussed within the HRA Report.

4.4 Field Survey

4.4.1 Habitat Survey

A habitat survey was undertaken in May 2020 to update and clarify the existing PEA habitat data within the proposed development site. During this survey the habitats were classified using the UK Habitat Classification system¹⁸ where possible to assist in undertaking BNG calculations¹⁹ using the Biodiversity Metric 2.0 (BM2.0)^{20 21}. This survey followed standard methods described in the Chartered Institute for Ecology and Environmental Management's (CIEEM) PEA (2013)²² guidance, and where required, also referred to the Phase 1 Habitat survey methodology²³.

The condition and connectivity of these habitats, as per the BM2.0 were also assessed.

A colour coded map, including target notes was produced to further aid this. This map is provided in Appendix A.

4.4.2 Nesting Bird Check

As part of INCA's wider work within the STDC site, nesting bird checks of the Grangetown Prairie site were undertaken on the 4 May, 19 May and 26 May 2020²⁴. These nesting bird checks are ongoing. Due to the recommendations of the 2018 PEA, breeding bird surveys were not undertaken by the client prior to Arup's commission to undertake this EcIA. The timescales of this commission didn't allow for formal breeding bird surveys to be undertaken.

4.5 Ecological Impact Assessment

This EcIA has been undertaken in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) best practice guidance²⁵.

¹⁸ UK Habitat Classification Working Group (2018) *UK Habitat Classification User Manual* at <https://ecountability.co.uk/ukhabworkinggroup-ukhab/>

¹⁹ Natural England (2019) *The Biodiversity Metric 2.0: Auditing and accounting for biodiversity value. Calculation tool*¹⁹: Short guide. Natural England

²⁰ Crosher I.A., Gold S.B, Heaver M.D., Heydon M.A., Moore L.D, Panks S.A, Scott S.C., Stone D.A. & White N.A. (2019) *The Biodiversity Metric 2.0: Auditing and accounting for biodiversity value. User guide (Beta version, July 2019)*. Natural England.

²¹ Baker, J. *et al* (2016) *Biodiversity Net Gain: Good practice principles for development*. CIRIA CIEEM & IEMA.

²² Chartered Institute of Ecology and Environmental Management (CIEEM) released updated PEA guidance (2nd edition) in December 2017. The surveys undertaken on the proposed development site are considered to satisfy the requirements of the 2017 guidance.

²³ Joint Nature Conservation Committee (JNCC) (2010) *Handbook for Phase 1 Habitat Survey. A technique for environmental audit*. Revised re-print. JNCC: Peterborough.

²⁴ A report on the nesting bird check was not yet issued at the time of writing this EcIA. A draft map was provided to Arup that highlighted the results of this survey.

²⁵ Chartered Institute of Ecology and Environmental Management (CIEEM) (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*. CIEEM, Winchester.

The impact assessment process involves:

1. Identifying and characterising impacts (see 4.5.1);
2. Incorporating measures to avoid and mitigate (reduce) these impacts;
3. Assessing the significance of any residual effects after mitigation (see 4.5.2 and 4.5.3);
4. Identifying appropriate compensation measures to offset significant residual effects; and
5. Identifying opportunities for ecological enhancement.

Cumulative impacts and effects are also considered (see 4.5.4).

4.5.1 Characterising Impacts

Impacts are actions resulting in changes to an ecological feature. Both positive and negative impacts of the proposed development are identified within this assessment, and described with reference to their extent, magnitude, duration, timing, frequency and reversibility.

4.5.2 Significance of Effects

Effects are the outcomes to an ecological feature, resulting from an impact.

The assessment will determine the significance of any potential effects on the important ecological features identified within their respective ZoIs. For the purpose of this EcIA, a significant effect is defined as '*an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general*'²⁵.

Significance of effects has been determined by assessing the impacts of the proposed development on the structure and function of habitats and ecosystems, and the conservation status of habitats and species (including extent, abundance and distribution).

4.5.3 Geographic Terms of Reference

Effects can be considered significant at a wide range of scales. The levels of geographical importance used in this assessment comprise:

- International and European – Statutory sites designated or classified under international conventions or European legislation. Sites supporting a species or species' assemblage important in an international context.
- National – Statutory sites designated under national legislation, for example SSSIs. Sites supporting a species or species' assemblage important in a national context.
- Regional – Statutory designated Local Nature Reserves (LNRs), non-statutory designated sites such as Sites of Nature Conservation Importance (SNCI). Sites supporting a population of a species or species' assemblage important in a regional context.
- Metropolitan, County, vice-county or other local authority-wide area – Non-statutory designated sites given lower than county importance for nature conservation. Sites supporting a population of a species or species' assemblage important in a metropolitan, County, vice-county or other local authority-wide context.
- Local – Sites that have no formal designation but contain species or habitats that are important to the ecological integrity of the local area.
- Negligible – No effect on species or habitats present are anticipated.

4.5.4 In-Combination Impacts and Effects

In-combination effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location.

A cumulative impact assessment has been undertaken which considers whether impacts from any of the developments described in Section 6.4 will collectively result in a significant effect.

Developments included in the cumulative impact assessment comprise the following types of future development within the same ZoI:

- Proposals for which consent has been applied which are awaiting determination in any regulatory process;
- Projects which have been granted consent, but which have not yet been started or which have been started but are not yet completed (i.e. under construction);
- Proposals which have been refused permission, but which are subject to appeal and the appeal is undetermined; and
- To the extent that their details are in the public domain, proposed projects that will be implemented by a public body but for which no consent is needed from a competent authority.

4.6 Biodiversity Net Gain Assessment

All semi-natural habitats have an ecological value, and collectively the total value of habitats classed in EcIA terms as ‘not important’, is important. The BNG assessment enables a valuation of all semi-natural habitats within the proposed development site.

This provides a baseline from which the achievement of true BNG can be measured.

The BNG baseline calculations were undertaken using the NE BM2.0 to inform approximate habitat areas required for future developments to mitigate and compensate for the loss of semi-natural habitats as a result of the proposed development remediation works, aiming to achieve a biodiversity net gain.

To provide some clarity and separation between the two assessment methodologies applied in this report, further details of the BM2.0 methodology, including clarifications on habitat classifications²⁶, Tees Valley adaptations of condition criteria, the connectivity tool and the river metric are provided in Appendix C.

4.7 Assumptions and Limitations

4.7.1 Habitat Survey

Ecological surveys are limited by factors which affect the presence of plants and animals such as the time of year, migration patterns and behaviour. The absence of evidence of any particular species should not be taken as conclusive proof that the species is not present or that it will not be present in the future. However, professional judgement allows for the likely presence of these species to be predicted with sufficient certainty as to not significantly limit the validity of these findings. Despite this limitation, the habitat survey of the proposed development site was undertaken at a time of year when the majority of key diagnostic plant species used in a habitat survey produce identifiable growth forms. As a result, the species and habitats recorded in this survey can be considered representative of the proposed development site.

4.7.2 Habitat Classifications

Assumptions on the classification of habitats within the proposed development site are discussed in Appendix C.

²⁶ Crosher I.A., Gold S.B, Heaver M.D., Heydon M.A., Moore L.D, Panks S.A, Scott S.C., Stone D.A. & White N.A. (2019) The Biodiversity Metric 2.0: Auditing and accounting for biodiversity value. Technical supplement (Beta version, July 2019). Natural England.

4.7.3 Connectivity Tool

As detailed in Section 5, the proposed development site contains Open Mosaic Habitat (OMH), a high distinctiveness habitat, as defined by the BM 2.0. As this habitat is of high distinctiveness, the connectivity tool was run to assess the connectivity of this habitat within the proposed development site. While attempting to utilise this tool, a potential bug within Natural England's tool was identified, as the tool would not recognise or calculate the connectivity of the OMH. It was therefore decided, that the connectivity of this habitat would be assessed using professional judgment.

4.7.4 Rivers Metric

As the Cross Connector and Knitting Wife Beck watercourses are completely culverted within the proposed development site, a formal assessment using the Rivers Metric (described in Appendix C2) has not been completed for these watercourses. The approximate biodiversity value of these culverted rivers has been calculated and can be seen in Table 5 and Table 9.

4.7.5 Mitigation and Compensation Approach

It is not possible for direct mitigation to be identified for the loss of habitat value (excluding any protected species) given the nature of the works proposed and the purpose of the application proposals. Instead, to address the significant residual adverse effects identified in this EcIA, STDC is committed to delivering compensation in due course through the Environment & Biodiversity Strategy. The Environment & Biodiversity Strategy will seek to identify opportunities for compensation in the STDC area and beyond, for a range of measures, as outlined in section 7.2.

5 Baseline Ecological Conditions

The ecological baseline conditions described in this section, are those conditions existing in the absence of proposed activities.

5.1 Consultation

The Environment and Biodiversity Steering group meeting minutes received on 7 May 2020 detailed the agreement in principle, by the steering group, to utilise a local interpretation of the BM2.0 across the entirety of the STDC area, which includes the proposed development site.

Some alternative site-specific condition criteria have been developed by INCA for Teesside, which are of relevance to the proposed development. Following agreement in principle for these local adaptations to be applied to the STDC Environment and Biodiversity Strategy, these have also been adopted for this project, to aid in what was felt is a more detailed, and locally-relevant condition assessment for certain habitats including open mosaic habitat and scrub.

The INCA ecologists have identified a number of recent records of bird species utilising the proposed development site for nesting and utilising the ponds within the proposed development site. These records are discussed further in Section 5.4.

5.2 Designated Sites

The proposed development site does not have any designated nature conservation sites within or immediately adjacent to the red line boundary, however, there are designated nature conservation sites within 2-5km of the proposed development site. These comprise of one SPA, one Ramsar site, one NNR and two SSSI as summarised in Table 1.

The designated sites are illustrated in Appendix D²⁷.

²⁷ The updated boundary for the Teesmouth and Cleveland Coast SPA was not available at the time of writing this report. The DEFRA Consultation Report was reviewed to understand the new extent of the SPA.

Table 1: Statutory designated sites within 5km and non-statutory designated sites within 2km of the proposed development site

Site Name	Designation	Location	Reason for Designation
Teesmouth and Cleveland Coast ²⁸	SPA	1.3km north	<p>The extensions to the Teesmouth and Cleveland Coast SPA were formally classified on 16 January 2020. The formal designation and boundaries of the extension have not been released but are detailed in the Consultation Report³⁰.</p> <p>Designated for important populations of breeding avocet (<i>Recurvirostra avosetta</i>), common tern (<i>Sterna hirundo</i>) and little tern (<i>Sternula albifrons</i>). As well as, important populations of non-breeding sandwich tern (<i>Thalasseus sandvicensis</i>), ringed plover (<i>Charadrius hiaticula</i>), knot (<i>Calidris canutus</i>), common redshank (<i>Tringa totanus tetanus</i>) and ruff (<i>Calidris pugnax</i>). The Salthome RSPB Reserve is part of the wider Teesmouth and Cleveland Coast SPA.</p> <p>Also designated for an important assemblage of over-wintering wetland birds.</p>
Teesmouth and Cleveland Coast ²⁹	Ramsar	1.6km north	<p>The extensions to the Teesmouth and Cleveland Coast Ramsar were formally classified on 16 January 2020. The formal designation and boundaries of the extension have not been released but are detailed in the Consultation Report.³⁰</p> <p>Wetland of international importance. Designated under Ramsar criterion 5³¹ for assemblages of international important numbers of waterbirds and criterion 6 for regularly supporting 1% of the individuals in a population of one species of waterbird. Also designated for peak counts of common redshank in spring and autumn and wintering red knot (<i>Calidris canutus islandica</i>).</p>

²⁸ DEFRA. Teesmouth and Cleveland Coast SPA, Ramsar and SSSI. <https://consult.defra.gov.uk/natural-england-marine/teesmouth-and-cleveland-coast-potential-sp/> Accessed on 7 May 2020.

²⁹ Joint Nature Conservation Council. Teesmouth and Cleveland Coast Ramsar. <https://jncc.gov.uk/jncc-assets/RIS/UK11068.pdf> Accessed 7 May 2020.

³⁰ Natural England (March 2019) Teesmouth and Cleveland Coast potential Special Protection Area (pSPA) and proposed Ramsar Site (pRamsar): Report of Consultation by Natural England, 2019. https://consult.defra.gov.uk/natural-england-marine/teesmouth-and-cleveland-coast-potential-sp/supporting_documents/Teesmouth%20and%20Cleveland%20Coast%20Consultation%20Report%20February%202020.pdf. Accessed 12 May 2020.

³¹ Ramsar Convention of Wetlands (Ramsar, Iran, 1971) The Ramsar Sites Criteria. https://www.ramsar.org/sites/default/files/documents/library/ramsarsites_criteria_eng.pdf Accessed 7 May 2020.

Site Name	Designation	Location	Reason for Designation
Teesmouth and Cleveland Coast ²⁸	SSSI	1.3km north	The Teesmouth and Cleveland Coast SSSI is an expansive site formally adopted on 18 April 2019, replacing seven SSSIs previously present within the region including: Cowpen Marsh SSSI; Hartlepool Submerged Forest SSSI; Redcar Rocks SSSI; Seal Sands SSSI (partially replaced, a small section of the Seal Sands SSSI distant from the proposed development site has been retained as per its existing designation); Seaton Dunes and Commons SSSI; South Gare and Coatham Sands; Tees and Hartlepool Foreshore and Wetlands SSSI. The SSSI is designated for its geology, mosaic of coastal habitats, breeding harbour seals (<i>Phoca vitulina</i>), diverse assemblage of breeding, and non-breeding birds as well as a non-breeding assemblage of more than 20,000 water birds.
Teesmouth	NNR	4km north	The site is designated for its sand dunes, marsh, intertidal sand and mudflat habitats. The reserve is split into two main sections, namely North Gare and Seal Sands. North Gare is an area of dunes and grazing marsh, supporting lapwing (<i>Vanellus</i>) and curlew (<i>Numenius arquata</i>). Seal Sands is one of the largest areas of intertidal mudflat on England's north-east coast ³² .
Lovell Hill Pools	SSSI	4.9km south	Lovell Hill Pools is set within an undulating, well-wooded agricultural landscape to the north of the North York Moors. The site supports an outstanding assemblage of dragonflies and damselflies. The pools and surrounding habitats also support populations of great crested newt (<i>Triturus cristatus</i>).

Due to their respective designation status, the SPA and Ramsar designated sites listed in Table 1 are considered to be of **international** importance and the SSSI and NNR are considered to be of **national** importance.

5.2.1 Teesmouth and Cleveland Coast SPA and Ramsar

Given the proximity to the proposed development site and designation under Ramsar criterion 5³³ the Teesmouth and Cleveland Coast SPA and Ramsar have been **scoped in** for further assessment.

³² Natural England. Corporate Report: Cleveland's National Nature Reserves.

<https://www.gov.uk/government/publications/cleveland-nature-reserves/cleveland-national-nature-reserves#teesmouth>. Accessed 7 May 2020.

³³ Ramsar Convention of Wetlands (Ramsar, Iran, 1971) The Ramsar Sites Criteria.

https://www.ramsar.org/sites/default/files/documents/library/ramsarsites_criteria_eng.pdf
Accessed 7 May 2020

5.2.2 SSSIs

NE provides guidance on SSSI Impact Risk Zones that have been developed to guide planners on whether a development has the potential to adversely impact a SSSI³⁴. The proposed development site is located within the impact buffer for Teesmouth and Cleveland Coast SSSI. This assessment will therefore consider the proposed development site to be within the ZoI for the Teesmouth and Cleveland Coast SSSI and therefore this site is **scoped in** for further assessment.

The proposed development site is not located within the Impact Risk Zone for the Lovell Hill Pools SSSI. The proposed development site is a substantial distance from the Lovell Pools SSSI and contains limited suitable habitat for the designating species of this SSSI. The limited suitable habitat within the proposed development site is considered sufficiently separated from the SSSI to be utilised by these designating species. The Lovell Pools SSSI is therefore **scoped out** of further assessment.

5.2.3 NNR

Although the Teesmouth NNR is a substantial distance from the proposed development site, the proposed development site is hydrologically connected to the Teesmouth NNR through connection of Holme Becks to the River Tees, therefore this site is **scoped in** for further assessment.

5.3 Habitats

5.3.1 Important Habitats (Ecological Impact Assessment)

OMH was recorded within the proposed development site, which is a HoPI and is considered to be a habitat of priority within the local area. Due to the small area of OMH and moderate to poor condition of these areas, this habitat is considered to be important at the local level. As the OMH is a HoPI and considered to be of local importance, it has been **scoped in** for further assessment. All other habitats have been **scoped out** of further assessment.

Holme Beck is not designated as Priority Habitat River and does not meet the qualifying criteria for priority habitat as defined by JNCC³⁵. Holme Beck has therefore been **scoped out** of further assessment.

As the Cross Connector and Knitting Wife Beck culverts are completely sealed, they are considered to not qualify as Priority Habitat Rivers. These two culverts have therefore been **scoped out** of further assessment.

³⁴ Natural England SSSI Impact Risk Zones <https://data.gov.uk/dataset/5ae2af0c-1363-4d40-9d1a-e5a1381449f8/sssi-impact-risk-zones> Accessed 7 May 2020.

³⁵ JNCC (2011) UK Biodiversity Action Plan Priority Habitat Descriptions – Rivers. <http://data.jncc.gov.uk/data/01d6ab5b-6805-4c4c-8d84-16bfebe95d31/UKBAP-BAPHabitats-45-Rivers-2011.pdf> Accessed: 13 May 2020.

5.3.2 Total Valuation of Habitats (BNG Assessment)

Sections 5.3.2.1 to 5.3.2.9 describe all the habitats within the proposed development site in more detail, to justify the scores provided in the BNG assessment. More details on this can be found in Appendix C.

Table 4 and Table 5 outline the baseline summary of the BNG assessment of the proposed development site, for habitats areas and rivers.

These habitats were mapped using the UK Habitat Classification system¹⁸. If the UK Habitat Classification definition was not appropriate, this has been discussed within the habitat description.

Due to the number of distinct habitat areas with different habitat conditions, a habitat code has been given to each habitat. These codes have been used to label each associated habitat illustrated in Appendix A.

5.3.2.1 Other Neutral Grassland (G3)

This area of grassland (reference code 1a), approximately 1.52ha in size, would be best described as semi-improved grassland under the Phase 1 Habitat survey description due to the sufficient coverage of herb species.

This habitat was dominated by rank grassland consisting of cock's-foot (*Dactylis glomerata*), red fescue (*Festuca rubra*), and false oat grass (*Arrhenatherum elatius*) with frequent herb species such as kidney vetch (*Anthyllis vulnerata*) and bird's-foot trefoil (*Lotus corniculatus*). A small number (less than 10) of cotoneaster shrubs were present including small-leaved cotoneaster (*Cotoneaster microphylla*) which is listed on Schedule 9 of the WCA 1981.

This neutral grassland has been assessed as being of fairly poor condition due to the low diversity of herb species.

5.3.2.2 Modified Grassland (G4)

This grassland would be best described as species poor semi-improved grassland under the Phase 1 Habitat survey descriptions²³ and is best classified under the UK Habitat Classification as modified grassland.

Modified grassland was present within the proposed development site within four separate locations. These are detailed further in Table 2.

Table 2: Modified Grassland Habitat Areas within the Proposed Development Site

Reference Code	Habitat Area (ha)	Species Composition	Condition Assessment
1b	0.13	Consisted of a vegetated mound covered primarily in rank grassland species such as cock's-foot and red fescue with small areas of scrub. There were little to no herb species present with red valerian (<i>Centranthus rubra</i>) present on bare substrate.	This area of modified grassland was assessed as being of poor condition due to the absence of herb species and the presence of scrub and red valerian.
1c	0.28	Dominated by creeping bent (<i>Agrostis stolonifera</i>) with few other grass species present and a few herb species such as ribwort plantain (<i>Plantago lanceolata</i>), mugwort (<i>Armeria vulgaris</i>) and bird's-foot trefoil.	This area was assessed as being of fairly poor condition due to the low coverage of herb species, but lacked species considered to be undesirable.
1d	1.42	Dominated by rank grassland with a small amount of scrub scattered within the area. This modified grassland area also included a number of bare ground areas which supported a few herb species.	This area of modified grassland was assessed as being of fairly poor condition as the areas of bare ground allowed for the presence of herb species.
1e	0.85	This area was species poor with the dominant species being red fescue, with occasional false oat grass, meadow vetchling (<i>Lathyrus pratense</i>) and creeping cinquefoil (<i>Potentilla reptans</i>).	This area has been assessed as being of fairly poor condition. The coverage of herbs was no more than 10%, is still open grassland (rather than being overgrown and rank) and does not contain a high coverage of scrub or invasive species.

5.3.2.3 Other Woodland, Broadleaved (W1F7)

The woodland (reference code 2), approximately 0.42ha in size, is an area of one-year old regrowth from a felled, plantation woodland³⁶. The principal tree species which are regenerating are alder (*Alnus glutinosa*), wild cherry (*Prunus avium*) and birch (*Betula* sp.). This area of woodland has been classified as 'other broadleaved woodland' as it originated from an area of plantation woodland used for screening purposes.

³⁶ As this woodland is of plantation origin, it is not considered to fall under the Semi-Natural Broadleaved Woodland priority habitat within the Tees Valley.

The woodland has been assessed as being of moderate condition. The woodland is dominated by native species however, there are a few non-native trees present within the canopy, consisting of Corsican pine (*Pinus nigra*) and Italian alder (*Alnus cordata*). The woodland is clearly of plantation origin and prior to felling was considered to be approximately 30-40 years of age¹⁴. Natural regeneration has resulted in Italian alder, birch and willow (*Salix* sp.) growing along the perimeter, diversifying the age and height of the woodland structure. The woodland contains no standing or fallen deadwood.

The definition of other broadleaved woodland and its condition assessment is clarified further in Appendix C.

5.3.2.4 Sea-Buckthorn Scrub (Other) (H3C6)

The scrub (reference code 3), approximately 2.19ha in size, is made up of a number of areas of mixed scrub dominated by sea buckthorn (*Hippophae rhamnoides*) with some areas of willow (*Salix* sp.) and some areas containing buddleja (*Buddleia davidii*), dog rose (*Rosa canina*) and bramble (*Rubus fruticosus* agg.). It should be noted that sea buckthorn is regarded as an invasive species in Teesside with a negative impact on biodiversity.

This area of scrub was assessed as being of fairly poor condition as it was dominated by sea buckthorn which is considered to be an undesirable invasive species in a Teesside context.

5.3.2.5 Artificial, Unvegetated Unsealed Surface (U1C)

This area (reference code 4), approximately 6.64ha in size, consists of unvegetated slag and unsealed road surfaces.

A condition assessment for this habitat type is not applicable.

5.3.2.6 Developed Land, Sealed Surface (U1D)

This area (reference code 4a), approximately 7.46ha in size, consists of tarmacked roads and a car park.

A condition assessment for this habitat type is not applicable.

5.3.2.7 Sparsely Vegetated Land – Ruderal/Ephemeral

Under the UK Habitats Classification Habitats Definitions, this habitat would be classified as “other inland rock and scree (UK Hab code: s1d)” however, this habitat would score a high distinctiveness level and is not considered suitable for the habitat present within the proposed development site.

Within the BM2.0 there is a “Sparsely Vegetated Land- Ruderal/Ephemeral” classification which is defined in the BM2.0 Technical Supplement²⁶ as: “*The short lived transitory habitat of low growing early successional plants of open ground such as arable landscapes, derelict urban sites, quarries and railway ballasts. This will get replaced by more stable vegetation unless disturbance of soil continues. Reasonably variable in biodiversity value dependent on species present, do often provide important pollen and nectar sources along with open ground for insects.*” This habitat description is considered to be more appropriate for the type of habitat recorded on the proposed development site.

These habitats are not considered to qualify as the HoPI type “Open Mosaic Habitats on Previously Developed Land³⁷” on the basis that the substrate has been compacted to varying degrees and therefore does not form a loose substrate. The definition of OMH is clarified further in Appendix C.

There were a number of areas of sparsely vegetated land- ruderal/ephemeral within the proposed development site. These have been described further in Table 3.

³⁷ JNCC (2011) UK Biodiversity Action Plan: Priority Habitat Descriptions – Open Mosaic Habitats on Previously Development Land. Available at <http://data.jncc.gov.uk/data/2728792c-c8c6-4b8c-9ccd-a908cb0f1432/UKBAP-PriorityHabitatDescriptions-Rev-2011.pdf>. Accessed 13 May 2020.

Table 3: Sparsely Vegetated Land- Ruderal/Ephemeral Habitat Areas within the Proposed Development Site

Reference Code	Habitat Area (ha)	Species Composition	Condition Assessment
5a	3.34	This area of habitat was considered as being in the early stages of becoming vegetated with less than 50% vegetation coverage. The area was dominated by creeping bent with some narrow leaved ragwort (<i>Senecio inaequidens</i>) and stonescrops (<i>Sedum</i> sp.). In the south-east corner of this habitat, there are a small number of young hawthorn (<i>Crataegus monogyna</i>) considered to be approximately five years old. This area of hawthorn was considered too small to be considered as a separate habitat block.	This area of habitat was assessed as being of poor condition due to its age and limited diversity of early pioneer species.
5b	3.74	This area of habitat was similar to habitat area 5a, however elements of the vegetation were noticeably taller, with rosebay willowherb (<i>Chamaenerion angustifolium</i>) beginning to invade.	This area of habitat was assessed as being of poor condition. Although this area was slightly more vegetated than habitat area 5a, it still lacked early pioneer species and contained the undesirable species rosebay willowherb.
5c	0.34	This habitat consisted of a crushed concrete substrate that was approximately 75% vegetated. This area was noticeably herb rich and contained frequent occurrences of bird's-foot trefoil and narrow-leaved ragwort with occasional dandelion (<i>Taraxacum officinale</i> agg.), cat's-ear (<i>Hypochaeris radicata</i>) and ribwort plantain.	This habitat area was assessed as being of fairly good condition due to the presence of brownfield indicator plant species and the overall cover of vegetation.
5d	6.82	This habitat area was sparsely vegetated and dominated by lesser hop trefoil (<i>Trifolium dubium</i>), a <i>Melilotus</i> species and cat's-ear. Other notable elements to the vegetation were small amounts of kidney vetch and hawkweed (<i>Hieraceum</i> sp.), but overall the habitat area was not very species rich.	This habitat area was assessed as being of moderate condition due to the presence of brownfield indicator plant species, the appropriate level of bare ground and limited number (<10%) cover of invasive species.
5e	6.68	This habitat area and ground conditions were similar to habitat area 5d with the main difference being quite extensive colonisation by scrub comprising primarily of sea buckthorn. There was also a small area which had a more diverse composition of brownfield flora.	This habitat area was assessed as being of fairly poor condition due to the high proportion of sea buckthorn which is considered to be an invasive species.
5f	9.95	This habitat area and ground conditions were similar to habitat area 5d with great quantities of cat's-ear and hawkweed.	This habitat area was assessed as being of moderate condition due to the presence of brownfield indicator plant species, the appropriate level of bare ground and limited number (<10%) cover of invasive species.
5g	0.05	This habitat area was small in size but contained a higher number of bird's-foot trefoil and kidney vetch plants.	This habitat area was assessed as being of moderate condition due to the higher presence of bird's-foot trefoil.

5.3.2.8 Open Mosaic Habitat on Previously Developed Land (u1a)

The OMH was recorded within two distinct areas of the proposed development site.

The first of these areas (reference code 6a), approximately 1.27ha in size, was structurally varied with mounds and depressions across the area. Many of the depressions within this OMH area have formed shallow ponds with a silt base, which appear to vary in the extent to which they hold water throughout the year, thereby providing ecologically valuable draw-down zones. There is also a larger pond (0.08ha), which has concrete sides and appears to hold water permanently.

As these ponds are relatively small, they have been classed as part of the habitat mosaic rather than being assessed separately. Most of the ponds have a narrow fringe of common reed (*Phragmites australis*). The diversity of indicator plant species is similar to the sparsely vegetation habitat areas 5d and 5f with areas of willow scrub. While the willow scrub adds to the overall habitat mix, the scrub is considered to have sufficient coverage to downgrade the OMH condition.

On this basis, this area of OMH was assessed as being in fairly good condition. This habitat area meets the following UK Habitat Classification assessment criteria:

- Incorporates a wetland feature or has topographical heterogeneity over at least 25%;
- Contains more than one substrate type;
- Significant potential for both burrowing insect species and pollinating insect species; and
- Non-native plant species cover less than 5% (other than buddleia and red valerian, which can total up to 10%).

Based on these criteria, this habitat could have been assessed as good, however the presence of the invading scrub downgraded this habitat area to fairly good.

The second area of OMH (reference code 6b), approximately 0.17ha in size, was present in the south west corner of the proposed development site. This habitat area represents a much smaller version of the first OMH area except the vegetation coverage was sparser and less diverse. This habitat area also contained >10% coverage of red valerian.

Due to the cover of red valerian, this habitat area was assessed as being of fairly poor condition.

5.3.2.9 Class 4 Watercourses

The Holme Beck runs along the eastern edge of Eston Road. The open section of the Beck starts a few tens of metres north of the junction of Eston Road and the A66 and continues for approximately 150m before being culverted again. The culverted section then runs approximately due north until the railway line, at which point the culvert turns 90° east with the Beck, then discharging into open water in Cleveland Channel. The total length of the Holme Beck within the proposed development site is approximately 900m.

The sides of the open sections are vertical and around 1.3m in height. There was a high flow of water at the time of the survey¹⁵, with the depth of the water being around 15-20cm. The upper parts of the embankments were colonised principally by bramble, and pendulous sedge (*Carex pendula*), with some grass in places. The first 0.5m of the embankments were unvegetated apart from some bryophytes. No aquatic vegetation was recorded within the beck.

Based upon extensive physical modification, and evidence of moderate water quality pressure associated with road run-off and surrounding industrial land use, the overall River Naturalness score for the 150m survey reach has been determined to be Class 4.

The modified nature of the beck, coupled with potential water quality pressures associated with road run-off, are expected to reduce the suitability of the reach for supporting natural ecological communities. Overall the condition of the surveyed reach of Holme Beck is considered to be 'fairly poor'.

The Cross Connector culvert runs along the southern boundary of the proposed development site, connecting to the Knitting Wife Beck in the south eastern corner of the proposed development site. The Cross Connector culvert runs in and out of the proposed development site boundary, with approximately 310m lying within the boundary. The Knitting Wife Beck then runs north along the eastern boundary of the proposed development site for approximately 920m.

Both of these watercourses are completely culverted within the proposed development site. Due to their culverted nature, these watercourses are considered to be in 'poor' condition.

5.3.3 Summary of Habitats BNG Assessment

Table 4 and Table 5 outline the baseline summary of the BNG assessment of the proposed development site, for habitat areas and rivers.

Table 4: Total Valuation of Habitats – Summary of Biodiversity Net Gain Assessment: **Habitats Baseline**

Habitat Type (UK HAB)	Reference Code	Area (ha)	Distinctiveness	Condition	Connectivity	Strategic Significance	Total Habitat Units	Suggested Action to Address Habitat Losses
Grassland - Other neutral grassland	1a	1.52	Medium (4)	Fairly Poor (1.5)	Unconnected habitat (1)	Area/compensation not in local strategy/ no local strategy	9.12	Same broad habitat or a higher distinctiveness habitat required
Grassland - Modified grassland	1b	0.13	Low (2)	Poor (1)	Unconnected habitat (1)	Area/compensation not in local strategy/ no local strategy	0.26	Same distinctiveness or better habitat required
Grassland - Modified grassland	1c	0.28	Low (2)	Fairly Poor (1.5)	Unconnected habitat (1)	Area/compensation not in local strategy/ no local strategy	0.84	Same distinctiveness or better habitat required
Grassland - Modified grassland	1d	1.42	Low (2)	Fairly Poor (1.5)	Unconnected habitat (1)	Area/compensation not in local strategy/ no local strategy	4.26	Same distinctiveness or better habitat required
Grassland - Modified grassland	1e	0.85	Low (2)	Fairly Poor (1.5)	Unconnected habitat (1)	Area/compensation not in local strategy/ no local strategy	2.55	Same distinctiveness or better habitat required
Other woodland, broadleaved	2	0.42	Medium (4)	Moderate (2)	Unconnected habitat (1)	Area/compensation not in local strategy/ no local strategy	3.70	Other woodland, broadleaved
Sea buckthorn scrub (other)	3	2.19	Medium (4)	Fairly Poor (1.5)	Unconnected habitat (1)	Area/compensation not in local strategy/ no local strategy	14.45	Same broad habitat or a higher distinctiveness habitat required
Artificial unvegetated, unsealed surface	4	6.64	Very low (0)	N/A	Assessment not appropriate (1)	Area/compensation not in local strategy/ no local strategy	0	Compensation not required
Developed land, sealed surface	4a	7.46	Very low (0)	N/A	Assessment not appropriate (1)	Area/compensation not in local strategy/ no local strategy	0	Compensation not required

Habitat Type (UK HAB)	Reference Code	Area (ha)	Distinctiveness	Condition	Connectivity	Strategic Significance	Total Habitat Units	Suggested Action to Address Habitat Losses
Sparsely vegetated land - Ruderal/Ephemeral	5a	3.34	Low (2)	Poor (1)	Unconnected habitat (1)	Location ecologically desirable but not in local strategy	7.35	Same distinctiveness or better habitat required
Sparsely vegetated land - Ruderal/Ephemeral	5b	3.74	Low (2)	Poor (1)	Unconnected habitat (1)	Location ecologically desirable but not in local strategy	8.23	Same distinctiveness or better habitat required
Sparsely vegetated land - Ruderal/Ephemeral	5c	0.34	Low (2)	Fairly Good (2.5)	Unconnected habitat (1)	Location ecologically desirable but not in local strategy	1.87	Same distinctiveness or better habitat required
Sparsely vegetated land - Ruderal/Ephemeral	5d	6.82	Low (2)	Moderate (2)	Unconnected habitat (1)	Location ecologically desirable but not in local strategy	30.01	Same distinctiveness or better habitat required
Sparsely vegetated land - Ruderal/Ephemeral	5e	6.68	Low (2)	Fairly Poor (1.5)	Unconnected habitat (1)	Location ecologically desirable but not in local strategy	22.04	Same distinctiveness or better habitat required
Sparsely vegetated land - Ruderal/Ephemeral	5f	9.95	Low (2)	Moderate (2)	Unconnected habitat (1)	Location ecologically desirable but not in local strategy	43.78	Same distinctiveness or better habitat required
Sparsely vegetated land - Ruderal/Ephemeral	5g	0.05	Low	Moderate (2)	Unconnected habitat (1)	Location ecologically desirable but not in local strategy	0.22	Same distinctiveness or better habitat required
Urban - Open Mosaic Habitats on Previously Developed Land	6a	1.27	High (6)	Fairly Good (2.5)	Moderately connected habitat (1.1)	Location ecologically desirable but not in local strategy	23.05	Same habitat required
Urban - Open Mosaic Habitats on	6b	0.17	High (6)	Fairly Poor (1.5)	Moderately connected habitat (1.1)	Location ecologically desirable but not in local strategy	1.85	Same habitat required

Habitat Type (UK HAB)	Reference Code	Area (ha)	Distinctiveness	Condition	Connectivity	Strategic Significance	Total Habitat Units	Suggested Action to Address Habitat Losses
Previously Developed Land								
Total	-	53.27	-	-	-	-	173.58	-

Table 5: Total Valuation of Habitats – Summary of Biodiversity Net Gain Assessment: **Rivers Baseline**

River Type	Approximate Length (km)	Distinctiveness	Condition	Strategic Significance	Total Baseline River Units	Suggested Action
Holme Beck - Class 4 - River Naturalness Assessment Non- culverted section	0.15	Medium (4)	Fairly Poor (2)	Low potential/ action not identified in any plan (1)	1.2	Avoid
Holme Beck - Class 4 - River Naturalness Assessment Culverted section	0.75	Medium (4)	Poor (1)	Low potential/ action not identified in any plan (1)	3	Avoid
Cross Connector culvert - Class 4 - River Naturalness Assessment	Approximately 0.31*	Medium (4)	Poor (1)	Low potential/ action not identified in any plan (1)	1.24	Avoid
Knitting Wife Beck culvert - Class 4 - River Naturalness Assessment	Approximately 0.92**	Medium (4)	Poor (1)	Low potential/ action not identified in any plan (1)	3.68	Avoid
Total	2.13	-	-	-	9.12	-

*The culvert enters and exits the proposed development site at a number of points. Length is calculated by the sections within the proposed development site.

** The culvert splits for a small distance into two separate sections within the proposed development site. The length combines the distance of these two sections.

5.4 Protected and Notable Species

The data search with ERIC NE returned no historical records of protected or notable species within the proposed development site boundary.

As detailed in the 2018 PEA, the proposed development site and wider Grangetown Prairie does not support habitats suitable for otter (*Lutra lutra*), water vole (*Arvicola amphibius*), badger (*Meles meles*) or reptiles. These species are not considered further in this assessment.

5.4.1 Amphibians

The proposed development site contains standing water, with a number of shallow ponds located in the upper area of the proposed development site at approximately NGR NZ 54499 21460. At the time of the 2018 PEA survey, approximately eight ponds were recorded and were primarily shallow depressions with a layer of silt on the base. Most of the ponds were recorded as likely drying up at times through the year, with the largest of the ponds remaining wet all year.

The proposed development site provides some low-quality foraging and commuting habitat for amphibians in the form of scrub and grassland.

5.4.1.1 Great Crested Newt

As part of the 2018 PEA an environmental DNA (eDNA) survey was undertaken to determine if great crested newt (GCN) were present within the ponds. These eDNA tests came back negative and confirmed likely absence of GCN within the Grangetown Prairie site.

Not all ponds within 500m of the proposed development site have been tested or surveyed for GCN, however there are a number of barriers around the proposed development site, that are considered substantial enough to limit the movement of GCN into the proposed development site. Beside the ponds within the proposed development site, the terrestrial habitats are considered poor quality for GCN. As noted above, no GCN have been recorded within 2km of the proposed development site.

As the proposed development site contains little to no suitable habitats for GCN and no populations are known within proximity to the proposed development site, GCN have been **scoped out** of further assessment.

5.4.1.2 Common Toad

During the 2018 PEA survey, common toad (*Bufo bufo*), was observed to be using the ponds as breeding grounds. Common toad is a SoPI and listed on the Tees Valley Local Biodiversity Species List. This population of breeding common toad is considered to be **locally important**.

As a number of breeding common toad were recorded within the proposed development site and the proposed development site contains some suitable

habitat for foraging and commuting of common toad, common toad have been **scoped in** for further assessment.

5.4.2 Bats

The habitats within the proposed development site have low potential for foraging bats. No structures or trees within the proposed development site were found to have roosting potential. There are six historical records of bats within 2km of the proposed development site. The nearest record was an unconfirmed roost in 2010 over 1km south east of the proposed development site.

Bats are therefore **scoped out** of further assessment.

5.4.3 Birds

There is scattered scrub, modified and neutral grassland within the proposed development site that provides suitable nesting habitat for breeding birds.

The nesting bird checks undertaken in May 2020 have identified active nests of a number of species. These species, their conservation status, and if they are included on the Tees Valley Local Biodiversity Species List (LBS) are summarised in Table 6.

Table 6: Bird Species Recorded during Nesting Bird Checks in 2020, and during the 2018 PEA survey

Common Name	Taxon Name	Conservation Status
Blue Tit	<i>Cyanistes caeruleus</i>	N/A
Blackbird	<i>Turdus merula</i>	N/A
Chaffinch	<i>Fringilla coelebs</i>	N/A
Common Whitethroat	<i>Sylvia communis</i>	LBS
Common Wood Pigeon	<i>Columba palumbus</i>	N/A
Dunnock	<i>Prunella modularis</i>	Amber BoCC, NERC Act S41 Species, LBS
Goldfinch	<i>Carduelis carduelis</i>	N/A
Great Tit	<i>Parus major</i>	N/A
Herring gull*. **	<i>Larus argentatus</i>	Red BoCC, LBS, NERC Act S41 Species
Lapwing**	<i>Vanellus vanellus</i>	Red BoCC, LBS, NERC Act S41 Species

Common Name	Taxon Name	Conservation Status
Linnet	<i>Linaria cannabina</i>	Red BoCC, NERC Act S41 Species, LBS
Mallard*	<i>Anas platyrhynchos</i>	Amber BoCC
Meadow Pipit	<i>Anthus pratensis</i>	Amber BoCC
Moorhen	<i>Gallinula chloropus</i>	N/A
Reed Bunting	<i>Emberiza schoeniclus</i>	Amber BoCC, NERC Act S41 Species, LBS
Reed Warbler	<i>Acrocephalus scirpaceus</i>	N/A
Ring Ouzel	<i>Turdus torquatus</i>	Red BoCC, NERC Act S41 Species, LBS
Shelduck*	<i>Tadorna tadorna</i>	Amber BoCC, LBS
Skylark	<i>Alauda arvensis</i>	Red BoCC, NERC Act S41 Species, LBS
Song Thrush	<i>Turdus philomelos</i>	Red BoCC, NERC Act S41 Species, LBS
Wheatear	<i>Oenanthe oenanthe</i>	LBS
Willow Warbler	<i>Phylloscopus trochilus</i>	Amber BoCC
Whinchat	<i>Saxicola rubetra</i>	Red BoCC, LBS
Wren	<i>Troglodytes troglodytes</i>	N/A

*Mallard, shelduck and herring gull are considered part of the 'important waterbird assemblage' of the Teesmouth and Cleveland Coast SPA and Ramsar

**Species recorded only during 2018 PEA survey

All species listed in Table 4 except for mallard, ring ouzel, shelduck, wheatear and whinchat have either been confirmed as nesting within the proposed development site or are considered by INCA highly likely to be nesting.

The assemblage as a whole is of local importance and has been **scoped in** for further assessment.

Due to their widespread nature and limited conservation status, blue tit, blackbird, chaffinch, common wood pigeon, goldfinch, great tit, moorhen, reed warbler and wren have been **scoped out** of further assessment. The remainder of the birds recorded within the proposed development site are discussed below.

5.4.3.1 Common Whitethroat

Approximately five or more breeding territories of common whitethroat were identified throughout the proposed development site. Whitethroat are considered to be a widespread species and, following a review of the data provided by INCA, the population nesting within the proposed development site is not considered to be of local importance. Whitethroat have been **scoped out** of further assessment.

5.4.3.2 Dunnock

Dunnock have been recorded as likely breeding within the proposed development site, primarily utilising the young plantation woodland and scrub along the south western border of the proposed development site. The habitats within the proposed development site that support this species are considered unconnected, lacking in structural diversity and of poor quality to support an important number of these species. Dunnock have been **scoped out** of further assessment.

5.4.3.3 Herring Gull

During 2018 PEA surveys, a flock of approximately 200 herring gull were recorded utilising the largest of the ponds within the proposed development site. At the time of writing this report, the data provided from the 2020 nesting bird checks has not noted the presence of herring gull within the proposed development site.

Herring gull are considered to be part of the designating waterbird assemblage of the Teesmouth and Cleveland Coast SPA and Ramsar.

The nesting bird checks in 2020 did not identify any herring gulls utilising the proposed development site in large numbers, with no breeding pairs identified. However, there is the potential that these species are still utilising the proposed development site as a formal breeding bird survey was not completed.

It is therefore considered that herring gull are likely to utilise the proposed development site infrequently, seeking out terrestrial ponds when they have become disturbed along the coast, however use of the proposed development site for breeding is currently unknown.

As herring gull are a red listed BoCC, Tees Valley LBS and SoPI, they are considered important at a local level. Herring gull have been **scoped in** for further assessment.

5.4.3.4 Lapwing

A single breeding territory of lapwing were recorded during the 2018 PEA but at the time of writing this report, have not been recorded during the 2020 nesting bird checks. Lapwing primarily frequent farmland, wet grassland and the North Tees marshes during the winter, with breeding habitat consisting of arable land or short grasslands³⁸. The proposed development site has little foraging resources for lapwing, however the proposed development site does contain some suitable breeding habitat for lapwing within the short grassland habitats. It is considered that the proposed development site is unlikely to support more than a single breeding pair of lapwing however as lapwing are a red listed BoCC, Tees Valley LBS and SoPI, they are considered important at a local level. Lapwing have been **scoped in** for further assessment.

5.4.3.5 Linnet

Linnet have been recorded within the proposed development site, likely breeding in the central area of the proposed development site near the ponds. Linnets are primarily found within farmland, hedgerows and scrub habitats. These habitat types are limited and of poor quality within the proposed development site. Linnet are likely to be breeding within the proposed development site, with two breeding pairs recorded during the 2020 nesting bird checks. As linnet are a red listed BoCC, SoPI and LBS, the population within the proposed development site is considered to be locally important. This species has been **scoped in** for further assessment.

5.4.3.6 Mallard and Shelduck

Standing water within the proposed development site provides some suitable habitat for waterbirds that form part of designating assemblage of the Teesmouth and Cleveland Coast SPA and Ramsar, specifically mallard and shelduck. Shelduck and mallard were both recorded within these pond areas, however in the data provided by INCA, they noted that these two birds were recorded in single figures and likely used the ponds in small numbers as a resting place. Both shelduck and mallard are known to breed primarily in the North Tees marshes and mudflats, which are not habitats present within the proposed development site³⁹. The number of mallard and shelduck using the proposed development site are not considered to be of local importance and the habitats within the proposed development site are not considered important to a large number of these species. Mallard and shelduck are therefore **scoped out** of further assessment.

³⁸ RSPB. Lapwing. Accessed <https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/farming/advice/helping-species/lapwing/#:~:text=Lapwings%20breed%20between%20mid%2DMarch,onto%20grazed%20pasture%20to%20feed.> 9 June 2020.

³⁹ Teesmouth Bird Club. Species of Conservation Concern in the Tees Valley 2019: Birds of Conservation Concern and Local Significance in the Tees Valley (Dec 2019). Accessed <https://www.teesmouthbc.com/conservationconcern/> 9 June 2020.

5.4.3.7 Meadow Pipit

Approximately five breeding pairs of meadow pipit were recorded utilising habitats across the proposed development site. Meadow pipit are considered wide spread in the UK, primarily being found in open country, frequenting upland areas in summer and agricultural land in winter⁴⁰. Meadow pipit were not identified as Species of Conservation Concern in the Tees Valley in 2019, are not a SoPI or a LBS. The population of meadow pipit utilising the proposed development site is not considered to be of local importance. Meadow pipit are therefore **scoped out** of further assessment.

5.4.3.8 Reed Bunting

Reed bunting have been recorded within the proposed development site primarily breeding near the central area of the proposed development site near the ponds. Reed bunting are primarily a farmland and wetland bird, and are considered widespread in the Tees Valley, particularly on the North Tees Marshes³⁹. Suitable breeding habitats are limited and of poor quality within the proposed development site. Reed bunting are likely to be breeding within the proposed development site, however this is considered to be in low numbers, and following a review of the data provided by INCA, the population nesting within the proposed development site is not considered to be of local importance. Reed bunting are therefore **scoped out** of further assessment.

5.4.3.9 Skylark

A single breeding territory of skylark was recorded in 2018, however approximately two to three breeding territories of skylark have been recorded during the 2020 nesting bird checks. The proposed development site is large and open with areas of short grassland and bare ground, making it suitable for skylark breeding. The proposed development site does contain some foraging habitat for skylark in the form of weed leaves and insects but is lacking in crop and seed producing grasses. As skylark are a red listed BoCC, Tees Valley LBS, SoPI and are considered to be of local importance. Skylark have therefore been **scoped in** for further assessment.

5.4.3.10 Song Thrush

Song thrush are likely to be breeding within the proposed development site and have been primarily recorded within young plantation woodland and scrub along the southern and south western border. Song thrush are primarily a woodland, farmland and garden bird, with approximately 1,973 pairs recorded in Cleveland between 1999 and 2006³⁹. The habitats within the proposed development site that are suitable for this species are limited and in poor quality and are therefore unlikely to support a number of breeding pairs of song thrush. Song thrush are therefore **scoped out** of further assessment.

⁴⁰ RSPB. Meadow pipit. Accessed <https://www.rspb.org.uk/birds-and-wildlife/wildlife-guides/bird-a-z/meadow-pipit/> 18 June 2020.

5.4.3.11 Wheatear, Whinchat and Ring Ouzel

Wheatear and whinchat are known to be primarily a summer visitor to the UK and breed in upland areas. Similarly, ring ouzel primarily breed in upland habitats. These species were recorded within the proposed development site but were likely foraging and present in low numbers. The proposed development site contains little suitable habitat for these species and therefore these species have been **scoped out** of further assessment.

5.4.3.12 Willow Warbler

Willow warbler are likely breeding within the proposed development site and have been recorded along the western boundary of the proposed development site in areas of scrub, grassland and the young plantation woodland. The habitats within the proposed development site are considered to be of poor quality and unlikely to support a large population of willow warbler. This species is therefore **scoped out** of further assessment.

5.4.4 Brown Hare

The proposed development site consists of habitats suitable for supporting brown hare, although the sparse vegetation within the proposed development site means that in order to support brown hare this area of suitable habitat would have to be connected to a much larger area of suitable habitat in the wider STDC area.

Two brown hares were observed during the 2018 PEA survey¹⁴ within the proposed development site. No evidence of burrowing was recorded. As noted in the PEA, while an area of this size is large enough in itself to support two hares in typical habitat, even within the proposed development site the sparse vegetation across much of the Grangetown Prairie means that it will probably only form part of wider home ranges.

There are two historical records of brown hare within close proximity to the proposed development site, the nearest being approximately 200m west.

The proposed development site is considered to be part of a wider home range for these brown hares. Brown hare are a SoPI and listed on the Tees Valley Local Biodiversity Species List. This small population is of local importance and has been **scoped in** for further assessment.

5.4.5 Invertebrates

The proposed development site is considered to have limited suitable habitat to support notable invertebrate species. The majority of soils within the proposed development site are compacted and are therefore unsuitable for most invertebrate species, such as solitary burrowing bees. There are two areas of OMH within the proposed development site, however these areas are small in size.

The proposed development site contains small areas of suitable foraging plant species such as bird's-foot trefoil for both dingy skipper (*Erynnis tages*) and grayling butterfly (*Hipparchia semele*). Both invertebrate species are known to breed within grassy tussocks which are limited within the proposed development site.

There were no historical records of protected or notable invertebrate species within 2km of the proposed development site, however this is considered to be due to lack of survey data rather than lack of species presence.

5.4.5.1 Dingy Skipper

During surveys conducted in May and June 2020, INCA ecologists recorded dingy skipper in low double figures within the proposed development site. As outlined in the Tees Valley Partnership “*Guidelines for the Selection of Local Wildlife Sites in the Tees Valley*”⁴¹, a population of 10 or more dingy skipper is considered to be an important sized population within the Tees Valley. Dingy skipper are a SoPI and listed on the Tees Valley LBS List. Dingy skipper are therefore considered to be important at the county level.

As dingy skipper are a SoPI, a LBS and important at the county level, they have been **scoped in** for further assessment.

5.4.5.2 Grayling Butterfly

Grayling have been recorded in small numbers within the proposed development site are a SoPI and listed on the Tees Valley LBS List. The small population of grayling butterfly are considered to be locally important.

As grayling butterfly are a SoPI, a LBS and important at the local level, they have been **scoped in** for further assessment.

5.4.6 Invasive Plant Species

A small number (<10) of cotoneaster shrubs are present within the proposed development site.

Species included small-leaved cotoneaster (*Cotoneaster microphylla*), which is listed on Schedule 9 of the WCA 1981 (as amended)³. This makes it an offence to cause the spread of this species in the wild.

The scrub within the proposed development site is dominated by sea buckthorn which is considered to be invasive within the Teesside area. Although native to Britain, and not listed on Schedule 9, it is not native locally and has caused deterioration of several valuable habitats locally as it spreads rapidly and shades out other species.

⁴¹ Tees Valley Biodiversity Partnership (June 2010) Guidelines for the Selection of Local Wildlife Sites in the Tees Valley. Version 7.

Measures to control the spread and removal of small-leaved cotoneaster need to be considered when working in areas where invasive species are present in order to remain legally compliant.

Control and/or removal of these species would be considered a positive.

5.5 Summary of Baseline

Table 7 provides a summary of all ecological features assessed in Section 5.2.1 to 5.4.6.

Table 7: Summary of each Ecological Feature Considered in this Assessment.

Feature	Scoped in/out & importance	Justification
Designated Sites		
Teesmouth and Cleveland Coast SPA and Ramsar	In – Internationally important	The proposed development site is considered to be hydrologically connected to the designated sites.
Teesmouth and Cleveland Coast SSSI	In – Nationally important	The proposed development site is considered to be hydrologically connected to the designated site and is within the SSSI Impact Risk Zone
Teesmouth NNR	In – Nationally important	The proposed development site is considered to be hydrologically connected to the designated site.
Lovell Hill Pools SSSI	Out	The proposed development site is located outside of the SSSI Impact Risk Zone and is sufficiently distant from the SSSI to provide any suitable habitats for the designate species of the SSSI.
Habitats		
Other Neutral Grassland	Out	This habitat is not a HoPI or a habitat of note within the local area.
Modified Grassland	Out	This habitat is not a HoPI or a habitat of note within the local area.
Other Woodland, Broadleaved	Out	This habitat is not a HoPI or a habitat of note within the local area.
Sea Buckthorn Scrub	Out	This habitat is not a HoPI or a habitat of note within the local area.
Artificial, Unvegetated Unsealed Surface	Out	This habitat is not a HoPI or a habitat of note within the local area.
Developed Land, Sealed Surface	Out	This habitat is not a HoPI or a habitat of note within the local area.
Sparsely Vegetated Land	Out	This habitat is not a HoPI or a habitat of note within the local area.
Open Mosaic Habitat on Previously Developed Land	In- Locally important	This habitat is a HoPI and is a habitat of note within the local area.
Class 4 Watercourses	Out	These watercourses are primarily culverted and where open (Holme Beck) is of poor quality and does not qualify as a Priority Habitat River.

Species		
Great crested newt	Out	The ponds within the proposed development site do not contain GCN. The surrounding terrestrial habitat is considered to be relatively poor quality and there are no known populations of GCN within 2km.
Common toad	In- Locally important	The proposed development site contains ponds that support a breeding population of common toad, which are a SoPI.
Bats	Out	The proposed development site has limited foraging opportunity for bats and no features with roosting potential.
Breeding Bird Assemblage	In – Locally important	The breeding bird assemblage consists of a six amber listed BoCC, seven red listed BoCC, eight SoPI and 11 LBS.
Herring gull	In- Locally important	200 herring gull were recorded utilising the ponds within the proposed development site in 2018. Herring gull area a red listed BoCC, Tees Valley BAP and SoPI, as well as a qualifying feature of the Teesmouth and Cleveland Coast SPA and Ramsar.
Lapwing	In – Locally important	Lapwing were recorded breeding within the proposed development site in 2018. Lapwing are a red listed BoCC, Tees Valley LBS and SoPI.
Linnet	In – Locally important	Linnet were recorded breeding within the proposed development site, are a red listed BoCC, Tees Valley LBS and SoPI.
Skylark	In – Locally important	Skylark were recorded breeding within the proposed development site, are a red listed BoCC, Tees Valley LBS and SoPI.
Brown hare	In – Locally important	Two brown hare were recorded within the proposed development site. Brown hare are a SoPI.
Dingy skipper	In – County level importance	An important population of dingy skipper were recorded within the proposed development site. This is considered a significant population at the county level. The species is a SoPI and is a LBS.
Grayling	In – Locally important	The proposed development site contains suitable habitat for grayling butterfly. Grayling butterfly are a SoPI, a LBS and considered to be locally important.
Invasive Plant Species - Cotoneaster	Out	Legally controlled invasive plant species listed on Schedule 9 of the WCA 1981 (as amended), scoped out of assessment as the control/ removal of this species would be considered a positive.
Invasive Plant Species – Sea buckthorn	Out	Not legally controlled under Schedule 9 of the WCA 1981 (as amended), but considered to be invasive within the Teesside area. Scoped out of assessment as the control/ removal of this species would be considered a positive.

5.6 Change in Baseline

5.6.1 Timeframes

As the application for this proposed development site is for outline planning, there is potential for the baseline ecological conditions to change in the period between this assessment and the commencement of works for the proposed development.

Due to the presence of habitats such as regenerating woodland and sea buckthorn scrub, if there is a significant amount of time between this assessment and the commencement of site clearance to facilitate construction, there is the potential that the habitats within the proposed development site could change. If this occurs, this EcIA will need to be revisited and reassessed.

5.6.2 Eston Road Highway Scheme

The proposed development red line boundary overlaps with the red line boundary for a separate proposed development known as ‘Eston Road Highway Scheme.’ The Eston Road Highway Scheme is the subject of a planning application that has been submitted and is yet to be determined, but like the Grangetown Prairie Remediation proposed development, The Eston Road Highway Scheme also includes proposals for daylighting of the Holme Beck Culvert.

If the Eston Road Highway Scheme progresses ahead of the proposed development remediation works being completed across the entire site, certain habitats within the red line boundary of the proposed development remediation works would have been removed and replaced as part of the mitigation and enhancement works for the Eston Road Highway Scheme. These include woodland, scrub, modified grassland and ruderal/ephemeral habitats. The mitigation measures proposed for the Eston Road Highway Scheme include a CEMP, SuDS pond and other associated drainage works. As part of the BNG assessment, post-development planting was proposed as part of the Scheme.

In the EcIA for the proposed development remediation works, the baseline includes the 150m of open, un-culverted section of the Holme Beck. However, if the proposed Eston Road Scheme progresses ahead of the proposed development remediation works, the Holme Beck will be daylighted, with an additional 750m of the Holme Beck daylighted. The increased risk of contamination to the Holme Beck is discussed in the HRA.

The implications for the BNG assessment baseline scores, if the Eston Road Highway Scheme is implemented before the proposed development remediation works are completed across the entire site, are outlined in Table 8 and Table 9.

5.6.2.1 Summary of BNG Assessment Baseline with Eston Road Highway Scheme Developed

Table 8: Total Valuation of Habitats – Summary of Biodiversity Net Gain Assessment: **Habitats Baseline with Eston Road Highway Scheme Developed**

Habitat Type (UK HAB)	Reference Code	Area (ha)	Distinctiveness	Condition	Connectivity	Strategic Significance	Total Habitat Units	Suggested Action to Address Habitat Losses
Grassland - Other neutral grassland	1a	0.94	Medium (4)	Fairly Poor (1.5)	Unconnected habitat (1)	Area/compensation not in local strategy/ no local strategy	5.64	Same broad habitat or a higher distinctiveness habitat required
Grassland - Modified grassland	1b	0.13	Low (2)	Poor (1)	Unconnected habitat (1)	Area/compensation not in local strategy/ no local strategy	0.26	Same distinctiveness or better habitat required
Grassland - Modified grassland	1c	0.28	Low (2)	Fairly Poor (1.5)	Unconnected habitat (1)	Area/compensation not in local strategy/ no local strategy	0.84	Same distinctiveness or better habitat required
Grassland - Modified grassland	1d	0.99	Low (2)	Fairly Poor (1.5)	Unconnected habitat (1)	Area/compensation not in local strategy/ no local strategy	2.97	Same distinctiveness or better habitat required
Grassland - Modified grassland	1e	0.85	Low (2)	Fairly Poor (1.5)	Unconnected habitat (1)	Area/compensation not in local strategy/ no local strategy	2.55	Same distinctiveness or better habitat required
Sea buckthorn scrub (other)	3	1.63	Medium (4)	Poor (1)	Unconnected habitat (1)	Area/compensation not in local strategy/ no local strategy	10.76	Same broad habitat or a higher distinctiveness habitat required
Artificial unvegetated, unsealed surface	4	5.96	Very low (0)	N/A	Assessment not appropriate (1)	Area/compensation not in local strategy/ no local strategy	0	Compensation not required
Developed land, sealed surface	4a	7.06	Very low (0)	N/A	Assessment not appropriate (1)	Area/compensation not in local strategy/ no local strategy	0	Compensation not required

Habitat Type (UK HAB)	Reference Code	Area (ha)	Distinctiveness	Condition	Connectivity	Strategic Significance	Total Habitat Units	Suggested Action to Address Habitat Losses
Sparsely vegetated land - Ruderal/Ephemeral	5a	3.34	Low (2)	Poor (1)	Unconnected habitat (1)	Location ecologically desirable but not in local strategy	7.35	Same distinctiveness or better habitat required
Sparsely vegetated land - Ruderal/Ephemeral	5b	3.74	Low (2)	Poor (1)	Unconnected habitat (1)	Location ecologically desirable but not in local strategy	8.23	Same distinctiveness or better habitat required
Sparsely vegetated land - Ruderal/Ephemeral	5c	0.34	Low (2)	Fairly Good (2.5)	Unconnected habitat (1)	Location ecologically desirable but not in local strategy	1.87	Same distinctiveness or better habitat required
Sparsely vegetated land - Ruderal/Ephemeral	5d	6.34	Low (2)	Moderate (2)	Unconnected habitat (1)	Location ecologically desirable but not in local strategy	27.90	Same distinctiveness or better habitat required
Sparsely vegetated land - Ruderal/Ephemeral	5e	5.68	Low (2)	Fairly Poor (1.5)	Unconnected habitat (1)	Location ecologically desirable but not in local strategy	18.74	Same distinctiveness or better habitat required
Sparsely vegetated land - Ruderal/Ephemeral	5f	9.46	Low (2)	Moderate (2)	Unconnected habitat (1)	Location ecologically desirable but not in local strategy	41.62	Same distinctiveness or better habitat required
Urban - Open Mosaic Habitats on Previously Developed Land	6a	1.27	High (6)	Fairly Good (2.5)	Moderately connected habitat (1.1)	Location ecologically desirable but not in local strategy	23.05	Same habitat required
Urban - Open Mosaic Habitats on Previously Developed Land	6b	0.16	High (6)	Fairly Poor (1.5)	Moderately connected habitat (1.1)	Location ecologically desirable but not in local strategy	1.74	Same habitat required
Total	-	48.76	-	-	-	-	153.52	-

Table 9: Total Valuation of Habitats – Summary of Biodiversity Net Gain Assessment: **Rivers Baseline with Eston Road Highway Scheme Developed**

River Type	Approximate Length (km)	Distinctiveness	Condition	Strategic Significance	Total Baseline River Units	Suggested Action
Class 4 - River Naturalness Assessment Culverted section	0.22	Medium (4)	Poor (1)	Low potential/ action not identified in any plan (1)	0.88	Avoid
Cross Connector culvert - Class 4 - River Naturalness Assessment	0.31	Medium (4)	Poor (1)	Low potential/ action not identified in any plan (1)	1.24	Avoid
Knitting Wife Beck culvert - Class 4 - River Naturalness Assessment	0.92	Medium (4)	Poor (1)	Low potential/ action not identified in any plan (1)	3.68	Avoid
Total	1.45	-	-	-	5.80	-

6 Assessment of Effects and Mitigation

This section of the assessment involves identifying and characterising impacts, incorporating measures to avoid and mitigate these impacts, and assessing the significance of any residual effects after mitigation.

6.1 Avoidance

Measures taken at the initial design development stages, to avoid and minimise effects on ecological features primarily involve reducing the size of the proposed development site to exclude areas of habitat along the edges of the proposed development site that would not be impacted from the proposed works.

In addition to this, a CEMP will be implemented prior to the commencement of construction, to control pollution and avoid construction impacts to legally protected species (e.g. through appropriate timing of works or use of an ecological clerk of works).

6.2 Assessment of Effects without Mitigation

This section identifies and describes all of the potential construction impacts of the proposed development on each feature from the baseline ecological conditions scoped into this part of the EcIA (Table 7).

It is not possible for direct mitigation to be identified for the loss of habitat value (excluding any protected species) given the nature of the works proposed and the purpose of the application proposals. Instead, to address the significant residual adverse effects identified in this EcIA, STDC is committed to delivering compensation in due course through the Environment & Biodiversity Strategy. The Environment & Biodiversity Strategy will seek to identify opportunities for compensation in the STDC area and beyond, for a range of measures, as outlined in section 7.2.

6.2.1 Teesmouth and Cleveland Coast SPA and Ramsar

The proposed development work includes potentially daylighting the Holme Beck, Cross Connector and/or Knitting Wife Beck culverts which are considered to be hydrologically connected to the River Tees. Due to the potential for an impact to an internationally important site and its qualifying features, a Habitats Regulations Assessment (HRA) has been completed as required under Regulation 63 of The Conservation of Habitats and Species Regulations 2017⁴².

The HRA of the proposed development site contains both Stage 1 and Stage 2 of the HRA process and therefore discusses appropriate mitigation measures to ensure the proposed development works would not give rise to an adverse effect on the integrity of the Teesmouth and Cleveland Coast SPA and Ramsar.

⁴² The National Archives. *The Conservation of Habitats and Species Regulations 2017*. Available: <http://www.legislation.gov.uk/uksi/2017/1012/contents/made>

The HRA Stage 1 assessment identified that during remediation, there is the potential for contaminated soil or accidental pollution to enter either the Holme Beck watercourse and/or the Cross Connector and Knitting Wife Beck culverts.

Any accidental pollution events or contamination of the watercourse could:

- destroy and/or disturb the habitats used by the qualifying features of the SPA and Ramsar site (bird species identified in Section 5.2.1) for foraging, commuting and/or roosting; and/or
- kill invertebrate species that are a foraging resource for the qualifying features.

The HRA report concluded that **with implementation of mitigation measures, there will likely be no significant effects** on the integrity of the Teesmouth and Cleveland Coast SPA and Ramsar from the proposed development, either alone or in-combination with the Eston Road Highway Scheme. Other than the CEMP and a Phasing Plan, no other specific mitigation is deemed required.

The potential impact to these designated sites and their qualifying features will therefore not be further assessed in this EcIA and reference should instead be made to the HRA.

6.2.2 Teesmouth and Cleveland Coast SSSI and NNR

As outlined in the HRA, the only impacts brought forward for assessment were pollution impacts from the remediation of the proposed development site, specifically from the hydrological connection of the watercourse within the proposed development site to the Teesmouth and Cleveland Coast SPA and Ramsar. As the Teesmouth and Cleveland Coast SSSI and NNR are within the same boundaries as the SPA and Ramsar, they are also considered to be hydrologically connected to the Holme Beck, Cross Connector and Knitting Wife Beck and thus subject to the same potential impacts.

Therefore, the main impact that has the potential to significantly impact designating features of the Teesmouth and Cleveland Coast SSSI and NNR (Table 1) is construction related pollution. The required mitigation (CEMP and Phasing Plan) put in place through the HRA process is considered to be sufficient to ensure the proposed development works do not impact the SPA and Ramsar, as well as the SSSI and NNR.

6.2.3 Open Mosaic Habitat on Previously Developed Land

There are two areas of OMH within the proposed development site, totalling approximately 1.44ha of the 53ha of habitats within the proposed development site red line boundary. The larger of these two areas was in fairly good condition with the smaller in fairly poor condition.

A review of the Natural England Open Data on OMH⁴³, identified a large portion of the north and north west of proposed development site as being of OMH. However, the detailed habitat surveys undertaken in 2020 by INCA have updated this information, as much of the soils within the area are too compacted to qualify as OMH, and so the local OMH resource is much lower than originally estimated by NE.

Effect without mitigation: The loss of 1.44ha of OMH will result in a significant adverse effect on the OMH resource, at the local level.

6.2.4 Common Toad

The proposed development site contains confirmed breeding ponds for common toad. Common toads are known to return to the same breeding grounds at which they were spawned and have been recorded as traveling long distances (2km or more) to return to their chosen breeding pond^{44,45}.

Common toad are known to over winter in woodlands, rough grassland, log piles or hedgerows where they are able to burrow into muddy, damp substrate⁴⁶. Following breeding, toads often spend much of the year in fairly dry habitats such as grasslands and gardens where there is suitable coverage from predators. The vegetation within the proposed development site is considered to be poor quality for over-wintering, foraging and commuting of common toad. The proposed development site consists of sparsely vegetated and dry grassland with poor quality commuting corridors and limited coverage for common toad. It is therefore likely that the majority of the common toad utilising the ponds within the proposed development site are traveling outside of the proposed development site to over-winter and forage.

Effect without mitigation: The surrounding area, contains limited to no other suitable breeding habitat for this local toad population, therefore the loss of all ponds within the proposed development site **will result in a significant adverse effect on the common toad population at the local level.**

6.2.5 Breeding Bird Assemblage

Although a number of the breeding bird species recorded within the proposed development site, are not considered to be of locally important levels, the proposed development sites breeding bird assemblage as a whole is considered to be locally important. The proposed developments site supports a total of six amber listed BoCC, seven red listed BoCC, eight SoPI and 11 LBS species.

⁴³ Natural England (20 May 2020) Open Mosaic Habitat (Draft). Accessed <https://data.gov.uk/dataset/8509c11a-de20-42e8-9ce4-b47e0ba47481/open-mosaic-habitat-draft> 11 June 2020.

⁴⁴ Natural History Society of Northumbria. Common Toad. Accessed <https://www.nhsn.ncl.ac.uk/interests/reptiles-amphibians/common-toad/> 9 June 2020.

⁴⁵ Kovar, R., Brabec, M., Vita, R. and Bocek, R. (2009) Spring migration distances of some central European amphibian species. *Amphibia-Reptilia*, 30: 367-378.

⁴⁶ Woodland Trust. Common Toad (*Bufo bufo*). Accessed <https://www.woodlandtrust.org.uk/trees-woods-and-wildlife/animals/reptiles-and-amphibians/common-toad/> 9 June 2020.

Breeding birds were recorded across the proposed development site, utilising a wide range of habitats.

Effect without mitigation: The habitats within the proposed development site support a varied number of BoCC and locally important breeding birds. It is therefore considered that the loss of all habitats within the proposed development site **will result in a significant adverse effect to breeding bird assemblage at the local level.**

6.2.5.1 Herring Gull

The proposed development site contains some suitable resting habitat for herring gull in the form of the ponds within the proposed development site. Herring gull are known to frequent a large number of habitats, foraging on a wide range of resources including carrion, seeds, fruit, eggs, insects and fish⁴⁷. Due to the varied diets of herring gull, the proposed developments site is also likely to support foraging of a small number of this species, however the proposed development site primarily consists of compacted soils and/or hard standing land, likely limited the food resources. It should be noted, that the pond within the proposed development site are lacking in aquatic vegetation and are therefore likely not utilised by herring gull for foraging.

No herring gull have been recorded within the proposed development site in 2020 during the nesting bird checks completed by INCA.

Between 1999 and 2006, 1,306 pairs of herring gull were recorded breeding in Cleveland. According to the RSPB the wintering population of herring gull in the UK is 740,000 birds, and the breeding population is 140,000 pairs. The 200 herring gulls recorded in May 2018, were not considered to be breeding within the proposed development site.

The proposed development site is not considered to support a large number of foraging or breeding herring gull. There is the potential that herring gull may utilise the proposed development site for breeding and or foraging however, as herring gull were not recorded breeding in either 2018 or 2020, it is unlikely they are utilising the proposed development site beyond resting in the ponds.

Effect without mitigation: The loss of small areas of fairly poor resting habitat for herring gull, and poor quality foraging and breeding habitat will not affect their overall breeding success in the Tees Valley, or the integrity of the population, and so **will not result in a significant adverse effect on the locally important population of herring gull.**

6.2.5.2 Lapwing

The proposed development site contains some suitable habitat for lapwing in the form of a large open space with short grassland. Lapwings feed primarily on earthworms and insects and generally feed where they can find an abundant

⁴⁷ RSPB. Herring Gull. Accessed <https://www.rspb.org.uk/birds-and-wildlife/wildlife-guides/bird-a-z/herring-gull/> 19 June 2020.

number of these foraging resources, such as grazed pasture or wetter grasslands³⁸. As detailed in the Species of Conservation Concern in the Tees Valley report³⁹, there have been approximately 590 breeding pairs of lapwing recorded in Cleveland between 1999 and 2006.

At the time of writing this report, lapwing have not been recorded within the proposed development site in 2020 and were last officially recorded within the proposed development site in 2018, with only a single breeding territory identified (representative of 0.2% of the local population).

The proposed development site primarily consists of ephemeral and ruderal grassland as well as sealed and unsealed hardstanding ground. These habitats are primarily defined by their course and compacted substrate making them poor habitat for an abundant number of invertebrates. The ponds within the central area of the proposed development site do contain wetter areas of habitat, however as detailed in the 2018 PEA it is believed that the majority of these ponds dry out for part of the year, likely reducing the quality of foraging potential in the wet grassland.

Effect without mitigation: The loss of small areas of fairly poor nesting habitat for lapwing will not affect their overall breeding success in the Tees Valley, or the integrity of the population, and so **will not result in a significant adverse effect on the locally important population of lapwing.**

6.2.5.3 Linnet

The proposed development site contains some suitable habitat for linnet in the form of scrub and rough grasslands, primarily feeding on seeds and insects. Linnet are often recorded as nesting in gorse bushes or hedgerows⁴⁸. As detailed in the Species of Conservation Concern in the Tees Valley report, there have been approximately 1,937 breeding pairs of linnet recorded in Cleveland between 1999 and 2006.

The proposed development site primarily consists of ephemeral and ruderal grassland as well as sealed and unsealed hardstanding ground, with areas of scattered sea-buckthorn scrub. There is a limited number of seed producing species within the proposed development site, likely limiting the available foraging resource for linnet within the proposed development site.

Effect without mitigation: The loss of small areas of fairly poor nesting and foraging habitat for linnet will not affect their overall breeding success in the Tees Valley, or the integrity of the population, and so **will not result in a significant adverse effect on the locally important population of linnet.**

6.2.5.4 Skylark

The proposed development site contains some suitable habitat for skylark in the form of a large open space with short grassland. The preferred habitat for skylarks

⁴⁸ The Wildlife Trusts. Linnet: Scientific name: *Linaria cannabina*. Accessed <https://www.wildlifetrusts.org/wildlife-explorer/birds/finches-and-buntings/linnet> on 18 June 2020.

is considered to be arable land where there is an abundance of seeds and grains⁴⁹. The proposed development site contains limited feeding resources in the form of grasses, with the site primarily consisting of ephemeral and ruderal grassland as well as sealed and unsealed hardstanding ground. These habitats are primarily defined by their coarse and compacted substrate making them poor habitat for an abundant number of invertebrates.

There were approximately 1,630 breeding pairs of skylark recorded within the Cleveland area between 1999 and 2006, with farmlands being the main habitats utilised³⁹. As discussed by Wilson and Browne (1993) as well as Eraud and Boutin (2002), territory sizes in skylark vary greatly and can fluctuate greatly between crop types^{50,51}. Although a number of skylark territories could be supported within the proposed development site due to its large size, the foraging resources are very limited, likely reducing the number of skylark present.

Approximately two to three breeding pairs of skylark were recorded within the proposed development site, representative of 0.2% of the local population.

Effect without mitigation: The loss of sub-optimal breeding habitat for skylark and limited food sources, will **not result in a significant adverse effect on the locally important population of skylark.**

6.2.6 Brown Hare

The proposed development site contains minimal, poor quality grassland and scrub habitat for foraging of brown hare. The proposed development site is considered to be a small part of the wider territory of brown hare within the local area.

Effect without mitigation: The loss of this small area of sub-optimal grassland and scrub habitat **will not result in a significant adverse effect on the locally important population of brown hare.**

6.2.7 Dingy Skipper

The proposed development site contains small areas of suitable foraging (bird's-foot trefoil) and breeding habitat for dingy skipper. An important number of dingy skipper were recorded by INCA (ten or more) within the proposed development site during the nesting bird check surveys.

⁴⁹ BTO. Understanding Birds: Skylark. Accessed <https://www.bto.org/understanding-birds/species-focus/skylark#:~:text=Skylarks%20are%20characteristic%20of%20semi,themselves%20provide%20throughout%20the%20year>. 15 June 2020.

⁵⁰ Wilson, J. and Browne S. on behalf of the BTO (1993) BTO Research Paper No. 129: Habitat Selection and Breeding Success of Skylarks *Alauda arvensis* on Organic and Conventional Farmland. Accessed at https://www.bto.org/sites/default/files/shared_documents/publications/research-reports/1993/rr129.pdf 12 June 2020.

⁵¹ C. Eraud & J-M. Boutin (2002) Density and productivity of breeding Skylarks *Alauda arvensis* in relation to crop type on agricultural lands in western France, *Bird Study*, 49:3, 287-296, DOI: 10.1080/00063650209461277

Effect without mitigation: The loss of suitable foraging habitat within the OMH and sparsely vegetated land **will result in a significant adverse effect to important population of dingy skipper at the county level.**

6.2.8 Grayling

The proposed development site has minimal suitable foraging and breeding habitat for the local grayling populations. The proposed development site was found to have limited breeding and foraging resources for grayling butterfly. As noted in the 2018 PEA, grayling were found in higher numbers within the STDC site, where higher quality brownfield habitat exists.

Effect without mitigation: The loss of small area of suitable feeding plants in the grassland and OMH **will not significantly affect the locally important population of grayling.**

6.3 Biodiversity Net Gain Assessment

As the entire proposed development site will likely require remediation, it has been assumed that all habitats within the proposed development site will be lost during the remediation works. Therefore, **without mitigation, the proposed development is likely to result in a biodiversity loss of 173.58 biodiversity units.**

The proposed development site has a baseline of **9.12** river units. If these watercourses are daylighted, this will result in a net gain for watercourses.

Off-site compensation is likely to be required to achieve a BNG. The approach for this will be detailed in the forthcoming STDC Environment & Biodiversity Strategy, which will coordinate the off-site (within the STDC Masterplan boundary, or within the wider Tees Valley) compensation approach for all developments in the wider STDC site.

6.4 In-combination Effects

6.4.1 Energy Recovery Facility

The proposed ERF covers an area of approximately 10ha (NGR NZ54312145) and will be capable of processing up to 450,000 tonnes of waste per annum. The ERF will be located within the Grangetown Prairie site and thus within the proposed development site. An Environment Statement (ES) was produced for this outline development proposal in December 2019⁵².

⁵² JBA Consulting, Fore Consulting and Hoare Lea (19 December 2019) Energy Recovery Facility, Grangetown Prairie, Redcar – Volume 1: Environmental Assessment.

As outlined in the ES for this development, it has been assumed that the remediation of the Grangetown Prairie site, where the ERF will be developed, will be remediated prior to the ERF construction. It is therefore considered that the ERF will not be constructed at the same time as proposed development site remediation works. The proposed development site remediation works and the ERF will have to separately control any potential pollution impacts to the adjacent watercourses.

The ES identified potential impacts to common toad, brown hare and invertebrates from the construction of the proposed development, with brown hare potentially disturbed also during the operation of the development. The impact to these, and other species is proposed to be mitigated through the creation of a designated biodiversity area of approximately 7ha which will be safeguarded, enhanced and managed for the lifetime of the facility. This proposed biodiversity area will provide enhanced habitats for amphibians, invertebrates and brown hare. Following the implementation of this mitigation, no significant residual impact is expected from the ERF development.

As the ERF will not be constructed at the same time as the remediation works and aims to implement sufficient enhancements to mitigate any residual impacts, it is therefore considered that there will be no cumulative impact from the proposed ERF development and the proposed development site.

6.4.2 Eston Road Highway Scheme

As part of the Eston Road Highway Scheme, a stretch of Holme Beck will be un-culverted and daylighted, the watercourse will be further naturalised with a sloped and vegetated bank and redesigned channel. Through the provision of a SuDS pond and implementation of a CEMP, the HRA of this work concluded that the Eston Road Highway Scheme would have no significant impact to the Teesmouth and Cleveland Coast SPA and Ramsar.

If, however, both the Eston Road Highway Scheme and the proposed development are in progress at the same time, there is the potential for adverse in-combination effects from increased dust and pollution entering Holme Beck, and through its hydrological connection, affecting the integrity of the Teesmouth and Cleveland Coast SPA and Ramsar site. As well, there is the potential for the Cross Connector and/or Knitting Wife Beck culverts to be daylighted at the same time, further increasing the potential for contamination. *Possible in-combination effects from the Eston Road Highway Scheme on the Teesmouth and Cleveland Coast SPA and Ramsar are further discussed within the HRA.*

Based on the information provided in the HRA it is considered that **with implementation of a Phasing Plan and CEMP, there will likely be no significant effects** on the integrity of the Teesmouth and Cleveland Coast SPA and Ramsar from the proposed development, either alone or in-combination with the Eston Road Highway Scheme.

6.5 Summary of Impacts and Residual Effects

In EcIA terms, Table 10 provides a summary of the impacts and the significance of any residual effects for each feature.

In terms of the BNG assessment, without mitigation, the proposed development is likely to result in a biodiversity loss of **173.58** biodiversity units.

It is likely that off-site compensation will be required to achieve a BNG. The approach for this will be detailed in the forthcoming STDC Environment & Biodiversity Strategy, which will coordinate the off-site compensation approach for all developments in the wider STDC site.

Table 10 provides a summary of the impacts and the significance of any residual effects for each feature, the mitigation measures required and the means by which mitigation measures can be secured.

Table 10: Summary of Impacts and Significance of Residual Effects

Feature	Impact	Characterisation of Unmitigated Impact on the Feature	Effect without mitigation	Mitigation	Significance of Residual Effects
Teesmouth and Cleveland Coast SPA and Ramsar	Pollution of Holme Beck, Cross Connector and/or Knitting Wife Beck from de-culverting and construction work close to watercourse.	Dust, pollutants or contaminated soils from construction work pollute habitats.	Potential impact to the habitats within the Teesmouth and Cleveland Coast SPA and Ramsar that support the foraging and commuting activities, and/or roosting and nesting of the qualifying features. Possible significant effect.	CEMP Phasing plan	No significant residual effects.
Teesmouth and Cleveland Coast SSSI and NNR	Pollution of Holme Beck, Cross Connector and/or Knitting Wife Beck from de-culverting and construction work close to watercourse.	Dust, water or contaminated soils from construction work pollutes habitats.	Potential impact to qualifying species (harbour seals) and habitats within the SSSI and NNR. Possible significant effect.	CEMP Phasing plan	No significant residual effects.
Open Mosaic Habitat on Previously Developed land	Loss of habitat from site clearance	Direct loss of 1.44ha of OMH (a HoPI) which is considered scarce within the wider STDC site.	Significant adverse effect on the OMH resource, at the local level	No mitigation currently proposed	Significant adverse residual effect on the OMH resource, at the local level.
Common toad	Habitat loss from site clearance	Loss of ponds that support breeding population of locally important common toad population	Significant adverse effect on the common toad population at the local level	No mitigation currently proposed	Significant adverse residual effect on the common toad population, at the local level.
Breeding bird assemblage	Habitat loss from site clearance	Loss of breeding and foraging habitat for locally important breeding bird assemblage	Significant adverse effect on the breeding bird assemblage at the local level	No mitigation currently proposed	Significant adverse residual effect on the breeding bird assemblage, at the local level.
Herring gull	Habitat loss from site clearance	Loss of sub-optimal breeding habitat and poor-quality foraging habitat for locally important lapwing population	Not significant	n/a	n/a

Feature	Impact	Characterisation of Unmitigated Impact on the Feature	Effect without mitigation	Mitigation	Significance of Residual Effects
Lapwing	Habitat loss from site clearance	Loss of sub-optimal breeding habitat and poor-quality foraging habitat for locally important lapwing population	Not significant	n/a	n/a
Linnet	Habitat loss from site clearance	Loss of sub-optimal breeding habitat and poor-quality foraging habitat for locally important linnet population	Not significant	n/a	n/a
Skylark	Habitat loss from site clearance	Loss of sub-optimal breeding habitat and poor-quality foraging habitat for locally important skylark population	No significant	n/a	n/a
Brown hare	Habitat loss from site clearance	Loss of a small area of sub-optimal foraging habitat for locally important population of brown hare.	Not significant	n/a	n/a
Dingy skipper	Habitat loss from site clearance	Loss of small area of suitable habitat population of dingy skipper of county importance	Significant adverse effect on the dingy skipper population at the county level	No mitigation currently proposed	Significant adverse residual effect on the dingy skipper population at the county level.
Grayling	Habitat loss from site clearance	Loss of small area of suitable habitat for locally important population of grayling	Not significant	n/a	n/a

7 Conclusions and Recommendations

7.1 Conclusions

In EcIA terms, following the implementation of a CEMP and Phasing Plan during construction, no significant effects are anticipated to the Teesmouth and Cleveland Coast SPA and Ramsar site, SSSI or NNR.

Without mitigation, the follow adverse significant residual effects remain:

- The loss of 1.44ha of OMH will result in a significant adverse effect on the OMH resource, at the local level;
- Loss of breeding ponds within the proposed development site will result in a significant adverse effect on the common toad population at the local level;
- Loss of breeding and foraging habitat for the local bird population will result in a significant adverse effect on the breeding bird assemblage at the local level; and
- Loss of small area of suitable habitat for the population of dingy skipper of county importance, will have a significant adverse effect on the dingy skipper population at the county level.

No other significant residual effects are expected as a result of the proposed remediation works.

In BNG terms, without mitigation, the proposed development is likely to result in a biodiversity loss of 173.58 biodiversity units.

In the event that the baseline changes because Eston Road is developed prior to the remediation works being undertaken, without mitigation, the proposed development is likely to result in a biodiversity loss of 153.52 biodiversity units.

7.2 Recommendations

7.2.1 Ensure Legal Compliance

Construction of the proposed development will be managed through implementation of a CEMP and Phasing Plan, primarily to prevent pollution of Holme Beck, the Cross Connector culvert and the Knitting Wife Beck culvert and therefore the River Tees, and to ensure legal compliance with respect to nesting birds and control of invasive plant species (see Section 7.2.1.1 and 7.2.1.2).

7.2.1.1 Breeding Birds

All wild birds in the UK are protected under the WCA 1981 (as amended). In order to remain legally compliant, any removal of vegetation (hedgerows, scrub,

grassland) in order to facilitate the construction of the proposed development should be completed outside of the breeding bird season (March to August, inclusive).

If vegetation removal must occur within this season, a nesting bird check must be completed by a suitably qualified ecologist immediately prior to vegetation clearance works. If nesting birds are identified, the suitably qualified ecologist will set up an appropriate buffer zone and all works in this area must cease until the chicks have fledged the nest.

7.2.1.2 Invasive Plant Species

It is an offence under the WCA 1981 (as amended) to cause the spread of invasive plant species listed on Schedule 9, into the wild. As invasive plant species (*Cotoneaster* sp.) have been identified within the proposed development site (Section 5.4.6) control or removal of these species must be undertaken in order to remain legally compliant.

All occurrences of invasive species must be controlled on-site or removed and disposed of off-site as a controlled waste. Construction of the proposed development should be undertaken following best practice guidelines, where plant material is cleaned by using such tools as a tyre wash to ensure there is no further spread of these or other invasive species. Tool-box talks should also be given to all relevant construction staff to ensure the spread of all invasive species is controlled. Finally, when landscaping is undertaken, only native species should be planted.

7.2.2 Addressing Significant Residual Effects

To address the significant residual effects concluded in this EcIA, the Environment & Biodiversity Strategy will seek to identify opportunities for compensation in the STDC area and beyond for a range of measures, including:

- Compensation for the loss of 1.44ha of OMH, in line with an agreed biodiversity metric, with suitable habitat monitoring and maintenance plans put in place as described in Section 7.2.2.1. Any OMH created as part of this compensation would include vegetation to support a wide range of invertebrates including, but not limited to dingy skipper and grayling butterfly;
- Suitable ponds and wet grassland habitat creation designed to support common toad, as compensation for the loss of common toad breeding habitat. Any ponds created would include a suitable monitoring and maintenance plan as described in Section 7.2.2.1;
- Suitable habitat creation to support bird species that comprise the affected breeding bird assemblage. In order to support the varying bird species, habitat would consist of both large open areas with short grassland as well as areas of scrub and hedgerow. Consideration will be made to planting seed and fruit producing vegetation and ensuring the overall habitat area will support a diverse invertebrate population; and

- Suitable habitat creation to support dingy skipper. This habitat would be of similar composition to the OMH lost within the proposed development site, with increased species diversity and condition. The habitat would contain areas of bare ground and suitable larval food sources for dingy skipper, such as bird's-foot trefoil and other brownfield indicator species.

7.2.2.1 Monitoring and Maintenance

Any created or enhanced habitats installed as compensation for habitat loss, should be monitored post creation to ensure suitability for their intended purpose, and that the target distinctiveness and condition of these habitats has been achieved. A post-construction monitoring and maintenance plan should be produced prior to the commencement of construction which details the features to be monitored, timescales for monitoring (to be agreed with the Local Authority), and the methods of maintenance. Once operational, a monitoring report should be produced at specified intervals and shared with the Local Authority.

7.2.3 Ensure No Net Loss in Biodiversity, and Provide 10% Biodiversity Net Gain

Compensation describes measures taken to make up for residual effects resulting in the loss of, or permanent damage to, ecological features despite mitigation. In BNG terms, compensation could be described as achieving '**No Net Loss**' in biodiversity.

Enhancement is the provision of new benefits for biodiversity that are additional to those provided as part of mitigation or compensation measures. In BNG terms, enhancement could be described as '**Biodiversity Net Gain**'.

To ensure no net loss in the overall biodiversity value of the site, habitats would need to be created that equate to a total value of 173.58 biodiversity units. To ensure a 10% BNG, habitats would need to be created that equate to a total value of 190.93 biodiversity units.

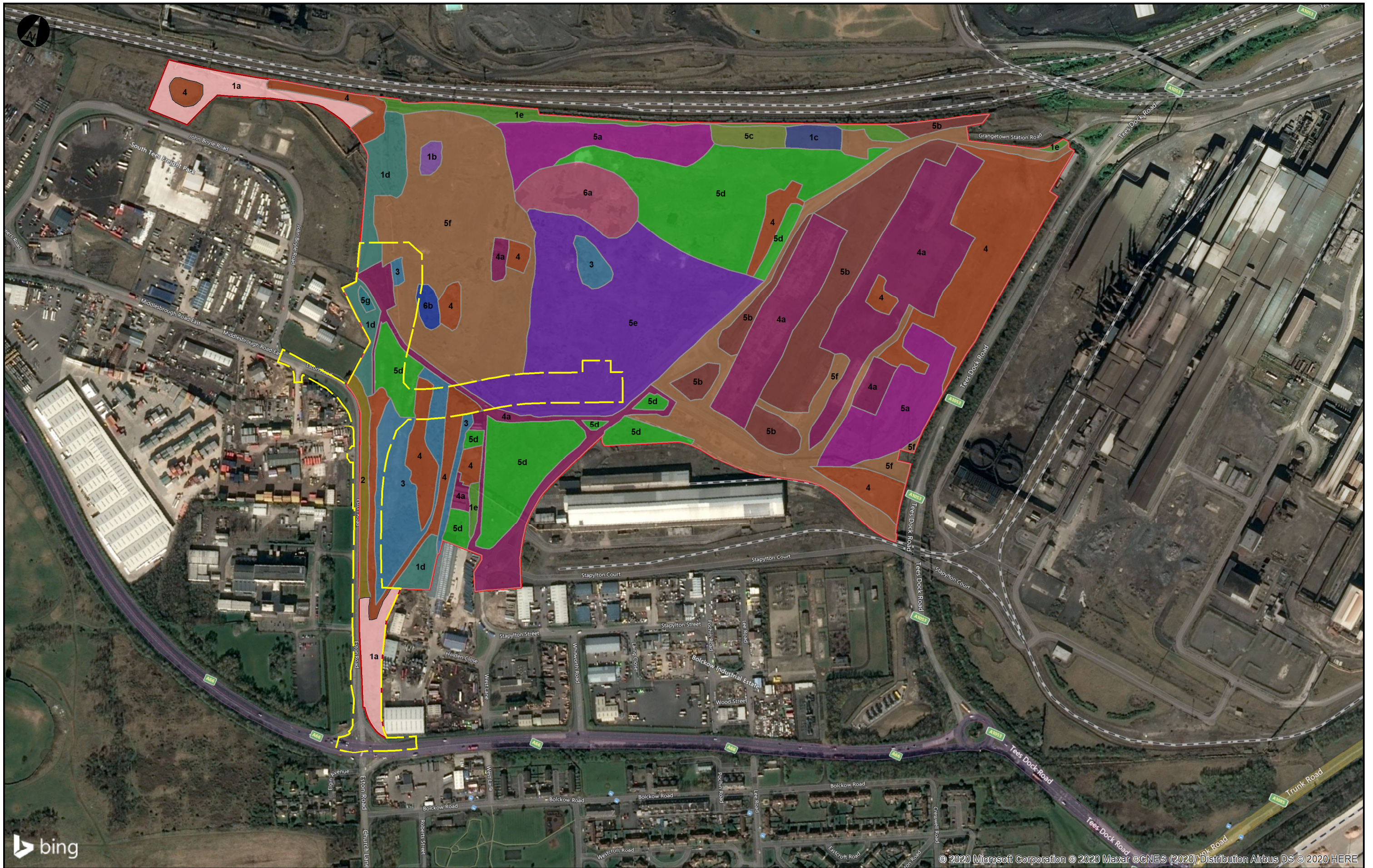
Off-site compensation is likely to be necessary to achieve a BNG. The approach for this will be detailed in the forthcoming STDC Environment & Biodiversity Strategy, which will coordinate the off-site compensation approach for all developments in the wider STDC site.

Compensation for any habitats that are to be lost due to the proposed development, should be undertaken with the aim to provide habitats with the same or greater ecological function and/or diversity to the habitat that is lost.

Appendix A

Proposed Development Site Red Line Boundary and Remediation Works

A1 Proposed Development Site Boundary



Legend

- Proposed Development Site Red Line Boundary
- Proposed Eston Road Highway Scheme Boundary

Remediation Site Baseline Habitats

SurveyCode

- Other Neutral Grassland- 1a
- Other Neutral Grassland- 1b
- Other Neutral Grassland- 1c
- Other Neutral Grassland- 1d
- Other Neutral Grassland-1e
- Other Broadleaved Woodland- 2
- Other Sea Buckthorn Scurb- 3
- Artificial unvegetated unsealed surface- 4
- Developed land; sealed surface- 4a
- Sparsely vegetated land- Ruderal/Ephemeral- 5a
- Sparsely vegetated land- Ruderal/Ephemeral- 5b
- Sparsely vegetated land- Ruderal/Ephemeral- 5c
- Sparsely vegetated land- Ruderal/Ephemeral- 5d
- Sparsely vegetated land- Ruderal/Ephemeral- 5e
- Sparsely vegetated land- Ruderal/Ephemeral- 5f
- Sparsely vegetated land- Ruderal/Ephemeral- 5g
- Open Mosaic Habitat- 6a
- Open Mosaic Habitat- 6b

Map Name: Appendix A - Habitat Classifications Within Proposed Development Site Red Line Boundary

Map Number: - Discipline: Environment & Biodiversity

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Date: 11/06/2020

Grange Town Prairie Remediation

Redheugh House, Teesdale South, Thornaby Place,
Stockton on Tees, TS17 6SG
Tel +44 1642 356 590 | www.arup.com

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Scale at A3: 1:5,000

A2 Remediation Works- Estimated Dig Depths



Legend

- Remedial Excavations
- Up to 1.5 mbgl
 - Up to 2.5 mbgl
 - Up to 4 mbgl
 - Up to 5 mbgl

- Culvert Routes (From Plans)
- Holme Beck (Open)
 - Holme Beck (Culvert)
 - Cross Connector (Culvert)
 - Knitting Wife Beck (Culvert)

Site Plans

- Redline
- Prairie

Notes:

Works to daylight Holme Beck to be confirmed.

Routes of Holme Beck, Cross Connector and Knitting Wife Beck taken from STDC drawings 42220 and PX90320. Actual locations should be confirmed before excavation.

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CONTACT ARCADIS IN CASE OF ANY QUERIES.



Title: Prairie - Estimated Dig Depths - Prairie Site

Site: Redcar Steelworks - Prairie

Client:
South Tees Development Corporation

Project:
10035117

Date: 10/06/2020
Drawn By: JALM
DRG No: 10035117-AUK-XX-XX-DR-ZZ-0075-03-
 Prairie_Rem_Ex

Appendix B

Legislation, Planning Policy and Guidance

B1 Legislation

B1.1 The Conservation of Habitats and Species Regulations 2017

The Conservation of Habitats and Species Regulations 2017² consolidated all the various amendments made to The Conservation of Habitats and Species Regulations 2010 and the Conservation (Natural Habitats, &c.) Regulations 1994 in respect of England and Wales. The 1994 Regulations transposed Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) into national law.

The Regulations are the British response to the Council Directive issued by the European Community (EC) (which is now the European Union (EU)).

Regulation 63 of The Conservation of Habitats and Species Regulations 2017 (hereby referred to as the ‘Habitats Regulations’) requires a competent authority to make an ‘appropriate assessment’ of the implications of a plan or project on a European designated site in view of its conservation objectives, before deciding to undertake or give consent for a plan or project which: (a) is likely to have a significant effect on a European site (either alone or in combination with other plans or project); and, (b) is not directly connected with or necessary to the management of that site. In light of the conclusions of the assessment, the competent authority may proceed with or consent to the plan or project only after having ascertained that it would not adversely affect the integrity of the European site.

The Regulations offer protection to a number of ‘European Protected Species’ (EPS), listed in Schedule 2 of the Regulations. The Regulations make it an offence [amongst others] to deliberately capture, injure, kill or disturb these species, or to damage or destroy a breeding site or resting place of such an animal.

The Regulations in relation to EPS have been amended and consolidated with key changes including the removal of most of the defences from Regulation 42 and Regulation 45, including the removal of the ‘incidental result of an otherwise lawful operation’ defence, and the increase in the threshold for the offence of ‘deliberately disturbing an EPS’.

Proposals that will affect EPS may require a licence from Natural England to allow an otherwise unlawful act. The species protection provisions of the Habitats Directive, as implemented by the Conservation of Habitats and Species Regulations 2017, contain three ‘derogation tests’ which must be applied by Natural England when deciding whether to grant a licence to a person carrying out an activity which would harm an EPS.

B1.2 Wildlife and Countryside Act 1981 (as amended) and The Conservation of Habitats and Species Regulations 2017

The WCA³ is the primary legislation covering endangered species in England and sets out the framework for the designation of Sites of Special Scientific Interest (SSSI). It confers differing levels of protection on species themselves, their habitats, or both, depending on their conservation status.

Species offered protection by the Act are listed in a series of schedules. These schedules are subject to a rolling review on a five-yearly basis. Protected species are listed under Schedule 1 (birds), Schedules 5 and 6 (animals other than birds and invertebrates) and Schedule 8 (plants).

The WCA makes it an offence (with exception to species listed in Schedule 2) to intentionally kill, injure, or take any wild bird, take, damage or destroy the nest of any wild bird while that nest is in use or being built or take or destroy an egg of any wild bird. Special penalties are available for offences related to birds listed on Schedule 1, for which there are additional offences of disturbing these birds at their nests, or their dependent young.

The WCA makes it an offence to plant or otherwise cause to grow any plant species listed on Schedule 9 of the Act. This includes the invasive non-native species Small-leaved cotoneaster.

B1.3 Natural Environment and Rural Communities (NERC) Act 2006

The NERC Act 2006⁴, is designed to help achieve a rich and diverse natural environment and thriving rural communities. Under Section 40 there is a duty to conserve biodiversity; specifically, Subsection (1) states “*The public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.*”

Section 41 of the Act requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The Section 41 referenced list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under Section 40 of the NERC Act 2006.

Habitats and species of principal importance in England include the habitats and species in England that were identified as requiring action in the now succeeded UK Biodiversity Action Plan (UK BAP) and continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework⁵³. Open Mosaic Habitat, recorded within the proposed development site, is a Habitat of Principle Importance (HoPI).

⁵³ JNCC (July 2012) UK Post-2010 Biodiversity Framework. <https://jncc.gov.uk/our-work/uk-post-2010-biodiversity-framework/>. Accessed 21 May 2020.

There are 50 bird species which are Species of Principal Importance (SoPI), the ones recorded within the proposed development site are:

- Dunnock;
- Linnet;
- Reed bunting;
- Ring ouzel;
- Skylark; and
- Song thrush.

B2 Planning Policy

B2.1 National Planning Policy Framework (NPPF)

The original National Planning Policy Framework (NPPF)⁷ was published in March 2012, with an updated version published in February 2019. The policies in the original Framework took immediate effect, and previous planning guidance in PPGs and PPSs has been revoked and replaced by the NPPF. Therefore, the NPPF is non-statutory though is a material consideration in all planning decisions from March 2012.

The updated version of the NPPF took effect immediately for development management decisions as of February 2019. NPPF refers the responsibilities of the local authorities to conserve the natural environment with respect to the use of the ‘Circular 6/2005: Biodiversity and Geological Conservation – Statutory Obligation and their Impact within the Planning System’ as guidance in this process.

All public bodies including local planning authorities are required to consider habitats and species of principal importance and Priority Species / Habitats within local Biodiversity Action Plans when considering a planning application.

Paragraph 170 of the NPPF states: *“Planning policies and decisions should contribute to and enhance the natural and local environment by minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.”*

Paragraph 174 of the NPPF states: *“To protect and enhance biodiversity and geodiversity, plans should promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.”*

Developments should therefore propose net gains in biodiversity in order for planning permission to be granted under NPPF policy.

B2.2 Redcar and Cleveland Local Plan

The Local Plan⁶ came into effect in May 2018 and sets out the overall development strategy and vision for the Council’s area. The plan outlines how to achieve the strategy for the period up to 2032. It replaces in full the Core Strategy and Development Policies Development Plan Document (2007) and saved Local Plan policies (1999) as the statutory planning policy for the area.

The Local Plan will support, under Policy N4: *“high quality schemes that enhance nature conservation and management, preserve the character of the natural environment and maximise opportunities for biodiversity and geological conservation, particularly in or adjacent to, Biodiversity Opportunity Areas in the*

wider Tees Corridor, Teesmouth, East Cleveland and Middlesbrough Beck Valleys areas”.

Policy N4 also seeks to: *“protect and preserve local, national and international priority species and habitats and promote their restoration, re-creation and recovery”.*

The Local Plan recognises the need for early consideration of biodiversity in the design stage, and that: *“areas of biodiversity on brownfield land should be retained and enhanced alongside any remediation of contamination, where possible”.*

As stated in the NPPF, the Local Plan also states support for net gains in the value of biodiversity through new developments. Where, as a last resort, compensation must be provided this should be local and representative to the area of loss.

The Local Plan supports: *“maximising the role of green infrastructure in mitigating and adapting to climate change, providing solutions for such issues as air quality, flood risk, coastal change and loss of habitats.”*

The Local Plan, when adopted, was independently assessed and found to be in conformity with national policy. In respect of biodiversity net gains, it seeks net gains in certain circumstances, as per the highlighted text below. Policy N4 (Biodiversity and Geological Conservation) states:

*‘Biodiversity and geodiversity should be considered at an early stage in the development process, with appropriate protection and enhancement measures incorporated into the design of development proposals, recognising wider ecosystem services and providing net gains **wherever possible**. Detrimental impacts of development on biodiversity and geodiversity, whether individual or cumulative, should be avoided. Where this is not possible mitigation, or lastly compensation, must be provided as appropriate. Proposals will be considered in accordance with the status of biodiversity and geodiversity sites within the hierarchy’*

The South Tees Area SPD (Appendix B3.2) is also aspirational in its desire for biodiversity net gains, with Development Principle STDC7 (Natural Environmental Protection and Enhancement) stating: *‘...Net environmental gains should be provided **where appropriate and viable**, in accordance with Policies N2 and N4’.*

B3 Guidance

B3.1 South Tees Regeneration Masterplan

The South Tees Development Corporation was established in 2017 and in November 2019 published its masterplan for the site. The masterplan supports the South Tees Supplementary Planning Document (SPD), which was formally adopted in 2018 following completion of statutory consultation.

The masterplan provides a framework for regenerating the area and provides a detailed overview of the existing conditions and future aspirations for the area. There are 10 core principles of the masterplan and principle 8 has particular relevance to the Environment and Biodiversity Strategy:

- Principle 8 – *deliver redevelopment in a way that reduces pollution, contributes to habitat protection and long-term sustainability, and that encourages biodiversity.*

While this principle is focused on environment and biodiversity, this strategy will be informed by all the core principles of the masterplan.

B3.2 South Tees Area Supplementary Planning Document

The purpose of the SPD is to define a spatial strategy and set of requirements for development proposed within the STDC area⁸. In doing so a clear vision has been defined to address heavy industry legacy effects on the environment, improve existing infrastructure and to drive the transformation of the area into a new industrial park.

The SPD aims to “*identify those key opportunities to protect, enhance and manage assets of ecological and heritage importance that will further enhance the South Tees Area*”.

The South Tees Area will be regenerated through a single vision. This vision has been set out through ten key objectives. Objective 8 intends to “*Deliver redevelopment in a way that provides long term sustainability, reduces pollution, manages the water environment, protects the historic environment, contributes to habitat protection, safeguards biodiversity and enhances green infrastructure, open space and landscape character*”.

The objectives are achieved through ‘Development Principles’. Principle STDC7 focuses on the enhancement and protection of the natural environment. Therefore, all development proposals must be in accordance with the requirements of STDC7 and to respond to their environmental context specifically to protect, and where possible enhance, biodiversity and geodiversity interests.

STDC 7 outlines the need for a coordinated approach to environmental protection and enhancement, with open spaces being used as connectors rather than barriers

to development. STDC7 goes on to state: “...*Net environmental gains should be provided **where appropriate and viable**, in accordance with Policies N2 and N4*’

B3.3 Birds of Conservation Concern

Commonly referred to as the UK Red List for birds, this is the fourth review of the status of birds in the UK, Channel Islands and Isle of Man, and updates the last assessment in 2009. Using standardised criteria, 244 species with breeding, passage or wintering populations in the UK were assessed by experts and assigned to the Red, Amber or Green lists of conservation concern.

The assessment is based on the most up-to-date evidence available and criteria include conservation status at global and European levels and within the UK: historical decline, trends in population and range, rarity, localised distribution and international importance.

B3.4 Tees Valley Local Biodiversity Species List

Although the Tees Valley Biodiversity Action Plan (BAP) no longer exists as a plan, the Natural Assets Working Group of the Tees Valley Nature Partnership still maintains a critical element of the BAP in the form of the Tees Valley local biodiversity species list.

This includes species which may be present within the proposed development site, namely common toad, brown hare, dingy skipper, grayling butterfly and a number of bird species.

Appendix C

Biodiversity Net Gain
Methodology

C1 Biodiversity Net Gain – Habitat Areas

C1.1 Introduction

The Biodiversity Net Gain (BNG) calculations, using the Natural England Biodiversity Metric 2.0 (BM2.0), are being undertaken to inform approximate habitat areas required to mitigate and compensate for the loss of semi-natural habitats as a result of the proposed development, and enhance habitats to achieve biodiversity net gain.

BM2.0 provides developers, planners, land managers and others with a tool to help limit damage to nature in the first place and to help it thrive.

C1.2 Principles of the Biodiversity Metric

BM2.0 uses habitat features as a proxy measure for capturing the value and importance of nature. It uses a simple calculation that takes into account the importance of these features for nature: their size, ecological condition, location and proximity to nearby ‘connecting’ features. BM2.0 enables assessments to be made of the present and forecast future biodiversity value of a site.

The metric accounts within it for some of the risks associated whenever new habitat is created or existing habitat is enhanced, including the difficulty of creating or restoring a habitat, and the temporal risk (i.e. the time a new habitat takes to establish).

In calculation terms, the change in biodiversity units is determined by subtracting the number of pre-intervention biodiversity units (i.e. those originally existing on-site and off-site) from the number of post-intervention units (i.e. those projected to be provided).

BM2.0 includes additional supplementary modules for habitats that are not well described by their area. These are linear habitats, for which habitat length is often a more meaningful measure of their extent than area, broadly apply to hedgerows and lines of trees, and rivers and streams. These parts of the metric are calculated differently and have their own discrete biodiversity unit types. It is an important rule of the metric that the biodiversity units calculated through the core habitat area-based metric and each of the linear units are unique and cannot be summed or converted. For detailed methodology and results for the Rivers Metric, see Appendix D.

It is worth noting that BM2.0 does not include species explicitly. Instead, BM2.0 uses broad habitat categories as a proxy for the biodiversity ‘value’ of the species communities that make up different habitats. The metric does not change existing levels of species protection and the processes linked to protection regimes are outside the scope of the metric.

C1.3 Methodology

Available baseline information has been used to calculate the number of 'biodiversity units' generated by the habitats present within the proposed development site.

Based on the assumption that all habitats within the proposed development site could be lost to the development, calculations have been made to determine approximate habitat areas required to mitigate and compensate for the loss of semi-natural habitats, and to achieve biodiversity net gain.

C1.3.1 Habitat Classifications and Distinctiveness

C1.3.1.1 Grasslands: Modified Grassland (g4)

Rank grassland of any kind, which would fit with the category of 'B6-poor semi-improved grassland' in the Phase 1 Habitat classification, is classed as 'modified grassland (g4)' in line with the UK Habitat Classification, and receives a distinctiveness score of 'low (2)'.

C1.3.1.2 Other Broadleaved Woodland

If a woodland has been recently felled (within the last 4-5 years), the assessments needs to be based on the trees that stood on the site prior to felling. It should be recorded as the original woodland type, the age of the trees and note that it has been felled.

Only if the felling occurred a considerable time previously (4-5 years +) with no obvious replanting progressing then it may be appropriate to classify as the now prevailing habitat.

In the case of the proposed development site, there is previous ecological data available in the form of the 2018 PEA conducted by INCA of the condition, species composition and age of the woodland prior to it being felled. It is therefore required that the woodland habitat is classified as 'Other Broadleaved Woodland' and receives a distinctiveness score of 'moderate (4)'.

C1.3.1.3 Ruderal/Ephemeral (17), Artificial Unvegetated / Unsealed Surface (u1c) and Open Mosaic Habitats on Previously Developed Land (u1a)

Habitats would be classed as Open Mosaic Habitats (OMH) only where they meet **all** the descriptors set out in the definition of OMH, as stated in the BM2.0 Technical Guidance.

The two descriptors of OMH that are particularly relevant to the classification of habitats at the proposed development site are:

1. Known history of disturbance at the site or evidence that soil has been removed or severely modified by previous use(s) of the site; and

2. The site contains unvegetated, **loose** bare substrate.

While land within the proposed development site has been altered from its natural state by the addition of industrial spoil, principally in the form of blast furnace slag (but in some cases crushed building materials), this material has been added for the purpose of forming areas of flat, hardstanding as a base for industrial operations. The nature of this material, being porous, alkaline and low nutrient makes it conducive to colonisation by a diverse and slightly specialised flora, whilst retaining some bare ground, but its structure does not meet the description of OMH. In many cases this material has been in situ for decades and in places has developed a very thin layer of soil so that the surface may be loose but with certain exceptions this is **merely a dressing on top of hardstanding and is not disturbed**.

In these calculations such habitats are considered to fit with the Phase 1 Habitat classification as ‘ephemeral/ short perennial’, which equates to the ‘ruderal/ephemeral’ category of the UK Habitat Classification and receives a distinctiveness score of ‘low (2).

Where an area is effectively unvegetated but is not sealed, then this is classed as ‘artificial unvegetated; unsealed surface’ habitat, in line with the UK Habitat Classification, which defines this category as ‘land cleared for development, infrastructure, construction or other purpose, currently unvegetated, but the soil surface is not sealed with impervious materials’. **INCA have interpreted ‘unvegetated to be defined as areas where the total vegetation cover including bryophytes and lichens is <10%.**

C1.3.2 Condition

The BM2.0 technical supplement defines the condition assessment criteria for each habitat type.

For certain habitat types, some alternative site-specific condition criteria have been developed by INCA for Teesside, which are of relevance to the proposed development. These should provide a more detailed, and locally relevant condition assessment for certain habitats, as outlined below.

C1.3.2.1 Ruderal/Ephemeral (17)

The BM2.0 does not provide specific guidance on condition criteria for ruderal/ephemeral habitats, although it could be assumed that the condition assessment criteria for the urban habitat type are the most relevant

Condition depends principally on the diversity and coverage of typical herb species though, like for OMH, some scattered bare ground is a positive factor.

The following factors have been used to determine the condition:

- the number of early-successional plant species that typify this habitat;
- the percentage cover of early-successional herb species;

- the mixture of bare ground. Bare ground should be scattered. Where it occurs in blocks of >10% of the area it is a negative factor. Any blocks of bare ground of 0.25ha or larger should be recorded as a separate habitat; and
- The percentage cover of non-native, invasive plant species. (*N.B. except buddleia and red valerian. These can total up to 10% between them with anything above that being counted in the total invasive species cover*).

Table 11 indicates the typical ranges for each condition category but as there are various permutations then some professional judgement from INCA has been required in their use, to apply a single score.

Table 11: Typical Ranges for each Condition Category for Ruderal/Ephemeral Habitat on the proposed development site (INCA)

Condition	Score	No. species	% cover	Bare ground	Invasive species
Good	3	10 or more	75-90	10-20% unevenly distributed	<5%
Fairly Good	2.5	8 or more	65-90	10-20% unevenly distributed	<5%
Moderate	2	6 or more	50-90	10-40% unevenly distributed	<10%
Fairly Poor	1.5	4 or more	40-90	40-75%	<20%
Poor	1	Less than 4	10-25%	>75%	>20%

C1.3.2.2 Sea-Buckthorn Scrub (Other) (H3C6)

Within the BM2.0, Sea-buckthorn scrub is considered a desirable habitat type and scores a distinctness score of medium (4). However, sea-buckthorn is considered to be an invasive species within the Teesside area, which is not represented in this moderate distinctiveness score.

When determining the condition score of this habitat, the dominant species were considered to be invasive species (sea-buckthorn as well as buddleia) which would classify the condition of the scrub as poor. However, the scrub habitat had a desirable structure and age range of species.

Therefore, due to the dominant species being invasive species but the scrub structure and age being desirable, the scrub habitat was given a condition of 'fairly poor.'

C1.3.3 Connectivity

As detailed in the BM2.0 connectivity tool guidance⁵⁴, the connectivity tool should be used only to calculate ecological connectivity for habitats with a ‘high’ or ‘very high’ distinctiveness value.

For all habitats scoring ‘medium’ or lower, the interim guidance as described in the BM2.0 user guide should be implemented. In the user guide, it states that any habitats with a distinctiveness value of medium or lower should be afforded a connectivity score of ‘low’.

In the case of this proposed developments site, the OMH has a distinctiveness value of ‘high,’ therefore these habitats were to be assessed using the connectivity tool.

As discussed in Section 4.7, the connectivity tool appears to have a potential bug that would not allow the OMH to be calculated. It was therefore decided that professional judgment would be used to determine the connectivity of this habitat.

A value of ‘moderate’ connectivity was determined due to the following facts:

- The OMH was only present in two areas within the proposed development site;
- In comparison to the total area of habitats within the proposed development site, these areas of OMH are considered to be small and disconnected due to their separation of approximately 130m; and
- The OMH was separated by sparsely vegetated land (5f) which contained similar plant species in moderate condition.

Based on these facts, a score of ‘high’ connectivity was determined to be inappropriate, however due to the presence of the sparsely vegetated land linking the OMH, a score of ‘moderate’ connectivity was more appropriate than ‘low’.

C1.3.4 Strategic Significance

The strategic significance of the habitats within the proposed development site was assessed on the priority habitats described within the Tees Valley Nature Partnership document¹⁰, and INCA’s wider understanding of habitats that are considered to be ecologically desirable in the wider South Tees area.

As OMH is a HoPI and locally important to the South Tees area, it was given a strategic score of ‘Location ecologically desirable but not in local strategy (1.1).’

Although not a HoPI, the sparsely vegetated land within the proposed development site contained some of the same desirable species as within the OMH and was therefore considered to be ecologically desirable in this location. All sparsely vegetated land was therefore given a strategic score of ‘Location ecologically desirable but not in local strategy (1.1).’

⁵⁴ Natural England (2019) Biodiversity Metric 2.0 – Connectivity Tool Guidance. Natural England Joint Publication JP029.

As the remainder of the habitats within the proposed development site are not considered to be a HoPI or locally important in the South Tees area, they have all been given a strategic significance score of ‘Area/compensation not in local strategy/ no local strategy (1).’

C2 Biodiversity Net Gain – River’s Metric for Holme Beck

6th Floor 3 Piccadilly Place
Manchester M1 3BN
United Kingdom
www.arup.com

t +44 161 228 2331
f +44 161 228 6879

Project title	Eston Road Highway Scheme	Job number	602510-87
cc	Nichelle Murray, Jessica Boath	File reference	6-02 Reports
Prepared by	Tom House, Simon Fleming, Matthew Sanders	Date	14 May 2020
Subject	Biodiversity Net Gain Methodology and Assessment of the On-site River Baseline		

1 Introduction

This appendix summarises the methodology and assessment used for the Rivers and Streams component of the Biodiversity Net Gain (BNG) assessment carried out for the proposed development. As it was not possible to carry out a detailed Modular River Survey (MoRPh)^{1, 2} for this project, an alternative field survey approach and assessment has been used to determine the input values for River Distinctiveness and River Condition. This document includes:

- Section 2: Methodology employed to assess River Distinctiveness and Condition;
- Section 3: Survey and assessment results for Holme Beck; and
- Section 4: Summary table of scores to inform the BNG assessment.

2 Methodology

The methodology used to determine River Distinctiveness and River Condition is described below. This involved a search of available desk study information and analysis of field survey data collected in May 2020. Relevant information pertaining to the physical aquatic and riparian habitat structure and diversity, and the degree of anthropogenic alteration of Holme Beck was collected in the field. These data provide a proxy for the overall riverine ecological quality.

¹ Modular River Survey (2020) <https://modularriversurvey.org/>. Accessed 12/05/2020

² A MoRPh survey form was utilised during the survey, however the surveyor is not formally trained to undertake MoRPh surveys.

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2.1 River Distinctiveness

Determination of River Distinctiveness was consistent with the approach set out in the BNG Metric 2.0 guidance³. The distinctiveness categories for rivers and streams are based on two classifications: Priority Habitats as defined by JNCC,⁴ and 'River Naturalness'⁵.

Priority Habitat includes a number of river types, namely:

- Chalk Rivers;
- Watercourses with water crowfoot assemblages (Habitats Directive Annex I habitat H3260);
- Active shingle rivers; and
- Headwater streams.

The Natural England Priority River Habitat map⁶ was consulted to determine whether the watercourses on site were mapped as Priority Habitat. In addition, an assessment of whether the watercourses met the qualifying criteria for Priority Habitat as defined by JNCC was undertaken using the field survey data collected.

A 'River Naturalness Assessment' was also carried out based on field survey data. This assessment has been created by Natural England to highlight rivers and streams that should be classified as priority river habitat in response to a known lack of coverage of priority river habitat, particularly for headwater streams. The River Naturalness Assessment derives a number of class scores based on their perceived naturalness ranging from 1 (natural systems) to 5 (modified) within the following categories: physical, hydrological, water quality and biological.

2.2 River Condition

River condition was determined based on a combination of desk-study information and the results of a field survey. Relevant information pertaining to the physical aquatic and riparian habitat structure and diversity, and the degree of anthropogenic alteration were used to inform the assessment. This information provides a proxy for the overall riverine ecological quality.

The approach is qualitative in nature and carried out in cognisance of the reach scale desk-based assessment and sub-reach scale field assessment components of the River Metric Survey, aligning with this assessment method where possible. The survey was carried out by competent field ecologists with experience in assessing river and stream habitats. Surveyors employed a precautionary approach to determine the subsequent condition classification for each watercourse.

³ Crosher, I., Gold, S., Heaver, M., Heydon, M., Moore, L., Panks, S., Scott, S., Stone, D., & White, N. (2019) The Biodiversity Metric 2.0: auditing and accounting for biodiversity value. User guide (Beta Version, July 2019). Natural England.

⁴ as defined under section 41 of the Natural Environmental and Rural Communities Act 2006.

⁵ Natural England (2019) Guidance on river naturalness assessment, <http://priorityhabitats.org/wp-content/uploads/River-naturalness-assessment-guidance-document-December-2019.pdf> Accessed: 14 May 2020

⁶ Natural England (2017) Priority River Habitat - Rivers (England), <https://naturalengland-defra.opendata.arcgis.com/datasets/priority-river-habitat-rivers-england?geometry=-2.221%2C54.646%2C-0.914%2C54.785> Accessed: 18 May 2020

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2.2.1 Part 1: Reach Scale Assessment

The river was assigned to one of 13 river types that are likely to be encountered in England. River type is informed by eight river type indicators which are combined to determine the indicative river type. Each river type indicator is then run through the River Metric information system to produce the indicative river type. In lieu of access to the River Metric information system, a best fit river type was determined following the river type decision tree included in the River Metric outline guidance document⁷.

2.2.2 Part 2: Sub-reach Scale Assessment

Information pertaining to the characteristics of the bank top, bank face, channel margin and channel bed zones of the river were collected in the field. The surveyor considered key aspects of river habitat quality within each of the zones including vegetation type and structure, channel morphology and modification, and the presence of man-made structures and invasive non-native species.

2.2.3 Overall Condition

Both the reach and sub-reach scale assessment were considered when assigning the overall condition of the river for input into the Biodiversity Metric Calculator. The resulting condition category was determined by the professional judgement of an experienced surveyor.

3 Results

3.1 Distinctiveness

Holme Beck is not designated as Priority Habitat River and does not meet the qualifying criteria for priority habitat as defined by JNCC⁸. Desk-study information on river naturalness was not available, so a River Naturalness Assessment was carried out based on data collected on site to determine the distinctiveness of the waterbody. Based upon extensive physical modification, and evidence of moderate water quality pressure associated with road run-off and surrounding industrial land use, the overall River Naturalness score for the 150m survey reach has been determined to be **Class 4**.

3.2 Condition

3.2.1 Reach Scale Assessment

The surveyed reach of Holme Beck is considered to best fit the river type category of a confined straight-sinuuous river with predominantly silt/clay/sand/gravel substrate (Type K).

⁷ River Condition Outline (2020) Part of the Rivers and Streams Component of the Biodiversity Net Gain Metric, <https://modularriversurvey.org/wp-content/uploads/RIVER-CONDITION-OUTLINE-Feb2020.pdf>. Accessed 13 May 2020

⁸ JNCC (2011) UK Biodiversity Action Plan Priority Habitat Descriptions – Rivers. <http://data.jncc.gov.uk/data/01d6ab5b-6805-4c4c-8d84-16bfebe95d31/UKBAP-BAPHabitats-45-Rivers-2011.pdf> Accessed: 13 May 2020

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3.2.2 Sub-reach Scale Assessment

The surveyed section of Holme Beck is canalised and straight. It runs immediately adjacent to Eston Road and is never further than one metre from the road. The beck flows through heavily modified land use associated with roads and historic industrial use and is culverted for large sections upstream and downstream of the surveyed reach. The surrounding land is “made ground” comprising blast furnace slag which is likely to be of considerable depth. It would appear that additional drainage from the road enters the beck through a pipe.

The bank top zone of Holme Beck consisted of short grasses and herbs (extensive), tall herbs/grasses (present) and scrub/shrubs (present). Trees/saplings were also recorded (trace). The bank tops were colonised principally by bramble (*Rubus fruticosus* agg.), and pendulous sedge (*Carex pendula*). The lower 0.5m of the banks were unvegetated apart from some bryophytes. No aquatic vegetation was recorded in the beck. No invasive non-native species were recorded in or around the watercourse and no associated water related features (ponds, wetlands, side channels) were observed.

The bank face was reinforced and vertical throughout. The artificial banks comprised concrete blocks and stone. In places, the lower parts of the banks appeared to consist of earth, but it was unclear whether this was just a covering of earth on top of the stone. Natural bank, channel margin, and channel bed features were absent.

The channel bed was dominated by silt (extensive). Given that the surrounding land was “made ground” comprising blast furnace slag, likely to be of considerable depth, the silt substrate is considered unlikely to be underlain by natural riverbed material. The flow types were predominantly smooth (extensive) or rippled (present). No artificial channel bed features (weirs or bridges) were recorded with the survey reach itself, however the river is culverted immediately upstream and downstream.

In summary, the surveyed reach of Holme Beck provides low habitat quality due to the historically straightened, artificially reinforced, culverted and over-deepened channel resulting in reduced flow and habitat heterogeneity and excessive shading. The modified nature of the beck, coupled with potential water quality pressures associated with road run-off, are expected to reduce the suitability of the reach for supporting natural ecological communities. Overall the condition of the surveyed reach of Holme Beck is considered to be **‘fairly poor’**.

The condition of the culverted section is considered to be ‘poor’.

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3.3 Strategic Significance

Holme Beck is not explicitly mentioned in any of the listed documents^{9,10,11} relating to strategic significance. Furthermore, the beck does not appear within the catchment of any Water Framework Directive waterbody. Consequently, it is considered that Holme Beck has low potential and therefore no strategic significance multiplier is applicable.




4 Summary

Table 1 summarises the river scores used in the BNG assessment. Full detail of the Rivers Metric is in Appendix D3.

Table 1: Summary of River Scores used in the BNG Assessment

River Section	Holme Beck – Culverted Section	Holme Beck – Channel Section
River type	Class 4	Class 4
Length	0.5km	0.15km
Distinctiveness	Medium (4)	Medium (4)
Condition	Poor (1)	Fairy poor (2)
Strategic Significance	Low (1)	Low (1)
Total River Units	2 units	1.2 units

DOCUMENT CHECKING (not mandatory for File Note)

	Prepared by	Checked by	Approved by
Name	Tom House, Simon Fleming, Matthew Sanders	Jessica Boath	Fraser Maxwell
Signature	 Simon Fleming		

⁹ Middlesbrough Local Plan (2018) Middlesbrough Council. Accessed: 18/05/20

<https://www.middlesbrough.gov.uk/sites/default/files/Middlesbrough%20Publication%20Local%20Plan.pdf>

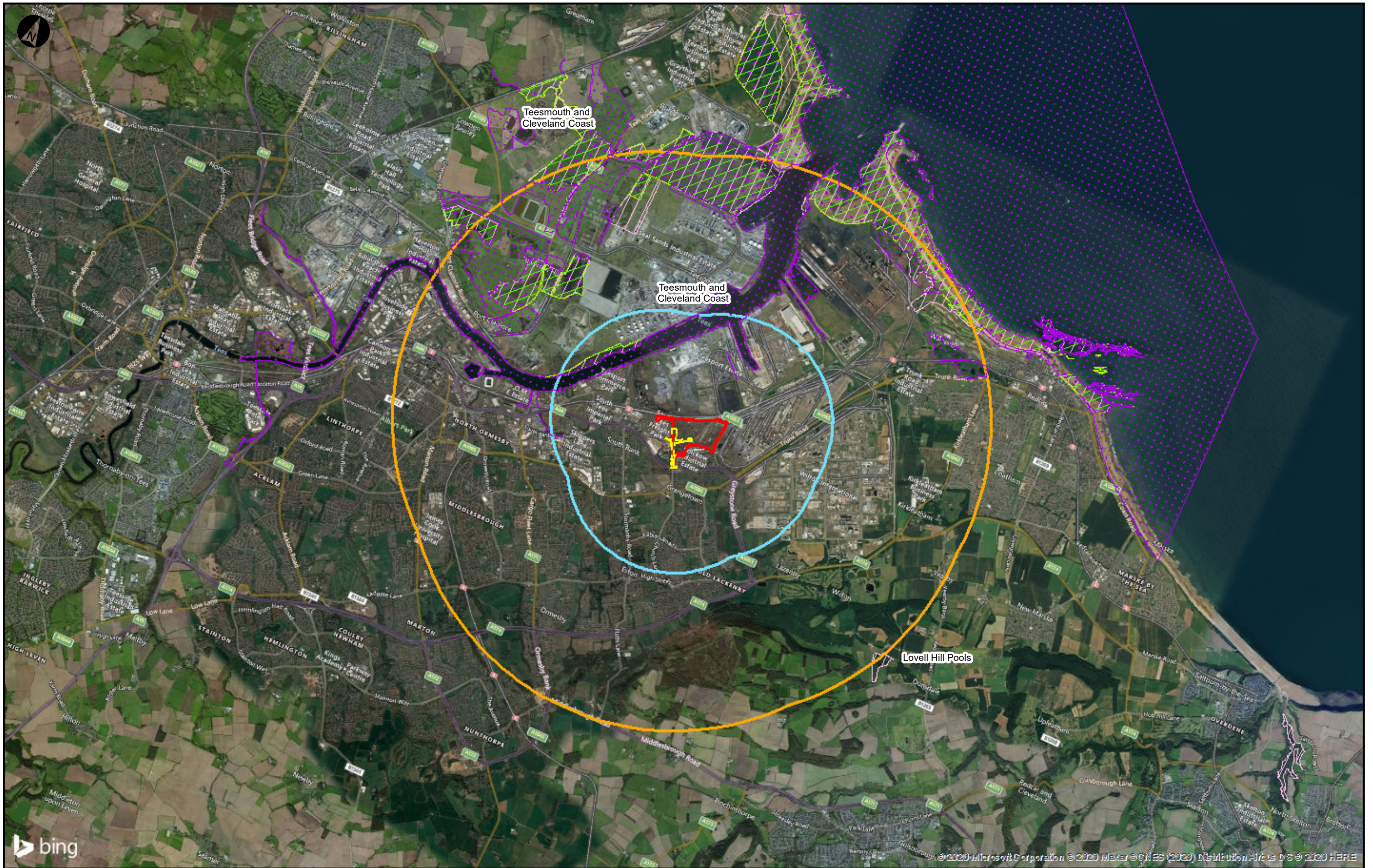
¹⁰ Northumbria River Basin District Management Plan (2015) Environment Agency.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/718333/Northumbria_RBD_Part_1_river_basin_management_plan.pdf Accessed: 18 May 20

¹¹ Priority Habitat Creation and Restoration (2020) Environment Agency <https://data.gov.uk/dataset/e0165747-8368-4ff7-a644-df9aeb27bb0b/priority-habitat-creation-and-restoration> Accessed 18 May 20

Appendix D

Designated Sites Map



- Legend**
- Proposed Development Site Red Line Boundary
 - Proposed Eston Road Highway Scheme Boundary
 - Special Protection Areas
 - Ramsar
 - Sites of Special Scientific Interest
 - 2km Buffer
 - 5km Buffer

Map Name Appendix D- Designated Sites within 2km and 5km	
Map Number -	Discipline Environment & Biodiversity
Contains OS data © Crown Copyright and database right (2020)	
Date: 23/06/2020	Scale at A3: 1:65,210

Grangeton Prairie Remediation

Redheugh House, Teesdale South, Thornaby Place,
 Stockton on Tees, TS17 6SG
 Tel +44 1642 356 590 | www.arup.com

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