Net Zero Teesside Project

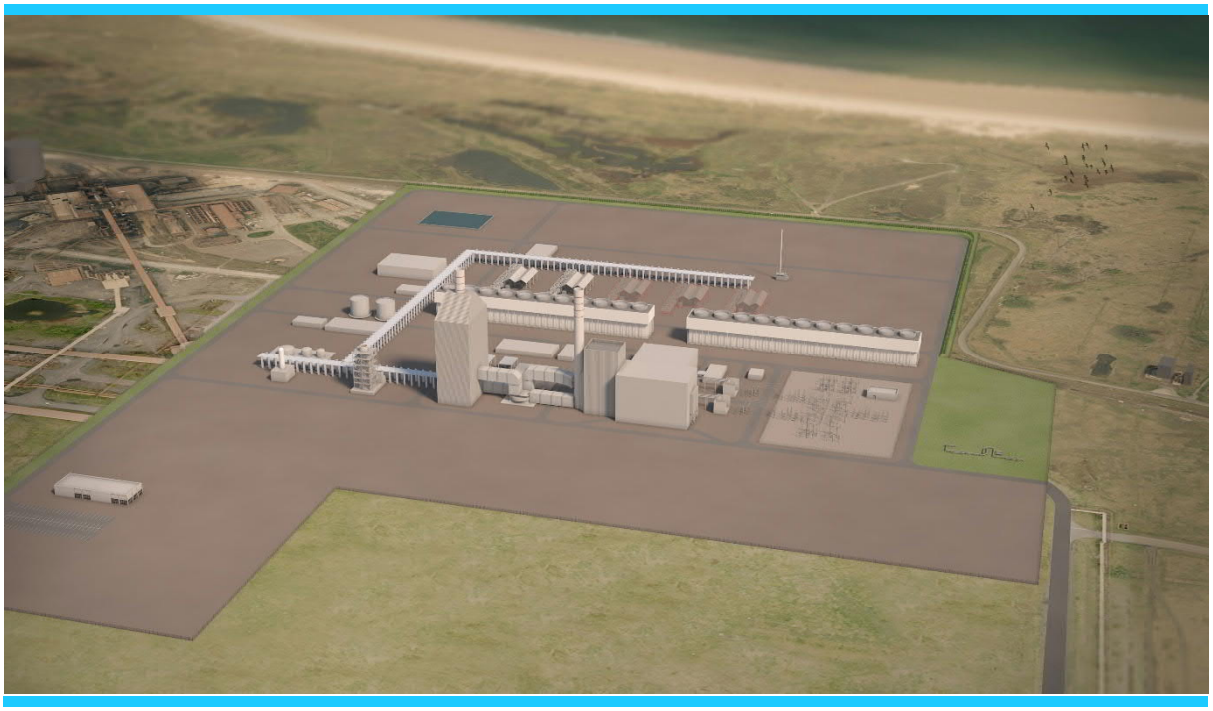
Planning Inspectorate Reference: EN010103

Land at and in the vicinity of the former Redcar Steel Works site, Redcar and in Stockton-on-Tees, Teesside

The Net Zero Teesside Order

Document Reference: 5.12 Indicative Landscape and Biodiversity Strategy

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 – Regulation 5(2)(q)



Applicants: Net Zero Teesside Power Limited (NZT Power Ltd) & Net Zero North Sea Storage Limited (NZNS Storage Ltd)

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GLOSSARY

Abbreviation	Description
AGI	Above Ground Installation
AOD	Above Ordnance Datum
CCUS	Carbon Capture, Usage and Storage
CEMP	Construction Environmental Management Plan
CO_2	Carbon Dioxide
DCO	Development Consent Order
EPC	Engineering, Procurement and Construction
ES	Environmental Statement
Ha	Hectares
HDD	Horizontal Directional Drilling
MLWS	Mean Low Water Springs
MOC	Minimum Offtake Connection
MW	Megawatt: the measure of power produced.
NGG	National Grid Gas
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
NZNS Storage	Net Zero North Sea Storage Limited
NZT	Net Zero Teesside Project
NZT Power	Net Zero Teesside Power Limited
PA 2008	Planning Act 2008
PCC	Power, Capture and Compressor Site
PIG	Pipeline Inline Gauging
SoS	Secretary of State
STDC	South Tees Development Corporation

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1.0 INTRODUCTION

1.1 Overview

1.1.1 This Indicative Landscape and Biodiversity Strategy (Document Ref. 5.12) (hereafter 'the Strategy') has been prepared on behalf of Net Zero Teesside Power Limited and Net Zero North Sea Storage Limited (the 'Applicants'). It forms part of the application (the 'Application') for a Development Consent Order (a 'DCO'), that has been submitted to the Secretary of State (the 'SoS') for Business, Energy and Industrial Strategy, under section 37 of 'The Planning Act 2008' (the 'PA 2008').

1.1.2 The Applicants are seeking development consent for the construction, operation and maintenance of the Net Zero Teesside Project ('NZT'), including associated development (together the 'Proposed Development') on land at and in the vicinity of the former Redcar Steel Works site, Redcar and in Stockton-on-Tees, on Teesside (the 'Site'). The former Steel Works site, along with other land required for the Proposed Development, lies within the boundary of the land controlled by the South Tees Development Corporation ('STDC'), which is now known as 'Teesworks'.

1.1.3 A DCO is required for the Proposed Development as it falls within the definition and thresholds for a 'Nationally Significant Infrastructure Project' (a 'NSIP') under Sections 14(1)(a) and 15 of the PA 2008, associated development under Section 115(1)(b) and by direction under Sections 35(1) and 35ZA of the same Act. The DCO, if made by the SoS, would be known as the 'Net Zero Teesside Order' (the 'Order').

1.1.4 The Proposed Development will be the UK's first commercial scale, full chain Carbon Capture, Usage and Storage project and will initially capture up to 4 million tonnes (Mt) of carbon dioxide (CO_2) emissions per annum. It will comprise a number of elements, including a new gas-fired Electricity Generating Station with post-combustion carbon capture plant; gas, water and electricity connections (for the generating station); a CO_2 pipeline network (a 'gathering network') for collecting CO_2 from a cluster of local industries on Teesside; a CO_2 compressor station (for the compression of the CO_2) and a CO_2 export pipeline.

1.1.5 The CO_2 captured from the Electricity Generating Station and local industries will be compressed and then transported (via the export pipeline) for secure storage within the Endurance saline aquifer located 145 kilometres offshore from Teesside under the North Sea. The export pipeline has the capacity to carry up to 10Mt of CO_2 per annum. The Proposed Development will therefore make a significant contribution toward the UK reaching its greenhouse gas emissions target by 2050.

1.2 The Applicants

1.2.1 NZT encompasses proposals to both decarbonise electricity generation and a cluster of carbon intensive industries on Teesside. In line with the CCUS business models published by BEIS in December 2020, there will be separate entities who will be responsible for:

- electricity generation with post-combustion carbon capture (including the gas, water and electricity connections);

- CO_2 gathering (from industrial emitters), CO_2 compression and CO_2 export and storage; and
- industrial (including hydrogen production) carbon capture and connections to the CO_2 gathering network.

1.2.2 The entities are set out in Table 1.1 below:

Table 1.1: NZT Entities

Onshore works scope	Partnership	NZT Entity	Within the scope of the DCO Application?
Electricity Generating Station with post-combustion carbon capture (including the gas, water and electricity connections)	bp*, Eni, Equinor and Total	Net Zero Teesside Power Limited	Yes
CO_2 gathering network, CO_2 compression and the onshore section of CO_2 export pipeline	bp*, Eni, Equinor, National Grid, Shell and Total	Net Zero North Sea Storage Limited	Yes
Industrial and hydrogen production carbon capture and connection to the CO_2 gathering network	Individual industrial emitters	N/A	No

*Operator on behalf of the relevant Partnership

1.2.3 NZT is being promoted by Net Zero Teesside Power Limited ('NZT Power') and Net Zero North Sea Storage Limited ('NZNS Storage'). NZT Power and NZNS Storage (together the Applicants for the purposes of the DCO Application) have been incorporated on behalf of bp as operator of the two Partnerships.

1.2.4 The electricity generation with post-combustion carbon capture Partnership comprises bp, Eni, Equinor and Total, with bp leading as operator. NZT Power will be

responsible for the Proposed Development in so far as it relates to the construction, operation and eventual decommissioning of the Electricity Generating Station together with its carbon capture plant (both within the scope of the DCO Application).

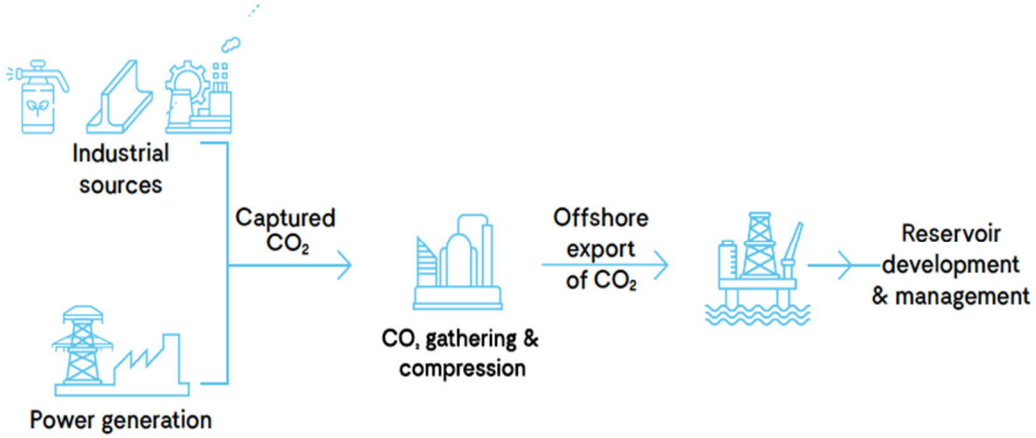
1.2.5 The CO_2 gathering network, CO_2 compression and onshore section of CO_2 export pipeline Partnership comprises bp, Eni, Equinor, National Grid, Shell and Total, with bp leading as operator. NZNS Storage will be responsible for the Proposed Development in so far as it relates to the construction, operation and eventual decommissioning of the equipment required for the high-pressure compression of CO_2 from the electricity generating station and industrial emitters via the CO_2 gathering network and the onshore section of the CO_2 export pipeline (these are all within the scope of the DCO Application).

1.2.6 NZNS Storage will also be responsible for the offshore elements of NZT, comprising the offshore section of the CO_2 export pipeline (below Mean Low Water Springs ('MLWS')) to a suitable offshore geological CO_2 storage site under the North Sea, CO_2 injection wells and associated infrastructure. The offshore elements of NZT (with the exception of the gas and CO_2 pipeline crossings of the River Tees and the water outfall from the Electricity Generating Station) do not form part of the DCO Application.

1.3 What is Carbon Capture, Usage and Storage?

1.3.1 Carbon Capture, Usage and Storage ('CCUS') is a process that removes CO_2 emissions at source, for example emissions from an Electricity Generating Station or industrial installation, and then compresses the CO_2 so that it can be safely transported to secure underground storage sites. It is then injected into layer of solid rock filled with interconnected pores where the CO_2 becomes trapped and locked in place, preventing it from being released into the atmosphere. Figure 1.1 below shows what is involved in the process.

Figure 1.1: CCUS Process



1.3.2 The technologies used in CCUS are proven and have been used safely across the World for many years. Storage sites are located several kilometres underground and are subject to stringent tests to ensure that they are geologically suitable. In the UK,

it is expected that the storage sites will be located offshore, in areas such as the North Sea.

1.3.3 CCUS is one of a number of technologies that are crucial to reducing CO_2 emissions and combatting global warming. The UK Government has committed to achieving 'Net Zero' in terms of greenhouse gas emissions by 2050. This is a legally binding target.

1.4 The Site

1.4.1 The Site lies within the administrative boundaries of both Redcar and Cleveland Borough Council and Stockton-on-Tees Borough Council. It also partly lies within the boundary of the Teesworks area that is controlled by the STDC.

1.4.2 Most of the Site lies within the administrative area of Redcar and Cleveland Borough Council, although parts of Site (for the Electricity Generating Station's gas supply connection to the National Transmission System for gas and the CO_2 gathering network) cross the River Tees into the administrative area of Stockton-on-Tees Borough Council. At this location, the River Tees is tidal. In addition, there are elements of the Site which extend into South Gare, Coatham Sands and the North Sea. Those sections of the Site that are below MLWS are outside the jurisdiction of either local authority being part of the UK marine area.

1.4.3 The Site extends to approximately 462 hectares ('ha') in area. Much of it comprises previously developed (including part of the former Redcar Steel Works Site) and existing industrial land, some of which was reclaimed from the Tees Estuary in the late C19th and during the C20th. The Site is relatively flat and low-lying and sits at a level of between sea level and approximately 9 metres Above Ordnance Datum ('AOD'). The area surrounding the Site is largely characterised by industrial and commercial uses, although there are open areas of land to the north in the form of South Gare and Coatham Sands, which are used for recreational purposes and that are of nature conservation importance.

1.4.4 A more detailed description of the Site and its surroundings is provided at Chapter 3 'Description of the Existing Environment' in the Environmental Statement ('ES') Volume I (Document Ref. 6.2).

1.5 The Proposed Development

1.5.1 The Proposed Development will work by capturing CO_2 from the Electricity Generating Station in addition to a cluster of local industries on Teesside and transporting it via a CO_2 export pipeline to the Endurance saline aquifer under the North Sea. The Proposed Development will initially capture and transport up to 4Mt of CO_2 per annum, although the CO_2 export pipeline has the capacity to accommodate up to 10Mt of CO_2 per annum thereby allowing for future expansion.

1.5.2 The Proposed Development comprises the following elements:

- a combined cycle gas turbine ('CCGT') Electricity Generating Station with an electrical output of between 750 and 860 megawatts and post-combustion carbon capture plant;

- cooling water, gas and electricity grid connections and infrastructure for the Electricity Generating Station;
- a CO_2 gathering network (including connections under the tidal River Tees) to collect and transport the captured CO_2 from industrial emitters to a CO_2 compressor station (the industrial emitters using the gathering network will be responsible for consenting their own carbon capture plant and connections to the gathering network);
- a high-pressure CO_2 compressor station to receive and compress the captured CO_2 from the Electricity Generating Station and gathering network before it is transported offshore; and
- a dense phase CO_2 export pipeline for the onward transport of the captured and compressed CO_2 to the Endurance saline aquifer under the North Sea.

1.5.3 The Electricity Generating Station, its post-combustion carbon capture plant and the CO_2 compressor station will be located on part of the STDC Teesworks area (on part of the former Redcar Steel Works Site). The CO_2 export pipeline will also start in this location before heading offshore. The Electricity Generating Station connections and the CO_2 gathering network will require corridors of land within both Redcar and Stockton-on-Tees, including crossings beneath the River Tees.

1.5.4 All of the above elements are included in the scope of the DCO Application, with the exception of the CO_2 export pipeline, where only the onshore section of pipeline above MLWS is included. The CO_2 export pipeline below MLWS and the CO_2 storage site under the North Sea (the Endurance saline aquifer) will be the subject of separate consent applications, including under the Petroleum Act 1998 and the Energy Act 2008. These applications will be supported by an Offshore Environmental Statement.

1.5.5 The ancillary development required in connection with and subsidiary to the above elements of the Proposed Development is detailed in Schedule 1 of the draft DCO (Document Ref. 2.1). A more detailed description of the Proposed Development is provided at Schedule 1 'Authorised Development' of the draft DCO and Chapter 4 ‘The Proposed Development’ in ES Volume I (Document Ref. 6.2) and the areas within which each of the main elements of the Proposed Development are to be built are denoted by the coloured and hatched areas on the Works Plans (Document Ref. 4.4).

1.6 The Purpose and Structure of this Document

1.6.1 The purpose of this document is to present the indicative strategy for the proposed onshore landscaping and biodiversity offsetting and enhancement measures for the Proposed Development. The document is structured as follows:

- Section 2 – summarises relevant legislation and planning policy;
- Section 3 – describes the existing onshore biodiversity features and the potential impacts and effects of the Proposed Development;
- Section 4 – outlines the requirements for impact avoidance and habitat reinstatement, both during advance works and during the construction phase;

- Section 5 – describes the proposals for landscape and biodiversity enhancement and the measures required for their effective management and maintenance. The indicative areas of the Site to which the different proposals would be applied are illustrated in Figure 1; and; and
- Section 6 – describes the high-level approach to landscape and biodiversity monitoring of the success of the proposed habitat interventions; and
- Section 7 – describes the roles and responsibilities of all parties involved in the delivery of the enhancement and management proposals.

2.0 LEGISLATION AND PLANNING POLICY

2.1.1 The legislation and planning policy relevant to construction of the Proposed Development and the specification of biodiversity specific mitigation and enhancement is listed in this section. This legislation and planning policy have been considered when formulating this Plan. Appendix 12A (ES Volume III, Document Ref. 6.4) provides more details on this relevant legislation and planning policy.

2.2 Legislation

2.2.1 The following legislation has been considered in the preparation of this Strategy:

- The Conservation of Habitats and Species Regulations 2017 (as amended);
- Wildlife and Countryside Act 1981 (as amended);
- Countryside and Rights of Way Act 2000;
- Natural Environment and Rural Communities (NERC) Act 2006 (specifically the Section 41 list of priority habitats and species);
- Protection of Badgers Act 1992;
- Wild Mammals (Protection) Act 1996;
- Environmental Protection Act 1990; and
- Invasive Alien Species (Enforcement and Permitting) Order 2019.

2.3 Planning Policy

2.3.1 Relevant national planning policy that has been considered in relation to landscape and biodiversity impact avoidance, mitigation and enhancement is as follows:

- Overarching National Policy Statement (NPS) for Energy (EN-1);
- NPS for Fossil Fuel Electricity Generating Infrastructure (EN-2);
- NPS for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4); and
- National Planning Policy Framework (NPPF).

2.3.2 The local planning policies that are relevant to the Proposed Development are set out in the following documents:

- Redcar and Cleveland Local Plan Policy SD1: Sustainable Development;
- Redcar and Cleveland Local Plan Policy LS4: South Tees Spatial Strategy;
- Redcar and Cleveland Local Plan Policy N2: Green Infrastructure;
- Redcar and Cleveland Local Plan Policy N4: Biodiversity & Geological Conservation;
- Redcar and Cleveland South Tees Area Supplementary Planning Document (SPD) Development Principle STDC7;
- Stockton-on-Tees Local Plan Policy ENV5: Preserve, Protect and Enhance Ecological Networks, Biodiversity and Geodiversity; and

- Stockton-on-Tees Local Plan Policy ENV6: Green Infrastructure, Open Space, Green Wedges and Agricultural Land.

2.4 Other Guidance

2.4.1 Other guidance that is relevant context includes:

- Natural England, Forestry Commission and Defra Standing Advice on protected sites and species;
- The National Pollinator Strategy;
- Stockton-on-Tees Supplementary Planning Document 1: Sustainable Design Guide;
- Tees Valley Green Infrastructure Strategy;
- Redcar and Cleveland's Green Space Strategy 2006-2016;
- Priority Habitats and Species in the Tees Valley (the Tees Valley Local Biodiversity Action Plan (BAP)); and
- Buglife B-Lines Northern England.

3.0 EXISTING LANDSCAPE AND BIODIVERSITY FEATURES AND DEVELOPMENT IMPACTS

3.1 Existing Landscape and Biodiversity Features

Habitats

3.1.1 The onshore habitats of relevance to the Proposed Development, all of which are terrestrial, are summarised below based on the information presented in Appendices 12C and 12H of the ES (ES Volume III, Document Ref. 6.4). The relevant habitats are those that would be affected by permanent or temporary land-take, and those that it is proposed would be enhanced during reinstatement for landscape and biodiversity. This document refers mainly to the PCC Site, as the location where permanent habitat losses will occur and as the land where long-term habitat management will remain within the permanent control of the Applicants.

3.1.2 The proposed PCC Site covers an area of approximately 42.5 ha and is located within the boundary of the Teesworks site. This land comprises areas of hardstanding and derelict buildings (which will be demolished by Teesworks prior to the Applicants taking ownership of the Site), localised areas of previously disturbed ground supporting ruderal vegetation and 17 ha of unmanaged secondary and relatively species-poor semi-improved grassland. It is assumed that all existing vegetation would need to be cleared to permit construction of the PCC Site.

3.1.3 Of additional relevance to the PCC Site and this Strategy are the sand dune and Open Mosaic Habitat of Previously Development Land, of national and regional nature conservation value respectively, located immediately north of the PCC Site within Teesmouth and Cleveland Coast Site of Special Scientific Interest (SSSI). The habitats within the SSSI will not be adversely affected by construction or operation of the Proposed Development (see Chapter 12 Terrestrial Ecology, ES Volume 1, Document Ref. 6.2) but there is potential for the measures set out in this Landscaping and Biodiversity Strategy to complement the biodiversity interest of the SSSI.

3.1.4 The above habitats within the PCC Site and the SSSI are located adjacent to a Green Wedge identified in the Redcar and Cleveland Local Plan, and within a 'B-Line' defined by Buglife (the non-governmental nature conservation charity) as a strategically important corridor of high-quality wildflower-rich habitat for pollinating insects. As set out later in this document, the habitat enhancement proposals for the PCC Site detailed within this Strategy take account of, and seek to complement and bolster, these strategic habitat corridors.

3.1.5 In addition to the permanent habitat losses within the PCC Site, the following habitats across the wider Site may be affected (pending final confirmation of the land required for construction corridors and temporary laydown) by temporary land take during installation of pipelines and utility connections, and for use as temporary construction laydown as shown on the Works Plans (Document Ref. 4.4):

- up to 12.2 ha of unmanaged species-poor secondary semi-improved grassland and up to 1.7 ha of scrub of planted origin within the land required for the temporary Teesworks Construction and Laydown area;

- up to 1.4 ha of species-poor semi-improved grassland within the land required for the Saltholme Laydown and Access area;
- up to 9.7 ha of species-poor semi-improved grassland within the land required for the Navigator Terminal Construction and Laydown area;
- up to 3.1 ha of species-poor agricultural grassland within the land required for the Haverton Hill Construction and Laydown area;
- up to 5 ha of OMH in succession towards closed sward grassland and scrub along the Natural Gas Connection Corridor at Seal Sands; and
- other improved and poor semi-improved grassland associated with localised and small-scale areas of land required for installation of buried infrastructure within the Natural Gas Connection Corridor, CO_2 Gathering Network, the Below Ground Pipeline from Bran Sands WwTW, and the Electrical Connection to Tod Point Sub-station.

Protected and Notable Species

3.1.6 The protected species of relevance to this Strategy, because of their presence in the potential zone of influence of construction activities and their legal status, are:

- bats;
- common lizard;
- barn owl; and
- nesting birds (including ground nesting species).

3.1.7 In addition, the Proposed Development Site contains giant hogweed, an invasive non-native plant species (also known as a 'controlled weed'). The distribution and relevance of giant hogweed and other invasive non-native plant species will need to be reconfirmed prior to vegetation clearance and construction.

4.0 PROTECTED AND INVASIVE SPECIES IMPACT AVOIDANCE REQUIREMENTS

4.1 Overview

4.1.1 The impact avoidance measures outlined below (Section 4.2 onwards) would be implemented, as relevant and appropriate, prior to and during the construction phase, to meet legislative requirements for protected species, or as part of standard construction environmental best practice. Consequently, the related requirements of planning policy are also met fully.

4.1.2 The commitment to provide these measures has been considered when assessing the likely impacts and effects of the Proposed Development on biodiversity features in Chapter 12: Terrestrial Ecology (ES Volume I, Document Ref. 6.2).

4.1.3 Avoidance and mitigation of potential impacts on the environment through, for example, noise, vibration or emissions to air or water associated with the construction and operation of the Proposed Development are not covered within this Plan. While such impacts could affect biodiversity, these effects are being appropriately controlled and mitigated through the design work that has been undertaken and the related Framework Construction Environmental Management Plan (CEMP), as presented in the Environmental Statement that accompanies the DCO application. In addition, there are other permitting, good practice, legislative, policy and regulatory mechanisms that provide the control and prevention of such impacts. The relevant measures are therefore prescribed in other chapters of the ES (ES Volume I, Document Ref. 6.2) and are not included within this Strategy.

4.1.4 It is anticipated that the Applicants will inherit a PCC Site cleared of all existing structures and buildings by the existing landowner (STDC), and that there may also be some vegetation clearance to facilitate these works. The responsibility for undertaking relevant protected and invasive species surveys to comply with relevant legislation, planning commitments and permits prior to site clearance will only rest with the Applicant if these works have not been completed prior to handover of the PCC Site to the Applicant (as has been assumed for the purposes of the DCO).

4.1.5 Where the above works within the PCC Site fall to the Applicant to undertake, and as otherwise relevant elsewhere within the Site, the following approach will be taken.

4.2 Protected and Invasive Species Update Surveys

4.2.1 Appropriately experienced ecologists would complete Site walkovers in advance of mobilisation or other potential advance works to re-confirm the ecological baseline conditions and identify any new ecological risks. Updated species surveys would also be undertaken to determine the status of protected and invasive non-native species identified as present or potentially present at the Site to inform mitigation requirements and support (if relevant later) protected species licence applications. These updated surveys would be completed sufficiently far in advance of construction works to account for seasonality constraints and to allow time for the implementation of any necessary mitigation prior to construction.

4.2.2 Existing or potential biodiversity constraints to be re-assessed during update surveys are as follows:

- bats – update surveys of buildings requiring demolition, where these works have not been completed by the existing landowner (STDC);
- barn owl - update surveys of buildings requiring demolition, where these works have not been completed by the existing landowner (STDC);
- breeding birds – nest checks of vegetation to be cleared, where necessary;
- badger – updated survey to re-confirm the baseline (i.e. ongoing absence of badger setts);
- water vole – update surveys where works on the banks of watercourses cannot be avoided;
- common lizard – precautionary working methods to address residual risks; and
- invasive non-native species – updated survey to re-confirm the locations of species that may be disturbed during construction.

4.2.3 Should any new protected or invasive species constraints be identified as a result of the updated surveys, the Landscaping and Biodiversity Strategy would be updated to address these constraints. Any requirement for additional impact avoidance or mitigation would be discussed and agreed with Redcar and Cleveland Council or Stockton-on-Tees Borough Council (depending on location) and/ or the relevant statutory consultees, except where this would otherwise be addressed through the process for obtaining any necessary protected species licences. Implementation of these measures is proposed to be secured by a Requirement of the draft DCO (Document Ref. 2.1).

4.2.4 Any additional surveys would be instructed during the advance works, site clearance and construction phases as identified as necessary by the ecologist or landscape architect, or otherwise as identified and requested by the Applicants or their contractors when implementing the approved Final Construction Environmental Management Plan (CEMP) and other relevant approved plans and permits. These may be required, for example, based on the construction programme, working requirements or following identification of specific issues and constraints not covered by previous advice.

4.3 Protected Species Licences

4.3.1 Given the results of the baseline biodiversity surveys (see Chapters 12 to 15, ES Volume I, Document Ref. 6.2, and associated Appendices, ES Volume III, Document Ref. 6.4), no requirement for protected species licences is currently identified. However, this position could change if the pre-commencement surveys (see Section 4.2) identify new protected species constraints.

4.3.2 Should licences be required, it is recognised that this could (a) impose restrictions on the timing of construction activities and (b) dictate lead-in times for agreement and completion of pre-construction mitigation. This will therefore be addressed in the final construction programme based on the findings of the updated surveys.

4.4 Clerk of Works

4.4.1 Requirements for Clerk of Works (CoW) would be advised by the ecologist and landscape architect based on relevant environmental commitments, the findings of the updated surveys, the requirements of protected species, and with reference to the relevant project programmes.

4.4.2 Immediately prior to site clearance and the start of construction in each relevant part of the Site, further site walkover surveys would be undertaken by an ecologist to confirm that the risks associated with the Site remain as previously assessed and/or to confirm the correct implementation of impact avoidance measures (e.g. protected species stand-offs and other protection measures).

4.4.3 The scope of the required walkover surveys would be defined on a case by case basis, in consultation with the project team, Redcar and Cleveland Council or Stockton-on-Tees Borough Council, STDC and/or other statutory consultees as necessary, based on the specific risks associated with each relevant part of the Proposed Development and the findings of any preceding updated surveys as detailed above in Section 4.2. Pre-construction surveys would be undertaken in accordance with the relevant DCO Requirements (see Document Ref. 2.1).

4.4.4 Relevant site staff would receive toolbox talks as necessary on the relevant ecological risks present, legal requirements, working requirements necessary to comply with this legislation, and the final approved landscaping and biodiversity management and enhancement measures. Toolbox talks would be repeated as necessary over the duration of the works.

4.5 Precautionary Protected and Invasive Species Working Methods

4.5.1 The following precautionary working methods would be employed prior to and during construction to minimise potential adverse effects on protected/notable species, or adverse effects arising from the presence of invasive non-native species.

4.5.2 Precautionary working method statements would be produced as necessary to specify working requirements and other necessary impact avoidance measures. These measures would be controlled and implemented through the Final CEMP that would be developed by the contractors. This is proposed to be secured by a Requirement of the draft DCO (Document Ref. 2.1). A Framework CEMP is provided as ES Appendix 5A (ES Volume III, Document Ref. 6.4).

4.5.3 The measures set out below for individual species will be implemented in a manner that avoids conflicts with requirements for other relevant species that may occupy the same habitats. As an example, nesting bird mitigation will be implemented in a manner that is consistent with the mitigation required for common lizard.

4.5.4 An appropriately qualified ecologist will act as CoW and will review and advise on precautionary working methods location by location and will supervise implementation of the required measures.

Nesting Birds

4.5.5 The following approach would be taken to deliver legislative compliance in relation to nesting birds:

- all clearance of vegetation and (if relevant) buildings will be undertaken outside the breeding season (typically March-August inclusive for most species), where possible;
- where there would be a gap in activity between site clearance and the start of construction, then visual disturbance or physical site disturbance measures (e.g. regular harrowing to maintain cleared ground in a disturbed state) to dissuade ground nesting birds (including Schedule 1 bird species such as little ringed plover) from establishing in the lead in to construction;
- if the above pre-emptive measures do not dissuade bird species from attempting to nest then the relevant works will stop and will not recommence until appropriate mitigation has been agreed with the CoW and (if appropriate) Natural England or the relevant planning authority. In the case of Schedule 1 bird species (such as barn owl and little ringed plover), a licence may also be required before works can continue;
- in relation to barn owl (where demolition is required), all buildings will be demolished immediately after barn owl (and bats) has been confirmed to be absent or, if immediate demolition is not possible, the relevant buildings will be thoroughly sealed (through use of boarding, expanding foam or other measures) to prevent access by barn owl prior to demolition;
- all losses of regular barn owl roosting site, or nest sites (if present at the time of construction) will be compensated through provision of appropriately sited barn owl boxes prior to loss of the existing roost/nest sites;
- site inductions and toolbox talks would be provided to contractors as appropriate; and
- in situations where the above breeding bird mitigation is not possible, the CoW would check the working area for nests before works commence. If active nests are discovered through this process, then the CoW will advise on appropriate mitigation to ensure that these are not impacted by construction activities. All relevant works would be completed in accordance with this advice and under the supervision of a CoW.

4.5.6 Based on current data it is assumed that there will be a need to compensate for the loss of one barn owl nest/roost site (see Chapter 15: Ornithology, ES Volume I, Document Ref. 6.2). Two replacement feature will be provided in advance of the loss of the existing nest/roost site. Additional provision is also proposed, see Section 5 of this Strategy.

Common Lizard

4.5.7 The following general precautionary measures will be provided to address the low residual risk of common lizard being present at the time of site clearance:

- a tool box talk would be given to clarify the legal protections afforded and to reinforce the role of the Ecological Clerk of Works in leading on the measures required to deliver compliance with the relevant legislation;
- arisings from vegetation clearance and construction material will not be stored in a manner that might risk them being used as a place of refuge by common lizard. The ecologist will confirm requirements for risk avoidance once working areas are defined;
- construction working areas will be appraised by the ecologist for their potential to support common lizard and working requirements advised case by case;
- vegetation disturbance and removal will be undertaken from mid-April to October to coincide with the period when common lizard is likely to be active and able to disperse away from works areas;
- removal of areas of suitable dense vegetation will involve incremental strimming to allow opportunity to find and displace/capture any common lizards present;
- any common lizards found within construction areas will be removed by an ecologist to a nearby place of safety outside construction areas. The ecologist will attend site prepared for the potential for these species to occur, and will have a suitable means to transport any reptiles found (e.g. bucket with sealable lid); and
- a record will be kept on the numbers and locations of reptiles found during the restoration works.

Invasive Non-native Plant Species

4.5.8 An updated terrestrial plant INNS survey will be completed prior to site clearance to determine the current location and extent of these INNS within the land required for construction.

4.5.9 An Invasive Species Management Plan (ISMP) will be prepared to address all relevant INNS (terrestrial, freshwater and marine) to accompany the final CEMP and would be agreed with relevant stakeholders. The ISMP will specify the control/eradication (as reasonable and practicable) measures, biosecurity measures and supervision necessary during construction to prevent the spread of plant and animal INNS to new locations. It is proposed that submission and approval of the ISMP will be secured by a Requirement of the draft DCO.

4.5.10 All INNS arisings will be disposed of in accordance with requirements set out in the ISMP. The default disposal approach will be transport to an authorised landfill via a registered waste carrier.

4.5.11 Biosecurity requirements will address all potential pathways for interaction with and dispersal of INNS, including movements of vehicles, machinery and staff:

- into the Proposed Development Site from third party locations, e.g. during construction mobilisation;
- between different locations within the Proposed Development Site, most especially movements between different watercourses; and

- from the Proposed Development Site for redeployment elsewhere.

Animal Welfare Requirements

4.5.12 Vegetation clearance and construction excavations have potential to affect wildlife and may result in offences under animal welfare legislation. An appropriately experienced CoW would be employed to supervise all relevant works to provide guidance on the measures required day-to-day to deliver legislative compliance.

4.5.13 All excavations would be covered overnight, or where this is not practicable, a means of escape would be fitted e.g. battered soil slope or scaffold plank, to provide an escape route should any animals (e.g. badger, brown hare, hedgehog) stray into the construction site and fall into an excavation.

4.6 Tree Works

4.6.1 The configuration of the Proposed Development avoids the need for the removal of mature trees. Some pruning of mature trees may be required along the proposed connection corridors, but it is unlikely that any mature trees would need to be felled in this area. No other mature trees are located within the Site.

4.6.2 An arboricultural survey in line with BS5837:2012 would be undertaken concurrently with the detailed design, to identify where trees are likely to be affected by the construction works and to inform the development of the detailed design and specification of tree root protection zones.

4.6.3 Where works in close proximity to retained trees cannot be practicably avoided, these works would be undertaken in accordance with current best practice. At the time of issue of this Landscaping and Biodiversity Management and Enhancement Plan, current best practice is defined in:

- British Standard (BS) 5837: 2012 Trees in relation to design, demolition, and construction – Recommendations; and
- National Joint Utilities Group (NJUG) Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees.

4.6.4 All necessary protective fencing would be installed prior to the commencement of any site clearance or construction works, as set out in the Arboricultural Report produced following the detailed pre-construction tree surveys and to be detailed as part of the Arboricultural Method Statement.

4.7 Lighting

4.7.1 Construction temporary lighting would be arranged so that glare is minimised outside the Site as far as reasonably practicable. Measures to minimise the impact of lighting are detailed in the Indicative Lighting Strategy (Document Ref. 5.11) and Framework CEMP (ES Appendix 5A, ES Volume III, Document Ref. 6.4).

4.8 Habitat Reinstatement

4.8.1 Habitats that would be temporarily lost or damaged during construction, mainly comprising species-poor grassland, would be reinstated on a like-for-like basis in

accordance with the requirements of the relevant landowner (see Chapter 5: Construction Programme and Management (ES Volume I, Document Ref 6.2).

4.8.2 Associated requirements for protection of retained vegetation e.g. during vehicle movements and construction/re-instatement works, soil protection and handling, and temporary soil storage are beyond the scope of this Strategy and will be specified in the final CEMP prepared by the relevant contractors. These specifications will reflect current industry good practice and will be location specific.

4.8.3 The broad approach for reinstatement (where required) of each relevant habitat type is set out below.

Grassland

4.8.4 Where grassland needs to be reinstated prior to return of temporary construction laydown areas and construction corridors to the relevant landowners then this will be re-instated in a manner consistent with the existing species-poor baseline condition.

4.8.5 After construction, all hardstanding and materials would be removed, soils would be reinstated and prepared for sowing, and then a suitable grassland seed mixture will be sown. Specifically, and unless required otherwise by the relevant landowner:

- all agricultural pasture will be re-sown with a basic agricultural grass seed mixture and grass-dominated regularly mown road verges will be sown with a low maintenance grass seed mixture;
- all other grasslands will be re-sown with a wildflower mixture comparable to the Emorsgate 'EM2 Standard General Purpose Meadow Mixture' (as summarised in Appendix 1); and
- small-scale disturbances of grassland occurring in matrix with ephemeral plant communities and/or OMH will not be re-sown unless this is required by the landowner. Instead the re-establishment of vegetation will be left to natural processes to secure biodiversity opportunities (e.g. for notable butterflies and other invertebrates) associated with early succession vegetation.

4.8.6 Where grassland is sown, sufficient aftercare will be provided to establish a closed grassland sward, or otherwise as agreed with the landowner. After this period, responsibility for management of these grasslands would return to the landowner.

Open Mosaic Habitat

4.8.7 No reinstatement of OMH is proposed. Instead, the re-establishment of vegetation will be left to natural processes. This approach is consistent with the mechanism by which the OMH and its associated biodiversity value originally established. It is considered that the benefits arising from construction disturbance, specifically the resetting of vegetation succession back to an earlier stage, outweighs any effect on biodiversity at the local scale (see Chapter 12, ES Volume I, Document Ref 6.2).

Scrub

4.8.8 Small-scale reductions in scrub cover are not considered adverse for biodiversity and potentially could prove beneficial as it would reset vegetation to an earlier successional state e.g. grassland or OMH. Given this, no re-planting of scrub is proposed unless required by the landowner. The exception to this is the proposed PCC Site where plantings of scrub will be provided to compensate for a preceding loss of scrub within the Teesworks temporary construction laydown area. The final approach will also be reviewed and revised in the final Strategy if the final construction requirements cannot avoid encroachment into larger stands of scrub.

4.8.9 Where re-planting is required then the specification for the new planting will be consistent with the extent and composition of the area of scrub removed (as described in Chapter 12, ES Volume I, Document Ref 6.2 and its appendices). Aftercare would be provided for five years or as otherwise agreed with the landowner.

5.0 LANDSCAPE AND BIODIVERSITY ENHANCEMENT

5.1 Approach to Landscape and Biodiversity Enhancement

5.1.1 To engage with planning policy on no net loss and net gain, use has been made of the calculator tool and metric published by Natural England for this purpose (Natural England, 2019). Use of this calculator, and indeed demonstration and quantification of attainment of a minimum threshold of biodiversity gain, is not otherwise a formal requirement for DCO applications. Instead all that is required is that the Applicant demonstrate how the Proposed Development has '*taken advantage of opportunities to conserve and enhance biodiversity*' (paragraph 5.3.4, Department of Energy and Climate Change, 2011a). Adoption of the calculator tool and metric is therefore provided on a voluntary basis in support of this.

5.1.2 The proposed enhancement measures will be provided within the PCC Site on land within the long-term management control of the Applicants. It will therefore be provided at the location affected by substantive permanent land take for the Proposed Development.

5.1.3 The layout of the PCC Site requires and therefore includes allowance for undeveloped stand-offs and buffers for the purposes of safe operation, including consideration of worst-case safeguarding needs. These essential areas of undevelopable land result in a cohesive network of land that can be used for habitat creation as described in this Indicative Strategy.

5.1.4 The frame of reference for the proposed approach is defined by the existing baseline of post-industrial land and extensive relatively species-poor unmanaged secondary grassland, and proximity to high quality habitats and open landscape of the Teesmouth and Cleveland Coast SSSI. The proposed approach therefore allows for compensation of some of the original losses of sub-optimal grassland, and to 'put back better' by making use of the existing favourable ground conditions (nutrient-poor, free-draining and summer drought-stressed) to create flower-rich native grassland and favourably manage it thereafter. Tree planting is not proposed given the unfavourable coastal location, but scattered scrub will be provided within grassland areas to add structural diversity and enhance the biodiversity value of the grassland. The surface water drainage arrangement will also be used to secure additional complementary habitat for biodiversity.

5.1.5 The relevant habitats will be created in the first planting season after the completion of construction.

5.1.6 The indicative locations where the proposed enhancement measures will be provided are shown on Figure 1 (Areas 1 to 8) and make use of cohesive blocks and corridors of land within the PCC Site. The land identified is sufficient to demonstrate, using standardised repeatable methods (Natural England, 2019), a measurable gain for biodiversity in accordance with planning policy. It should be noted that the configuration and locations of the proposed enhancement measures within the PCC Site may differ in the final Strategy, as this will need to respond to the final design and layout. However, the final Strategy will, as a minimum, achieve a biodiversity gain consistent with the threshold and approach established in this Indicative

Strategy. The suitability of the final Strategy to achieve this commitment will be demonstrated in the final Strategy using comparable standardised methods.

5.1.7 The land allocated for enhancement is located within the non-statutory B-Line network developed by the nature conservation charity Buglife. The B-Line network has been conceived as a national series of '[pollinating] insect pathways' running through countryside and towns, along which the aspiration to restore and create a series of wildflower-rich habitat stepping stones to provide large areas of new habitat benefiting bees, butterflies and other wildlife. The enhancement proposals are supportive of the aspirations for this national habitat network which in turn enacts the objectives of the Government's National Pollinator Strategy.

5.1.8 The proposed approach is also supportive of wider planning policy and local biodiversity priorities as set out below in Table 5.1.

Table 5.1: Summary of how the Proposed Enhancements Respond to Relevant Planning Policy and Strategy

Policy/ strategy	Requirement	Biodiversity benefit achieved
Redcar and Cleveland Local Plan policy SD1	Improve environmental conditions in the area.	A large area of species-rich native grassland will be created consistent with objectives of the Tees Valley Local BAP. A gain for biodiversity is demonstrated.
Redcar and Cleveland Local Plan policy LS4	Protect European sites, and safeguard and improve sites of biodiversity interest particularly along the River Tees and the estuary and encourage integrated habitat creation and management.	Large area of new species-rich native grassland of composition to that within Teesmouth and Cleveland Coast SSSI. Configuration connects to and buffers the SSSI, complementing its biodiversity value. Proposed pond is likely to provide minor ancillary interest for the designated bird interest present in the area. Potential benefits for notable invertebrates and the integrity of their habitat resource.
Redcar and Cleveland Local Plan policy N2	Protect and enhance the green infrastructure network.	A large area of species-rich native grassland will be created immediately adjacent to a SSSI and a Green Wedge. Also provides habitat linkages and stepping stone towards other land of biodiversity value (including future aspirations under the South Tees Area masterplan).

Policy/ strategy	Requirement	Biodiversity benefit achieved
Redcar and Cleveland Local Plan policy N4	Protect and enhance the borough's biodiversity resources. Support will be given to high quality schemes that enhance nature conservation and management, preserve the character of the natural environment and maximise opportunities for biodiversity conservation, particularly in or adjacent to, Biodiversity Opportunity Areas.	The proposed species-rich native grassland will complement and contributes to the setting and existing biodiversity value of the South Tees Area and otherwise accord with local biodiversity objectives (see below). The proposed measures are located within and sympathetic to the Teesmouth Biodiversity Opportunity Area.
South Tees Area Supplementary Planning Document policy STDC7	The Council will support the delivery of a strategy for the regeneration which promotes the provision of green infrastructure, in accordance with Local Plan Policy. All proposals will be required to have regard to the forthcoming Teesworks Environment and Biodiversity Strategy and net environmental gains should be provided where appropriate and viable.	Achieved, as explained above.
National Pollinator Strategy	Improve the state of bees and other pollinating insects.	Directly addresses the outcome 'more, bigger, better, joined-up, diverse and high-quality flower-rich habitats' by

Policy/ strategy	Requirement	Biodiversity benefit achieved
		providing large areas of flower-rich grassland habitat juxtaposed with scattered scrub. Contributes to 'no further extinctions of known threatened pollinator species' by providing habitat suitable for locally notable species e.g. dingy skipper.
Tees Valley Green Infrastructure Strategy	Develop [by 2021] a network of green corridors and green spaces that creates and extends opportunities for enhancement of biodiversity.	Creates a large and cohesive area of new habitat directly linking to existing green infrastructure, Teesmouth and Cleveland Coast SSSI and a defined 'B-Line' for pollinators.
Redcar and Cleveland Green Space Strategy	Enhance biodiversity throughout the Borough.	A gain for biodiversity is demonstrated through the creation of priority habitats (see below).
NERC Act Section 41/ Tees Valley LBAP	Identifies habitats and species that are priorities for conservation action.	The aim is to provide flower-rich herb dominated grassland, so contributes to local targets for creation/restoration of the lowland meadows priority habitat. A pond suitable to provide a gain for biodiversity will also be provided. The proposed grassland would be suitable as habitat (as minimum) for the following priority species: - Barn owl - Bats (all species) - Brown hare - Common lizard - Common toad - Dingy skipper - Grayling - Grey partridge - Hedgehog - Linnet - Skylark - Small heath

5.2 Habitat Creation Principles Supporting Delivery of Biodiversity Enhancement

5.2.1 Where new native habitats are to be created, or new native planting undertaken, the following principles would apply:

- all seed mixes and planting stock would be ordered as early as reasonably practicable to ensure that supply can be met without risk of substitution;
- all seed mixes and planting stock would be sourced from a specialist producer of British native plants who can source-identify all stock (i.e. not a non-specialist nursery that buys in stock or an agricultural/general merchant that buys stock from diverse sources, including non-British sources);
- native shrubs would be sourced from a supplier which follows the Forestry Commission's Voluntary Identification Scheme for British Native Trees and Shrubs;
- grassland wildflower mixtures would be approved by the Department for Environment, Food and Rural Affairs (Defra) under the Seed (Registration, Licensing and Enforcement) (England) Regulations 2002 ; and
- terms of supply would include a condition that no part of the order shall be substituted with stock of alternative species or origin and that any change must be mutually agreed.

5.2.2 The above requirements would be incorporated into contractors specifications and contracts, as appropriate, to deliver genuinely native plantings in accordance with the biodiversity objectives of this Plan.

5.3 Wildflower Grassland Creation

5.3.1 The plots shown on Figure 1 will be sown to create species-rich wildflower grassland with a comparable botanical composition to species-rich grasslands located to the north of the PCC Site within Teesmouth and Cleveland Coast SSSI. This grassland will compensate for, and represent an improvement over, the loss of species-poor grassland at site clearance.

5.3.2 The proposed grassland seed mixture will be comparable to Emorsgate 'EM6 Meadow Mixture for Chalk and Limestone Soils' as this is composed of species already present within the wider Teesworks site and adjacent areas of Coatham Sands (see Appendix 1). Despite the name of the seed mixture most of the species listed can also be found of circum-neutral soils and are not dependent on chalk and limestone derived soils. Soil tests will be undertaken prior to the final specification of the grassland seed mixture.

5.3.3 It is intended that this seed mixture be used as a starter pack to provide an initial flower-rich grassland sward and rapid biodiversity gain (e.g. for invertebrates), while not negating potential for the further establishment of additional plant species from habitats located nearby e.g. through the natural dispersal of seeds from the species-rich grassland within Teesmouth and Cleveland Coast SSSI.

5.3.4 Given this objective, the seed mixture will be sown at a relatively low sowing rate of 2-4 g/m^2. This approach allows for an extended period of establishment that

prevents fast growing grasses from establishing before wildflowers have germinated. It will also provide space for additional wildflower species to seed in from sources on adjacent land.

5.3.5 Management, in the first year (potentially extending into Year 2, depending on the time of sowing and rate of establishment), will be in accordance with the aftercare regime recommended by the seed producer. This would involve:

- Periodic mowing in the first year after sowing to maintain a sward height of 40-60mm, removing all arisings for off-site disposal or in a pre-agreed location within the proposed PCC Site where this would not conflict with biodiversity objectives and habitat management;
- Spot treatment of perennial weeds such as broad-leaved dock (*Rumex obtusifolius*), creeping thistle (*Cirsium arvense*) and spear thistle (*Cirsium vulgare*) with an approved herbicide;
- Common ragwort (*Jacobaea vulgaris*), as an ecological beneficial plant species, will only be controlled if there is identified specific legal reason to do so. Otherwise it will be tolerated for its biodiversity value; and
- Review requirements for Year 2 at end of aftercare Year 1. Move into the long-term nature conservation management regime (see below) if appropriate.

5.3.6 After the aftercare period of management, the grassland will be maintained through a nature conservation regime for a minimum period of 30 years[1]. This regime will be specified in more detail in the final Strategy with reference to the final PCC layout but will allow for:

- mowing of plots on rotation so that in any one year there always remains areas of longer tussocky grassland suitable to provide foraging habitat for barn owl and other birds, and places of refuge for other wildlife, e.g. over-wintering invertebrates, when the remainder of the grassland is cut;
- mowing grassland to 50 mm height between late July and early September, with all arisings removed;
- a second cut, if required (not likely to be necessary given existing substrates but this will be determined later through monitoring) in April to reduce the vigour of the grassland and maximise flower production; and
- periodic control of scrub cover if it establishes greater than 10% total cover, and pernicious weeds such as creeping thistle, spear thistle and broad-leaved dock where these start to dominate to the exclusion of other flora.

[1] This minimum aftercare period is anticipated to become a legal requirement for all new development when the Environment Act comes into force. While this timeframe is not currently a legal requirement and is not likely to become so over the life of this Application, it has been advised by STDC that this period has been adopted within the Teesworks Environment and Biodiversity Strategy.

5.4 Native Scrub Creation

5.4.1 The proposed native scrub will be integral to the grassland habitat, rather than a discrete habitat. Allowance for small stands of scrub within grassland areas will result in a habitat matrix of more diverse structure and consequently of higher biodiversity value that open grassland in isolation. For example, inclusion of scrub will allow the site to support a greater diversity of bird species though provision of additional nesting sites, food resources and places of refuge. It will also enhance the habitat for the benefit of terrestrial invertebrates and bats. Inclusion of scattered scrub is also considered desirable on landscape and visual amenity grounds.

5.4.2 The planting mixture will comprise native flower and fruit-bearing species suitable to the location, as indicated by the existing baseline within the PCC Site and on adjacent land. Native species suitable to this location include:

- Sea buckthorn (*Hippophae rhamnoides*);
- Hawthorn (*Crataegus monogyna*);
- Dog-rose species (*Rosa canina* agg., *rubiginosa* and *sherardii*);
- Burnet rose (*Rosa spinossisima*);
- Holly (*Ilex aquifolium*); and
- Dogwood (*Cornus sanguinea* subsp. *sanguinea*).

5.4.3 The extent of scrub will not contribute more than 5% of the total grassland cover and will be located so as not to impede implementation of the specified grassland management regimes.

5.4.4 All scrub planting would be notch planted at 1.5 m and 2.5 m spacings and enclosed with post and mesh rabbit proof fencing.

5.4.5 All new scrub planting would be subject to the draft maintenance regimes described in Appendix 2, in which all plants found to be dead or dying within the initial five-year aftercare period would be replaced within the first available planting season. Following the completion of the initial five-year aftercare period all new planting plots will undergo an annual condition assessment and an appropriate programme of works developed to address changes in condition and site requirements. Such work may include; additional replacement planting, fence repair/ removal, pruning, coppicing, or thinning out of plots to encourage establishment.

5.4.6 Fencing would be removed in Year 5 unless there is a reason to retain these for longer e.g. slower establishment and evidence of damage from rabbits or deer.

5.5 Storm Water Attenuation Pond (Sustainable Urban Drainage System)

5.5.1 The indicative site layout includes an indicative location for a storm water attenuation pond. It is intended that the design of the pond will be agreed later as a Requirement of the DCO.

5.5.2 The pond could be designed so that it is also suitable for freshwater and/or wetland flora and fauna, although the biodiversity gains achieved from this would be low. It has therefore only been included as an option which could be used (as necessary and

practical later, during detailed design) to complement the main habitat enhancement approach as described above.

5.6 Other Ornamental Plantings

5.6.1 In addition to native habitat creation, amenity planting of native and non-native ornamental tree and shrub species may also be provided within the final design e.g. in association with car parks and reception areas. Any such additional planting will be described in the final Strategy which will be agreed as a Requirement of the DCO.

5.6.2 If specified later, such planting will aim to achieve a dual amenity and biodiversity function. The latter will be achieved through selection of species and characteristic of value to native fauna e.g. provision of fruit for birds or flowers for pollinating insects.

5.6.3 Ornamental tree and shrub species will also be chosen to avoid use of known or likely invasive plant species. For example, cotoneaster species (*Cotoneaster* spp.) would not be used due to the potential for dispersal of seeds into and invasion of the nearby sand dunes of Teesmouth and Cleveland Coast SSSI.

5.7 Barn Owl Boxes

5.7.1 Baseline surveys identified the presence of a barn owl territory in association with the PCC Site and adjacent land. To maximise the gain for this species from the creation of good quality new foraging habitat, suitable roosting and nesting sites will also be provided regardless of whether or not there is a need to mitigate for the loss of an existing nest/roost site (this is not certain to occur as a consequence of the Proposed Development).

5.7.2 Two pole or wall mounted barn owl boxes will be provided in accordance with the indicative specifications given in in Appendix 3. The specifications and locations of the towers will be confirmed in the final Strategy, but Figure 1 indicates potential suitable locations within Areas 2 and 8.

5.7.3 The barn owl boxes will be inspected annually in January/February to review any requirements for remedial action e.g. re-straightening and securing of leaning boxes (where pole-mounted), or replacement of boxes damaged by the weather or decay.

5.8 Comparison of Permanent Habitat Losses and Gains

5.8.1 The permanent losses of habitat within the proposed PCC Site are summarised in Appendix 4, along with details of the new habitats to be created post-construction within the same area. There are no other permanent habitat losses that need to be measured, as in other locations the land requirements are temporary e.g. for burying of pipelines and services or used for temporary construction laydown. This land would be reinstated in accordance with the requirements of the relevant landowners.

5.8.2 The data presented for the proposed PCC Site has been used as the basis for calculation of the balance of losses and gains of 'biodiversity units' within the proposed PCC Site using a standardised calculator published for this purpose (Natural England, 2019). This confirms and quantifies in a replicable manner the biodiversity gain that can be achieved within the proposed PCC Site and therefore provides

structured evidence to show how the Proposed Development will meet the requirement of current relevant planning policy for provision of biodiversity enhancement. It is considered that these details are sufficient to provide certainty that no net loss and indeed a net gain is achievable a biodiversity gain is achievable, but the calculator used to assess the proposed PCC Site is available on request to support this summary information.

5.8.3 The assessment of habitat losses and gains has been based on the provision of the identified habitat creation measures in all of the indicative Areas 1 to 8, as shown on Figure 1. Although, not all of this land would be required to achieve the stated gain (total area available = 20.57 ha, total land currently required = 18.99 ha). The location and extent of land for biodiversity enhancement is subject to ongoing review and will be confirmed in the final Strategy. However, the relative level of biodiversity gain to be provided would remain as committed in this Indicative Strategy.

5.8.4 A conservative approach has been used within the calculations to account for uncertainties regarding timeframes and impacts prior to the detailed design stage. The current assessment is therefore precautionary and there are a number of reasons why the land required to achieve the committed gain and its location within the PCC Site may change later. Specifically:

- The current assessment takes a worst-case position and assumes that all land within the PCC Site that has not been allocated for biodiversity enhancement would be permanently lost to buildings and hard landscaping. Clearly this is overly precautionary, but it is a necessary assumption until the final site layout is fixed;
- The current indicative layout for the proposed PCC Site retains space for ongoing iterative design, and therefore the land indicated for buildings and infrastructure is to some degree precautionary and could reduce later;
- The condition (a quality indicator) assigned to each of the baseline habitats currently present is that assignable to the best examples of that habitat present within the proposed PCC Site. No attempt is made to segregate habitats in the most optimal condition from comparable habitats of relatively lower condition. So, as example of this, all grasslands have been assumed to be of 'moderate' condition;
- Assumptions on the condition of future habitats also reflects what is realistically achievable. It also does not overstate the potential condition of features still subject to ongoing design. For example, the stormwater attenuation basin is assumed to achieve 'fairly poor' condition even though a higher condition is likely to be achievable later after consideration of the design options available;
- Realistic precautionary timeframes are adopted for the committed habitat creation i.e. no more than 10 years to achieve target condition of grassland

habitats[2]. This represents a typical management period when establishing new habitats. In reality, measurable biodiversity gains for wildlife can be expected by year 5 and before the final target habitat condition is reached. There is also good potential for the target condition to be reached earlier given the anticipated presence of optimal substrates for grassland creation (i.e. nutrient-poor and free-draining soils that have not been affected by agricultural enrichment); and

- No claims are made that the new habitats would represent priority habitats. Instead, the only aim is to achieve a genuine enhancement. So, for example, the existing secondary 'modified grasslands' with be replaced with habitat more typical of favourably managed semi-natural grasslands i.e. 'other neutral grassland'. The management regimes to achieve this are committed in the Strategy (see above), and the standard guidance (Natural England, 2019) advises that such habitat has a 'low difficulty of creation'. Given this it is reasonable to assume that the committed habitats can and will be delivered.

5.8.5 The additional species-specific interventions proposed for barn owl cannot be factored into the above assessment, but otherwise represent site-appropriate biodiversity enhancement.

[2] Note that this is the timeframe set within Biodiversity Metric 2.0 as the realistic period for creation of habitats of the target condition. This does not alter or remove the wider commitment to continue to manage habitats favourably for a minimum period of 30 years.

6.0 MONITORING

6.1.1 A landscape architect and an ecologist will undertake post-intervention habitat monitoring annually in June or July for a period of 10-years. This timeframe reflects the advised time period for the establishment of the committed grassland habitats of the target condition and is also considered appropriate to provide sufficient time to confirm a net gain for biodiversity. Long-term favourable management will continue after the cessation of monitoring, as already committed within this Indicative Strategy.

6.1.2 The monitoring approach will be provided with the final Strategy and will involve the following:

- Review of the establishment of seed mixtures and shrub planting, and review of any requirements for remedial actions e.g. replacement of failed stock or re-seeding, or identification and rectification of damage;
- Review of grassland structure and composition, and associated implications for the agreed management regimes;
- Review of any native or non-native weed issues requiring treatment, or requirements for scrub control where the cover exceeds 5% of the total grassland area; and
- Review of establishment of vegetation within the pond and any requirements for management e.g. periodic vegetation clearance.

6.1.3 The site manager or a delegated member of the staff team will be responsible for making a ground level check of the barn owl boxes in January or February each year and identifying any requirements for remedial action. Where remedial action is needed the advice of an ecologist will be sought first (due to the potential presence of a protected species – barn owl), and then the relevant faults will be rectified as agreed with the ecologist.

6.1.4 A brief monitoring report will be prepared in each year and provided to Redcar and Cleveland Council and the Teesworks Estate Management Company as a record of compliance.

7.0 ROLES AND RESPONSIBILITIES

7.1 The Applicants and/or the Appointed Main Contractors

7.1.1 The Applicants and/or appointed main contractors would be responsible for:

- ongoing liaison (as appropriate) with the Teesworks Estate Management Company;
- correct instruction of all parties contributing to delivery of the final approved Landscaping and Biodiversity Strategy (including but not restricted to the Applicants' staff and their appointed ecologists, landscape architects, landscape contractors, construction contractors and management organisations);
- compliance with the final approved Landscaping and Biodiversity Strategy, relevant legislation and any relevant planning commitments;
- keeping the appointed ecologist/ landscape architect/ arboriculturalist informed of work activities that require support and supervision, so that it is clear when attendance at Site is required;
- enacting/enforcing recommendations made by the ecologist/landscape architect/ arboriculturalist, or otherwise agreeing an appropriate alternative course of action, if it is subsequently determined that previous advice is not practicable or is out of date; and
- keeping a record of measures taken to deliver the requirements of the final Landscaping and Biodiversity Strategy, to provide an auditable record of compliance.

7.2 The Appointed Ecologist

7.2.1 The appointed ecologist would be responsible for:

- advising the Applicants on ecological matters and requirements for compliance with relevant legislation and protected species licences, providing support as instructed, and monitoring compliance with the final approved Landscaping and Biodiversity Strategy;
- reviewing the Landscaping and Biodiversity Strategy at appropriate intervals and revising management requirements as necessary for the following five-year period and subsequently for the duration of the Strategy; and
- providing the Applicants with survey reports and other written evidence required in accordance with the agreed scope of work and contractual obligations.

7.3 The Appointed Landscape Architect/Arboriculturalist

7.3.1 The appointed landscape architect/arboriculturalist would be responsible for:

- providing specialist site supervision in the form of walkover assessments relating to relevant landscape areas. This would be to assess landscape components and their condition and identify the need for landscape enhancement as instructed and in accordance with the agreed scope of work and contractual obligations, once the Proposed Development is operational;

- monitoring and assessing the landscape related elements of the approved Landscaping and Biodiversity Strategy for their effectiveness on an annual basis for the first five years following commencement of operation of the Proposed Development and then for the following five-year period and subsequently for the duration of the Strategy;
- ensuring that the landscape related elements of the approved Landscaping and Biodiversity Strategy are reviewed at the end of the five-year initial monitoring and assessment stage and amended accordingly for the following five-year period and subsequently for the duration of the Strategy. The Landscaping and Biodiversity Strategy shall be amended accordingly to suit any changing landscape conditions and ultimately inform the maintenance operations throughout the operational life of the Proposed Development; and
- ensuring that any reviews associated with landscape related elements of the approved Landscaping and Biodiversity Strategy clearly identifies any changes to site conditions and circumstances, whether the aims and objectives of the approved Strategy are being met, and where identified changes are needed to existing management practices and timeframes.

8.0 REFERENCES

British Standard (BS) 5837: 2012. Trees in relation to design, demolition, and construction – Recommendations

Department of Energy and Climate Change (BEIS) (2011a). National Policy Statement NPS for Overarching Energy (EN-1) Secretary of State for Energy and Climate Change. London: The Stationery Office.

Department of Energy and Climate Change (2011b). National Policy Statement for Fossil Fuel Electricity Generating Infrastructure (EN-2). London: The Stationery Office.

Department of Energy and Climate Change (2011c). National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4). London: The Stationery Office.

Forestry Commission (2007) Forest Reproductive Material. Regulations controlling seed, cuttings and planting stock for forestry in Great Britain.

Ministry of Housing, Communities and Local Government (2019) National Planning Policy Framework. Available online at: https://www.gov.uk/government/publications/national-planning-policy-framework--2

National Joint Utilities Group (2007) Volume 4. Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees.

Natural England (2019) *The Biodiversity Metric 2.0*. Available from: http://nepubprod.appspot.com/publication/5850908674228224?cache=1564421772.98&_sm_au_=iVV0WQ2rfnqRSV22

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

APPENDIX 1: SEED MIXTURES

EM2 – Standard General Purpose Meadow Mixture

% CONTRIBUTION	LATIN NAME	COMMON NAME
0.2	Yarrow	*Achillea millefolium*
3	Common Knapweed	*Centaurea nigra*
2	Wild Carrot	*Daucus carota*
0.5	Hedge Bedstraw	*Galium album*
0.1	Meadow Crane's-bill	*Geranium pratense*
1	Field Scabious	*Knautia arvensis*
3	Oxeye Daisy	*Leucanthemum vulgare*
0.1	Birdsfoot Trefoil	*Lotus corniculatus*
3	Black Medick	*Medicago lupulina*
3	Salad Burnet	*Poterium sanguisorba*
0.1	Cowslip	*Primula veris*
3	Selfheal	*Prunella vulgaris*
0.2	Meadow Buttercup	*Ranunculus acris*
0.2	Common Sorrel	*Rumex acetosa*
0.6	Bladder Campion	*Silene vulgaris*
8	Common Bent	*Agrostis capillaris*
28	Crested Dogstail	*Cynosurus cristatus*
24	Red Fescue	*Festuca rubra*
4	Smaller Cat's-tail	*Phleum bertolonii*
16	Smooth-stalked Meadow-grass	*Poa pratensis*

EM6 – Meadow Mixture for Chalk and Limestone Soils

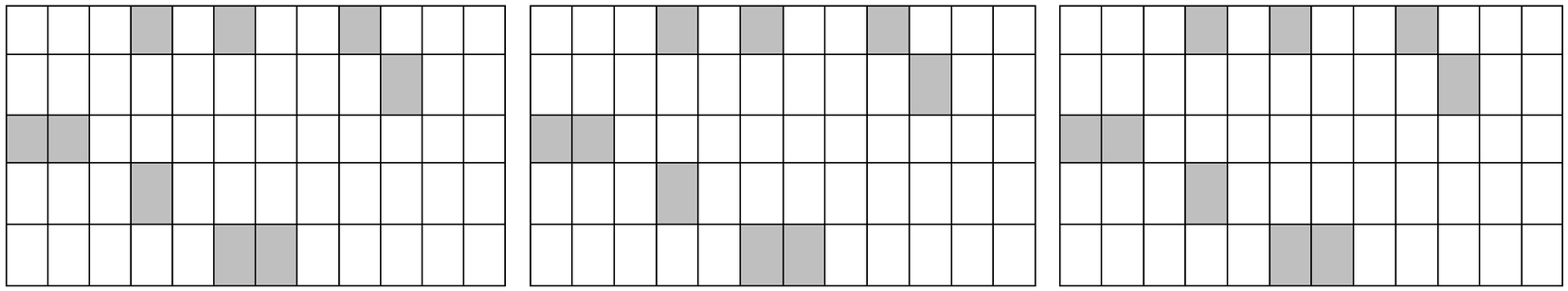
% CONTRIBUTION	COMMON NAME	LATIN NAME
0.2	Yarrow	*Achillea millefolium*
0.5	Agrimony	*Agrimonia eupatoria*
0.5	Kidney Vetch	*Anthyllis vulneraria*
0.2	Betony	*Betonica officinalis*
2	Common Knapweed	*Centaurea nigra*
2.5	Greater Knapweed	*Centaurea scabiosa*
1	Wild Carrot	*Daucus carota*
0.2	Dropwort	*Filipendula vulgaris*
0.6	Hedge Bedstraw	*Galium album*
2	Field Scabious	*Knautia arvensis*
0.1	Rough Hawkbit	*Leontodon hispidus*
1	Oxeye Daisy	*Leucanthemum vulgare*
0.2	Birdsfoot Trefoil	*Lotus corniculatus*
1.6	Black Medick	*Medicago lupulina*
0.4	Wild Marjoram	*Origanum vulgare*
1	Wild Parsnip	*Pastinaca sativa*
0.5	Hoary Plantain	*Plantago media*
2	Salad Burnet	*Poterium sanguisorba*
0.5	Cowslip	*Primula veris*
1.5	Selfheal	*Prunella vulgaris*
0.5	Common Sorrel	*Rumex acetosa*
1	Bladder Campion	*Silene vulgaris*
4	Quaking Grass	*Briza media*
0.2	Glaucous Sedge	*Carex flacca*
24	Crested Dogstail	*Cynosurus cristatus*
24	Sheep's Fescue	*Festuca ovina*
21.8	Red Fescue	*Festuca rubra*
2	Crested Hair-grass	*Koeleria macrantha*
2	Smaller Cat's-tail	*Phleum bertolonii*
2	Yellow Oat-grass	*Trisetum flavescens*

APPENDIX 2: MAINTENANCE REGIMES

The landscape and biodiversity management and enhancement area will be managed and maintained for 10 years, with a review after 5 years to potentially integrate the management and maintenance.

LANDSCAPE ELEMENT TYPE	Maintenance Year 1												Maintenance Years 2, 3 and 4												Maintenance Year 5 and ongoing (to be reviewed and amended as required)											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Species Rich Grassland																																				
Remove litter, rubbish and debris	■				■				■				■				■				■				■				■				■			
Spot-treat undesirable species				■		■			■							■		■			■							■		■			■			
Establishment cuts (may occur pre-practical completion)					■	■	■																													
Subsequent cuts																■					■							■				■			
Removal of arisings					■	■	■									■					■							■				■			
Control emerging scrub								■												■												■				
Scrub Planting																																				
Spot-treat undesirable species				■		■			■							■		■			■							■		■			■			
Re-firm plants			■			■				■					■			■				■					■						■			
Inspect and repair rabbit-proof fencing			■							■					■							■					■						■		
Pruning											■												■												■	
Control unwanted emerging scrub within plots										■												■												■		
Watering (timing as required)	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Remove litter, rubbish and debris	■				■				■				■				■				■				■				■				■			
Replacement of failed/ failing plants										■	■	■		■	■	■							■	■	■			■						■	■	■
Remove rabbit-proof fencing																																				

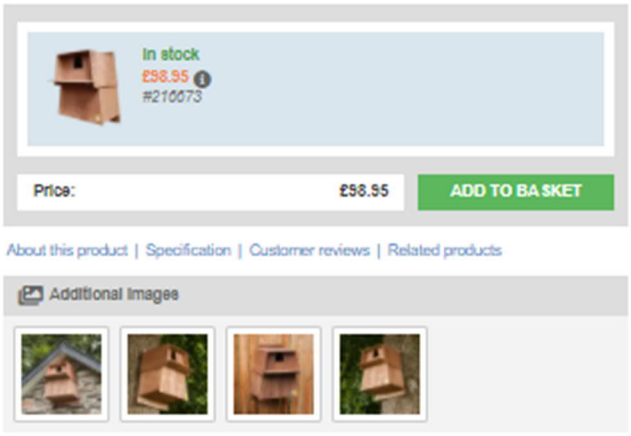
Monitoring and Inspection
Weed control inspection
Annual inspection of all planted areas to record failed or defective plants
Annual inspection of all bird and bat boxes
Monitoring of landscaped areas to assess species diversity and establishment
Annual Condition Assessment survey of grassland (Year 1, 3 and 5)



Appendix 3: Indicative Barn Owl Box Specifications

Indicative Specification for a Wall Mounted Box

Barn Owl Nest Box



About this product

Please note that due to their size and weight, additional shipping costs will apply. We will be in contact once you have placed your order to confirm these costs with you, or if you wish to discuss this before your order, please contact us on 01803 865913 or by email at customer.services@nhbs.com.

This barn owl nest box has been designed with the Barn Owl Trust and constructed from FSC certified exterior grade plywood making it suitable for use both inside buildings, such as barns, or outside. The nest box has a sturdy front platform for owlets to exercise on and a generous front canopy to protect the entrance and platform from bad weather. The nest box is a generous size offering a full 44cm depth from entrance to floor. The double inspection hatch allows full access to the whole floor area for cleaning or inspection and is designed to prevent rain coming in with simple, secure fastenings. The specially drilled backplate provides fixings above and below the nest box to ensure it is secure and there are oversized holes to accommodate ropes for hauling the nest box up the tree and locating it.

This nest box will be delivered fully assembled with the exception of the platform which can be easily fixed in place without tools, before or after the next box is fixed into position.

Please note that Barn Owls are a Schedule 1 species and so an occupied box must only be disturbed or inspected by a licensed individual.

Dimensions
Height: 74cm
Width: 59cm
Depth: 50cm
Weight: 8kg approx.

Specification

Height: 74cm
Width: 59cm
Depth: 50cm
Depth of enclosed box: 34cm
Entrance hole: 13cm high x 12cm width
Weight: 8kg approx.
Material: FSC certified exterior grade plywood

Indicative Specification for a Pole-mounted Box

Barn Owl Trust
Waterleat, Ashburton
Devon TQ13 7HU
Tel: 01364 653026
Email: info@barnowltrust.org.uk

Pole-box Design

An outdoor Barn Owl nestbox suitable for erection on a large pole

LEAFLET No 50

Reg. Charity No 299 835

This leaflet describes how to make a Barn Owl nestbox suitable for erection on a large telegraph pole. The information includes plans, dimensions, materials, safety advice and erection tips.

Please note:

Nestboxes in buildings are generally the best option, followed by nestboxes in trees. Pole boxes are usually only erected where these options are not available. Nestboxes should never be erected on operational telegraph/electricity poles and erecting your own telegraph pole is expensive. Building and erecting a pole nestbox is a lot of work so before deciding to proceed make sure there is no alternative. See *Nestboxes for use in Barns & Other Buildings* (leaflet no. 3) and *Nestboxes for use on Trees* (leaflet no. 2).

Suitability of the area

The Barn Owl is not a woodland bird. In the UK, Barn Owls hunt mainly by flying over areas of rough grassland, ditch sides, young tree plantations etc. that support a high population of small mammals. In areas with an abundance of food but a shortage of suitable sites, nestboxes can be of great benefit. They should always be placed in areas with some good Barn Owl habitat or they are unlikely to be used. See *Habitat Management* (leaflet no. 1)

Selecting a suitable pole

A pole box is big and heavy and cannot be adequately supported by a thin or flexible pole. A good pole will not only support the box for many years but will also be strong enough to take the weight of someone climbing a ladder leaned against it during inspection or clearing out. Most proper telegraph or electricity poles are suitable and just need to be cut to the right length.

You should be aiming for an erection height over 4 metres above ground level using a substantial pole of not less than 150mm diameter and 6 metres long (1.5m underground and 4.5m in height). In areas where climbing nest-predators are a problem (such as Beech Martens in mainland Europe) position the pole away from buildings or trees and wrap a 1.5m section of the pole with thin aluminium or other very slippery material.

Pole-box construction

The basic box should be built using exterior grade rot-resistant or Tanalith E treated sheet material. The Barn Owl Trust uses 12mm tanalised ($^1/_2$") softwood ply, 25 x 50mm (2" x 1") tanalised batten and 30mm (1¼") rust resistant screws. There's also a small amount of 50 x 50mm timber and a piece of 18mm ply used in this design. Please avoid using hardwood ply, unless it is stamped "FSC Approved".

You may use any type of wood preservative on the box where tanalised (CCA-treated) ply is not available. The preservative should be applied to all component parts before the box is assembled so that all the edges are properly treated. Make sure the treated wood is dry before you assemble the box. During construction a waterproof sealant (such as EVER BUILD – WEATHER MATE) should be applied to all the wood joints to increase weather protection. If you need proof that this is necessary, try leaving your box under a sprinkler for a few hours and then look inside it.

Although tanalised timber is very rot-proof it's not very waterproof so the roof sheets should also be treated with Creosote or some other water-resistant preservative. The apex should be covered with a strip of aluminium or copper. The front, back and sides **MUST** overhang the floor of the box and as an extra precaution a large drainage hole (20mm - ¾" - diameter) should be drilled in each corner of the floor of the box.

All the dimensions are given as a guide and variations of + or - 10% are quite acceptable. The box must have a large access panel to enable nest debris to be cleared out periodically.

You can see a cutting plan and watch a slideshow of a pole-box being constructed on our website www.barnowltrust.org.uk

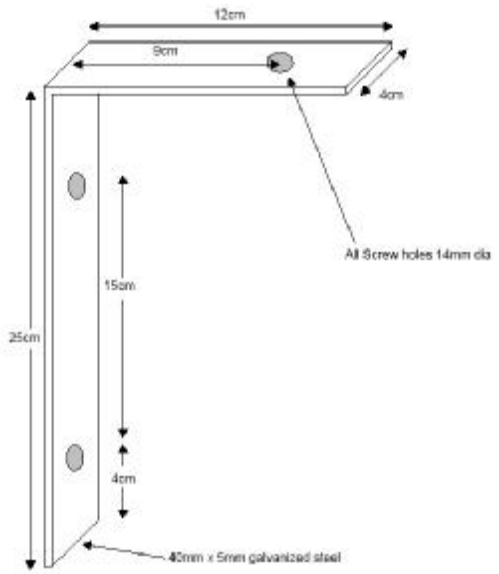
Siting the pole-box

Time spent in reconnaissance is seldom wasted. Please avoid siting your box within 1km (½ mile) of a dual-carriageway, motorway or similar modern road because of the high risk of road mortality. Nestboxes placed in a patch or strip of good (rough grassland) habitat are likely to be discovered more quickly as are boxes placed at existing roost sites. However, neither of these factors is essential.

The box should face open ground so that the main entrance hole is obvious to a passing owl. Don't hide it between big trees or tall buildings – if an entrance can't be seen easily the box is less likely to be discovered. Try to avoid facing the box towards prevailing wind and rain. Generally this means avoiding the west or south-west. The ridge of the roof should lie north-south or northwest-southeast.

The box will need to be cleaned out in future so think about where the ladder could stand and position the box so that this can be done safely.

POLE-BOX BRACKET DIMENSIONS



Erecting the box

By far the simplest and safest option is to attach the box to the pole before the pole is erected. If the pole has already been erected you may consider the use of tower scaffolding or a "cherry-picker" hydraulic platform. It is possible to erect a pole-box (on a pole that's already up) without using any machinery. However, a pole-box is heavy and awkward to lift by hand and the use of ladders is potentially dangerous. The Barn Owl Trust has placed pole-boxes onto previously-erected poles on numerous occasions with a team of three people using three ladders but a detailed description of the method is beyond the scope of this leaflet. Heavy duty galvanised steel brackets, coach bolts, and coach screws are used to secure the box to the pole.

The most important thing when erecting the box is your own safety (for which you are responsible), the safety of your helpers, and the safety of anyone going up to the box in future years. Make sure you carry out a detailed assessment of the risks associated with whatever method you choose and do not attempt to erect a pole-box when working alone!

Each half of the exercise platform should be slid onto the box after erection and retained by screwing through the two outer battens. To facilitate this the box has ladder rests on both sides as well as below the inspection hatch.

Important advantages of this pole-box design

The nestbox described in this leaflet is very deep which makes it almost impossible for the young to emerge prematurely. This reduces the chances of nestlings falling from the box and dying as a result of neglect or predation. By the time a young Barn Owl is big and strong enough to get out of the box it will soon be fully fledged. The design also provides emerging young with a very generous exercise platform enabling them to do lots of wing-flapping before their first flight. They can even get onto the roof of the box and safely back inside before they are able to fly.

The combination of box depth and safe exercise area means that when a young owl leaves the box for the first time it stands a very good chance of being able to fly up and get back inside. This period of returning to the box is important for their survival. Boxes with low entrance holes allow young to leave the box before they are big or strong enough to fly back up again. Young on the ground are generally ignored by the adults and either starve or are predated. Whereas young emerging from a tree-mounted nestbox stand some chance of being able to climb back up, a pole box does not allow the same possibility.

This design has other important features and detailed criteria for the evaluation of Barn Owl nestbox designs may be found at:
www.barnowltrust.org.uk/infopage.html?Id=231

Clearing out the box

As the box fills up with nest debris its effective depth is reduced and so it gradually becomes less safe for emerging young. After four or five broods of young have been produced (normally after about four years) the nest debris should be removed. Boxes used by Jackdaws will fill rapidly with sticks and should be

cleared out every year. When clearing out nest debris it is advisable to wear gloves and a dust mask. It's usually best to clear out nestboxes in November, December or January (but please try to avoid flushing birds out during severe weather conditions). Under the Wildlife and Countryside Act 1981, it is an offence to disturb breeding Barn Owls.

Safety tips

Before erecting your nestbox take time to consider the hazards you might face and what steps you could take to minimise the risks. Hazards might include: an injury at a remote location, falling from a ladder, injury from heavy lifting, dropping a nestbox onto another person, or poor positioning of a box resulting in additional hazards for anyone monitoring the box at a later date. The following are examples of precautions you should take to reduce the risks.

1 Don't work alone. If erecting a nestbox at an isolated site, let someone know where you are going and when you expect to be back before you set off. Carry a mobile phone if you have one.

2 Time spent in reconnaissance and preparation is seldom wasted. Never lift a box up into position until all preparatory work is complete. Double-check your measurements to confirm that the box will fit.

3 Ensure that any ladder you use is secure before climbing it. If possible tie it off at the top and bottom.

4 Avoid over-reaching - never attempt to carry out any task up a ladder if you cannot reach comfortably.

5 When planning how to position, support and fix a nestbox, try to create a situation where the box can rest in position without being held. This will allow you to have both hands free to fix it safely.

6 If carrying a nestbox up a ladder, ensure that it is kept low relative to your body (ideally not above waist height). This will keep your centre of gravity down. Try to keep the box in front of you or to the side - never hold a nestbox behind or above you.

7 You are responsible for your own safety - assess all the risks and be careful.

Please let us know when your box is occupied.

Good Luck!

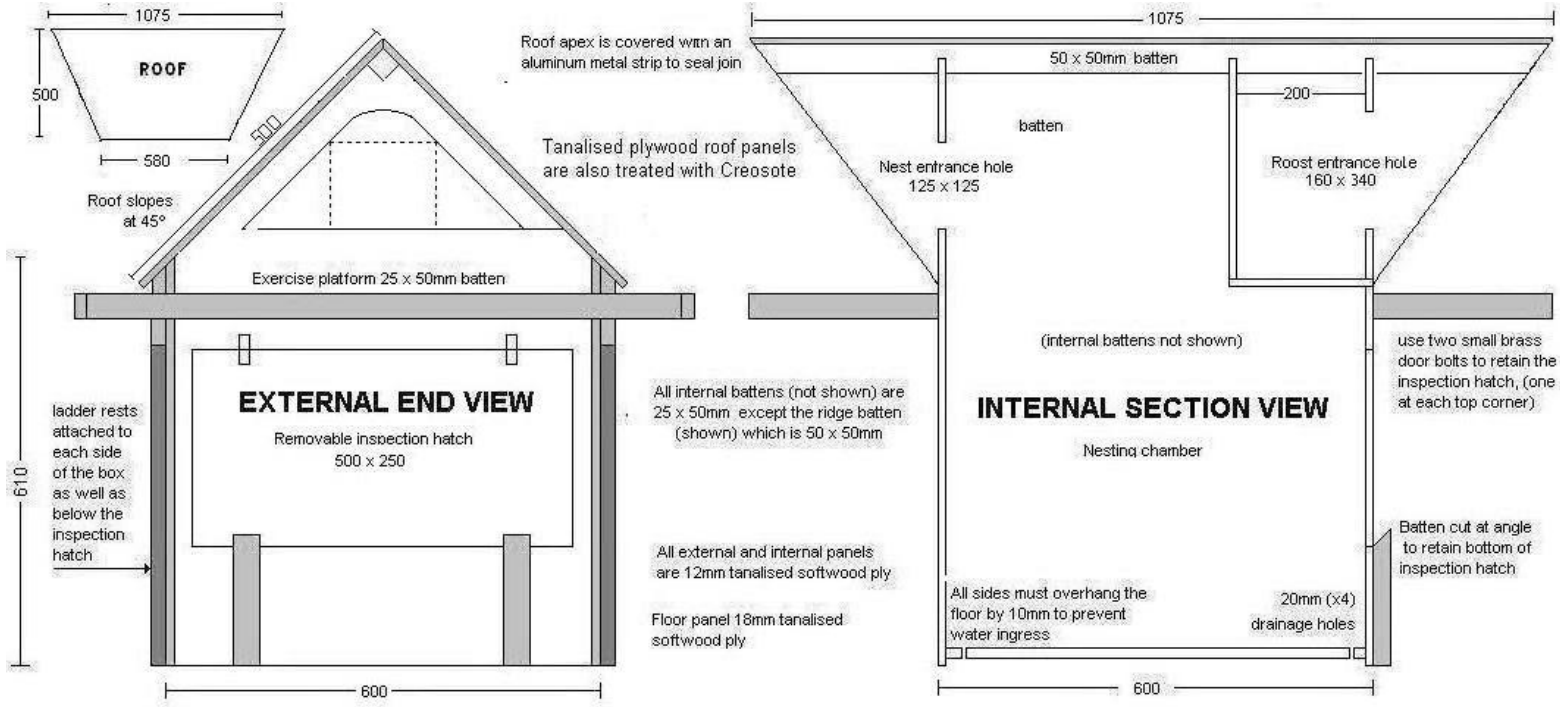
The Barn Owl Trust is a registered charity dedicated to the conservation of the Barn Owl and its environment. You can become a **Friend of the Barn Owl Trust** and support our work by making a regular donation. **Friends** receive our bi-annual magazine Feedback, our Annual Report and an enamel pin badge.

The Trust provides a wide range of free leaflets on Barn Owl related matters. For details of these and further information about the Trust and its work, please write including a large SAE to:

Barn Owl Trust
Waterleat
Ashburton
Devon
TQ13 7HU

Tel: 01364 653026
Email: info@barnowltrust.org.uk
Web: www.barnowltrust.org.uk

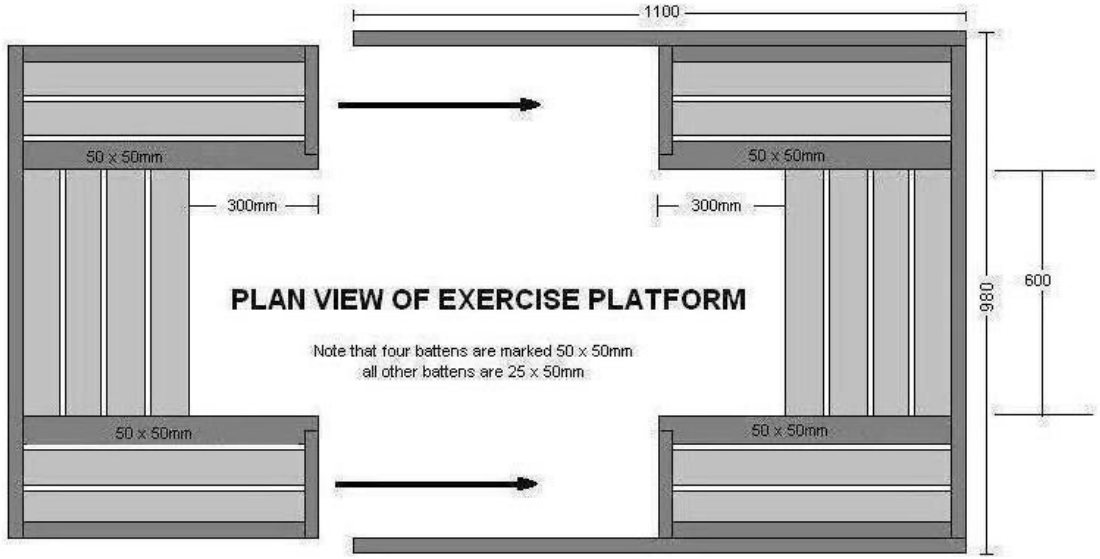
Leaflet No. 50—Pole-box design—an outdoor Barn Owl nestbox suitable for erection on a large pole



BARN OWL TRUST POLE BOX DESIGN.

Photographs of this box under construction may be viewed at www.barnowltrust.org.uk

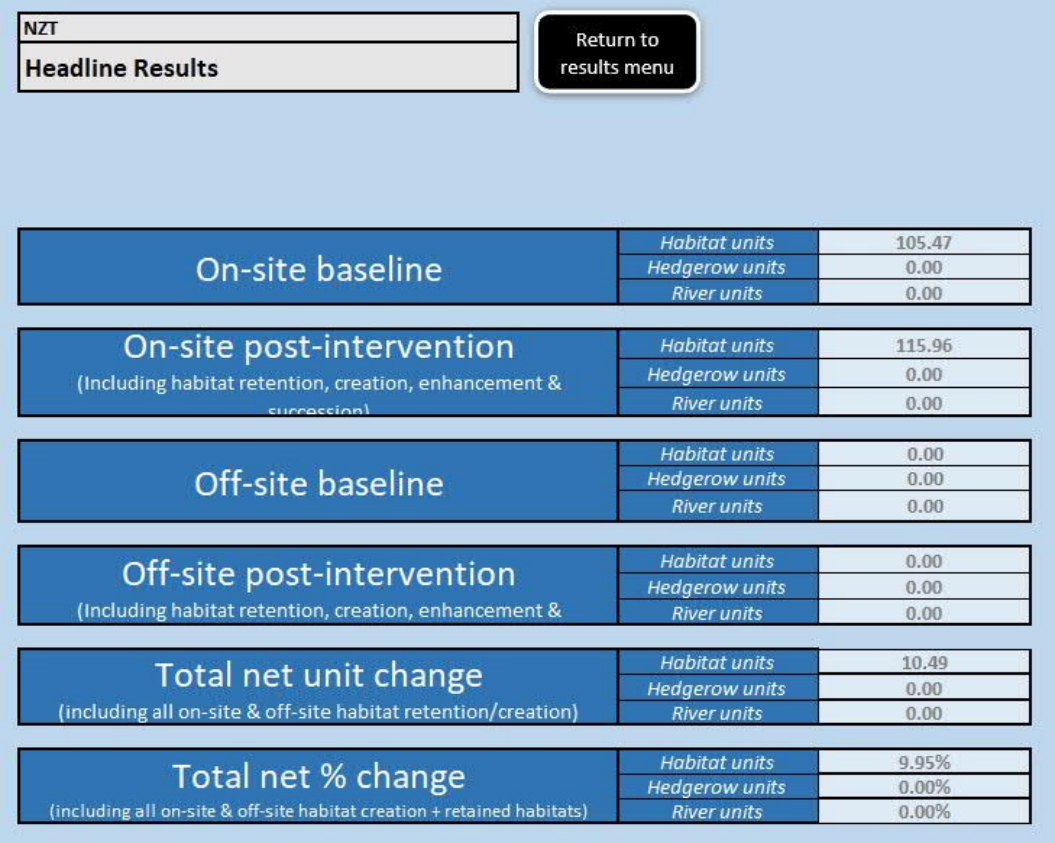
The platform is made in two parts. After the box has been erected the platform halves simply slide onto the box and the outer extended battens (already attached to one half of the platform) are screwed to the other half. To facilitate this, the box has ladder rests on both sides. Please note that the light grey shaded battens in this diagram are flat and level with the bottom of all the other timbers. This effectively gives the tray an edge that is easy for young birds to grip.



Drawing NOT to scale

all dimensions are millimetres

APPENDIX 4: SUMMARY RESULTS OF THE HABITAT LOSS AND GAIN CALCULATIONS



NZT

Headline Results

Return to results menu

On-site baseline	*Habitat units*	105.47
	Hedgerow units	0.00
	River units	0.00
On-site post-intervention (Including habitat retention, creation, enhancement & succession)	*Habitat units*	115.96
	Hedgerow units	0.00
	River units	0.00
Off-site baseline	*Habitat units*	0.00
	Hedgerow units	0.00
	River units	0.00
Off-site post-intervention (Including habitat retention, creation, enhancement &	*Habitat units*	0.00
	Hedgerow units	0.00
	River units	0.00
Total net unit change (including all on-site & off-site habitat retention/creation)	*Habitat units*	10.49
	Hedgerow units	0.00
	River units	0.00
Total net % change (including all on-site & off-site habitat creation + retained habitats)	*Habitat units*	9.95%
	Hedgerow units	0.00%
	River units	0.00%

NZT

A-1 Site Habitat Baseline

Condense / Show Columns | Condense / Show Rows | Main Menu | Instructions

	Habitats and areas			Habitat distinctive	Habitat conditio	Ecologic al	Strategic significance	Suggested action to address habitat losses	Ecologic al	Retention category biodiversity value								Bespoke compensat ion agreed for unaccepta	Comm
Ref	Broad Habitat	Habitat type	Area (hectares)	Distinctiveness	Condition	Ecological connectiv	Strategic significance		Total habitat units	Area retained	Area enhanced	Area succession	Baselin e units retaine	Baseli ne units	Baseline units successi	Area lost	Units lost		Assessor comments
1	Urban	Urban - Developed land; sealed surface	14.18	V.Low	N/A - Other	Low	Location ecologically desirable but not in local strategy	Compensation Not Required	0.00	0	0	0	0.00	0.00	0.00	14.18	0.00		Buildings, surfaced roads etc.
2	Sparsely vegetated land	Sparsely vegetated land - Ruderal/Ephemeral	2.35	Low	Moderate	Low	Location ecologically desirable but not in local strategy	Same distinctiveness or better habitat required	10.34	0	0	0	0.00	0.00	0.00	2.35	10.34		Areas mapped as ephemeral.
3	Grassland	Grassland - Modified grassland	17.28	Low	Moderate	Low	Location ecologically desirable but not in local strategy	Same distinctiveness or better habitat required	76.03	0	0	0	0.00	0.00	0.00	17.28	76.03		Secondary grassland over previously developed land and not aligning with priority habitat types. Herb cover relatively low and declining/limited as a consequence of the absence of favourable management. On precautionary basis assume moderate condition. Grassland type follows INCA.
4	Urban	Urban - Vacant/derelict land/ bareground	8.68	Low	Poor	Low	Location ecologically desirable but not in local strategy	Same distinctiveness or better habitat required	19.10	0	0	0	0.00	0.00	0.00	8.68	19.10		Former dump and areas disturbed by vehicles. Areas of bare ground with negligible vegetation cover. Most of the ground area compacted. Not consistent with 'artificial unvegetated' as mapped by INCA as the land has not been 'stripped of vegetation for purpose of development' (see UKHAB manual).
5																			
6																			Connectivity follows current guidance from Natural England. Strategic significance follows INCA recognising proximity to SSSI but no formal strategy (beyond aspirations of STDC masterplan for no net loss). Condition applied on a precautionary basis for each habitat i.e. highest likely conditon based on
7																			
8																			
9																			
		Total site area ha	42.49					Total Site baseline	105.47	0.00	0.00	0.00	0.00	0.00	0.00	42.49	105.47		

NZT

A-2 Site Habitat Creation

Condense / Show Columns | Condense / Show Rows | Main Menu | Instructions

Post development/ post intervention habitats										
Proposed habitat	Area (hectares)	Distinctiveness	Condition	Ecological	Strategic significance	Temporal	Difficulty	Habitat units delivered	Comments	
				Ecological connectivity	Strategic significance	Time to target condition/years	Difficulty of creation		Assessor comments	Reviewer comments
Grassland - Other neutral grassland	0.81	Medium	Moderate	Low	Location ecologically desirable but not in local strategy	10	Low	4.99	Area 1, 10m wide verge. Aim is good quality flower-rich semi-improved neutral grassland. Moderate/ fairly good feasible (have suitable substrates and proximity to flower-rich habitat in the dune system), good would indicate a priority habitat. Same comments apply below.	
Grassland - Other neutral grassland	6.07	Medium	Moderate	Low	Location ecologically desirable but not in local strategy	10	Low	37.41	Area 2	
Grassland - Other neutral grassland	1.42	Medium	Moderate	Low	Location ecologically desirable but not in local strategy	10	Low	8.75	Area 3. Between bp and STDC fence. Minimum corridor 5m width, so sufficent space for access for management.	
Grassland - Other neutral grassland	2.15	Medium	Moderate	Low	Location ecologically desirable but not in local strategy	10	Low	13.25	Area 4.	
Grassland - Other neutral grassland	1.15	Medium	Moderate	Low	Location ecologically desirable but not in local strategy	10	Low	7.09	Area 5.	
Grassland - Other neutral grassland	3.7	Medium	Moderate	Low	Location ecologically desirable but not in local strategy	10	Low	22.80	Area 6.	
Urban - Sustainable urban drainage feature	0.26	Low	Fairly Poor	Low	Location ecologically desirable but not in local strategy	2	Medium	0.54	Attenuation pond, design later to raise distinctiveness and condition. At present not designed so keep as low distinctiveness. Assume fairly poor but scope to achieve Moderate condition could be achieved in 3 years, Good in 5 years. Revise at detailed design.	
Grassland - Other neutral grassland	1.2	Medium	Moderate	Low	Location ecologically desirable but not in local strategy	10	Low	7.39	Area 7.	
Grassland - Other neutral grassland	2.23	Medium	Moderate	Low	Location ecologically desirable but not in local strategy	10	Low	13.74	Area 8.	
Urban - Developed land; sealed surface	23.5	V.Low	N/A - Other	Low	Location ecologically desirable but not in local strategy	0	Low	0.00	Remainder. Overly precautionary as assumed all remaining land would be buildings or sealed surfaces. This is not realistic. Revise at final design.	
									Note that connectivity follows current guidance from Natural England. Strategic significance follows INCA recognising the relevant Local Plan policy and proximity to SSSI but no formal strategy (beyond aspirations of STDC masterplan for no net loss). Condition applied on a precautionary basis to provide confidence in deliverability, arguably 'fairly good' grassland could be achieved.	
Totals	42.49							115.96		