DC and IE SHERVINGTON

Extended Phase 1 Habitat Survey for:

The Restoration of a Former Landfill Site at Ty Mawr Farm, St Brides, Wentlooge, Newport, NP10 8SF.

Report Reference: CE-TM-0937-RP03 - Final, Rev A

Produced by Crestwood Environmental Ltd.

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The information which we have prepared and provided is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

This report has been prepared in good faith, with all reasonable skill, care and diligence, based on information provided or known available at the time of its preparation and within the scope of work agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

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1 INTRODUCTION

1.1 INSTRUCTION AND BRIEF

1.1.1 Crestwood Environmental Ltd. ('**Crestwood**') has been appointed by Mr Edd Shervington of DC and IE Shervington (sole trader) ('**the Client**') to undertake an Extended Phase 1 Habitat Survey at Ty-Mawr Farm, St Bridges, Wentlooge, Newport, Gwent - centred at National Grid Reference (NGR) ST 30622 82472 ('**the Site**').

1.1.2 The Client is applying for an Environmental Permit for the restoration of a former landfill Site, which will involve the spreading of up to 4m thickness of inert soils and subsoils across the Site.

1.2 PURPOSE AND SCOPE

1.2.1 The purpose of the surveys is to provide ecological advice in respect of the Permitted Development, and to identify ecological constraints which may be a relevant consideration from a permit and/or a legislative perspective.

1.2.2 In addition to the Extended Phase 1 Survey, several preliminary species specific surveys were also carried out. The scope of these surveys is detailed in Table 1.

Table 1 Survey Purpose and Scope

Survey	Purpose and Scope
Extended Phase 1 Habitat Survey	To record the presence and extent of habitats and the likelihood of protected species being present within the Site
Preliminary Roost Assessment	To determine the suitability of mature trees at the Site for roosting Bats.
Habitat Suitability Index Assessment	To determine the suitability of ponds at and within 500m of the Site to support Great Crested Newts
Initial Badger Survey	To check the Site and within 30m of the Site boundary, where accessible, for the presence of Badger setts or evidence of Badgers.

1.2.3 The description of the Site and the results of the survey relate to the findings at the time of the field survey only, 14th December 2016.

1.3 SITE LOCATION AND CONTEXT

1.3.1 The Site is located circa 5km south-southwest of Newport (Casnewydd) city centre and the nearest village is St Brides Wentlooge (Llansanffraid Gwynllwg) located approximately 900m west of the Site (see Plate 1).

Plate 1 Site Location

1.3.2 The Site is dominantly comprised of grassland and bare earth and is bounded on three sides by wet ditches.

1.3.3 The Site is located in an agricultural area and is predominantly surrounded by farm land. The River Usk is less than 0.5km to the east of the site boundary, which is a tributary of the Severn Estuary. The Severn Estuary is approximately 0.2km south of the site boundary.

1.3.4 The Site is located within the footprint of the Gwent Levels St. Brides, a designated Site of Special Scientific Interest (SSSI). The Severn Estuary located approximately 0.2km from the Proposed Permit Boundary is designated a SSSI, Special Area of Conservation (SAC), Special Protection Area (SPA) and RAMSAR site.

Definitions

1.3.5 Definitions and abbreviations detailed within this report are provided in Appendix E1.

1.4 GENERAL LIMITATIONS

1.4.1 The Site's boundary is shown on Drawing No CE-TM-0937-DW05. Any subsequent amendments to the boundary may alter recommendations made in this report.

1.4.2 Other applications or non-implemented consents within the local area have not been considered, and therefore the assessment of impacts and effects pertains solely to those associated with the Site and not cumulative effects arising from impacts arising from other developments in the local area.

1.4.3 The survey was conducted outside of the optimum survey period for botanical surveys (April-

September inclusive) which may have resulted in less botanically diverse floral species being identified during the survey.

2 METHODOLOGY AND APPROACH

2.1 DEFINING THE ZONE OF INFLUENCE ('ZOI')

2.1.1 The potential impact of a development is not always limited to the boundaries of the site concerned. The development may also have the potential to impact on ecologically valuable sites, habitats or species beyond the site boundaries. The area over which a development may impact ecologically valuable receptors is known as the Zone of Influence (ZoI).

2.1.2 The ZoI is determined by the source/type of impact, a potential pathway for that impact and the location and sensitivity of the ecologically valuable receptor beyond the boundary. For the majority of (unmitigated) impacts identified as part of the Permitted Development, the ZoI is generally considered to be the application site and immediately adjacent areas.

2.1.3 In ecological terms, the ZoI can also vary considerably depending upon the species potentially affected by the Permitted Development. For example, some species may be confined to a specific location whilst others, such as Birds and Bats, are more mobile and can occupy larger territories or home ranges. The ZoI is also likely to be influenced by the presence of dispersal barriers, such as roads and hardstanding, which either stop or reduce the likelihood of animals crossing it. As a consequence this could isolate areas of potentially suitable habitat within the application site due to fragmentation.

2.1.4 The ZoI for species or species groups has been determined by research and the professional judgement of the ecologist. For example, Common Lizards (*Zootoca vivipara)* have restricted mobility and generally occupy smaller home ranges (up to 700m^2) (Langton & Beckett, 1995).

2.2 DETERMINING THE LEVEL OF ECOLOGICAL IMPORTANCE

2.2.1 Certain species (flora or fauna) and habitats present at a Site are assessed for their ecological importance. It is important that ecological features of high importance; such as those that are of high biodiversity value or significantly contribute to ecosystem services should be protected and enhanced where possible.

2.2.2 Table 2 details the criteria for assessment of ecological importance used within this assessment.

2.2.3 It should be noted that ecological importance is assessed on a Site by Site basis and includes a variety of factors (i.e. species abundance); therefore the criteria for assessment may change (i.e. the presence of a rare declining species in relation to a rare stable species).

2.2.4 Furthermore, there may be some cross over between habitats and species which could alter the assessment of the level of ecological importance of a particular feature (i.e. poor quality habitat supporting protected species); therefore the criteria for assessment detailed below should be used as a general guide only.

Table 2 Criteria of Assessment for Assigning a Level of Ecological Importance

Level of Ecological Importance	Criteria for Assessment	
	Species	**Habitats**
Very High	• Very rare/rare species present. • Species of very high biodiversity value.	• Internationally designated Sites. • Supports very rare/rare species. • Habitat of very high biodiversity value. • Highly suitable for protected species. • Very high floral diversity.
High	• Rare species present. • Species of high biodiversity value. • Abundant species present of moderate biodiversity value.	• Nationally designated Sites. • Features rare species. • Several features of high value for biodiversity (i.e. numerous features suitable to support protected species). • High floral species diversity.
Moderate	• BAP/HPI species. • Species of moderate biodiversity value.	• BAP/HPI Habitat. • Features of moderate value for biodiversity. Reasonable floral species diversity. • Potential to support protected species.
Low	• Species of low biodiversity value present.	• Habitat of low biodiversity value. • Low floral species diversity. • Unlikely to support protected species.
Very Low	• Species of negligible biodiversity value present.	• Very low/no species diversity present. • Of little to no biodiversity value.

2.2.5 Reasons for the assessment of the level ecological importance of certain features are detailed in the relevant sections of this report.

2.3 FIELD SURVEY

2.3.1 The weather conditions at the time of survey are shown in Table 3.

Table 3 Weather Conditions during the Survey 14th December 2016

Parameter	Recorded Figure
Temperature (°C)	11
Cloud Cover (in Octas)	2
Precipitation	None
Wind Speed (Beaufort Scale)	2

Extended Phase 1 Habitat Survey

2.3.2 The method used for the Extended Phase 1 Habitat Survey is based on guidelines provided by JNCC (JNCC, 2010) and CIEEM (CIEEM, 2013). During the survey visit, habitat types and signs of protected

or notable species were recorded and mapped using specific standard mapping colours and target notes.

Preliminary Roost Assessment (PRA) of Trees for Bats

2.3.3 The survey included a survey of mature trees at the Site from ground level, recording any evidence of Bat roosts, droppings, staining, scratch marks and feeding remains, or any potential roost sites within the trees themselves in accordance with the Bat Survey Good Practice Guidelines 3rd Edition (Collins, 2016).

2.3.4 Based on the results of the inspection, trees were categorised for their potential suitability for roosting Bats as follows in Table 4 (Collins, 2016):

Table 4 Potential Tree Roost Suitability

Suitability	Description
Negligible	Negligible roost features present.
Low	Tree of sufficient age/size to have PRFs but none seen from the ground, or having only limited roosting potential. Building with 1+ PRF that could be used opportunistically by Bats, but conditions not appropriate or no suitable surrounding habitat to be used on regularly or by a larger number of Bats.
Moderate	Contains 1+ PRFs that could be used by Bats but unlikely to support a roost of high conservation status*.
High	A structure or tree containing one or more PRFs that are obviously suitable for use by larger numbers of Bats on a regular basis and for longer periods of time due to features of PRF and surrounding habitat.

* = High conservation status defined (Mitchell-Jones, 2004) as: maternity sites of rarer species; significant hibernation sites for rarer/rarest species; sites meeting SSSI guidelines; maternity sites of rarest species.

Badger Survey

2.3.5 A survey for Badgers was carried out following recognised guidance (Harris et al, 1989). All potential habitats within the Site, plus 30m outside of the Site boundary, where accessible, were surveyed for evidence of Badger activity, and specifically for the presence of setts. Field signs searched for included active or inactive setts, Badger pathways, latrines, hair, discolouring of and damage to fencing, signs of foraging and feeding remains.

Invasive Plant Species

2.3.6 The Site visit included recording the presence of invasive plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

2.4 IMPACTS AND EFFECTS METHOD OF ASSESSMENT

2.4.1 To help inform the design of the Proposed/Permitted Development and to inform the planning and decision making process, an assessment of the likely impacts and effects on ecological features has been made taking into account the following impact/effect types in line with relevant guidance (CIEEM, 2013), (CIEEM, 2016):

- Positive/Negative;
- Direct/Indirect;
- Cumulative; and
- Temporary/Permanent.

3 RESULTS AND EVALUATION

3.1 PLANNING POLICY

3.1.1 The Development Plan for the Site and potentially affected area comprises:

- National Planning Policy Framework (HMO, 2012); and
- Newport City Council - Local Development Plan 2011-2026 - Adopted January 2015 (Newport City Council, 2015).

3.1.2 Local planning policies which are relevant to the Permitted Development are detailed below:

GP5: General Development Principals – Nature Conservation:

"Development will be permitted where, as applicable:

i) The proposals are designed and managed to protect and encourage biodiversity and ecological connectivity, including through the incorporation of new features on or off site to further the UK, Welsh and/or Newport biodiversity action plans;

ii) The proposals demonstrate how they avoid, or mitigate and compensate negative impacts to biodiversity, ensuring that there are no significant adverse effects on areas of nature conservation interest including International, European, National, Welsh section 4232 and local protected habitats and species, and protecting features of importance for ecology;

iii) The proposal will not result in an unacceptable impact on water quality; iv) the proposal should not result in the loss or reduction in quality of high quality agricultural land (grades 1, 2 and 3a);

iv) There would be no unacceptable impact on landscape quality;

v) The proposal includes an appropriate landscape scheme, which enhances the site and the wider context including green infrastructure and biodiversity networks; and

vi) The proposal includes appropriate tree planting or retention where appropriate and does not result in the unacceptable loss of or harm to trees, woodland or hedgerows that have wildlife or amenity value".

3.2 HABITATS AND FLORA

General Description of Habitats within the Site

3.2.1 The habitat types identified at the Site, as listed below, relate to the guideline habitats listed within

the Handbook for Phase 1 Habitat Survey (JNCC, 2010). These habitats are recorded on Figure E1 in Appendix E2 and are described in more detail below.

Bare Earth

3.2.2 An area of Bare Earth (see Plate 2) is located in the western extent of the Site. The soil within this area had been recently turned over and no floral species were evident within this habitat.

3.2.3 Target Note 1 (TN1) as shown in Figure E1 (Appendix E2) shows the location of several spoil heaps composed of compost that are present within this habitat at the Site.

Plate 2 Bare Earth (see Photo Point 1 for Location)

Dense Scrub

3.2.4 Two areas of Dense Scrub habitat (see Plate 3) are present at the Site; these are located along a short section of the northern and southern boundaries. Species within this habitat include Bramble (*Rubus fruticosus*) and Common Nettle (*Urtica dioica*).

Plate 3 Dense Scrub (see Photo Point 2 for Location)

Poor Semi-Improved Grassland

3.2.5 Poor Semi-Improved Grassland is the dominant habitat present at the Site (see Plate 4) and is primarily located in the southern extent of the Site. The bulk of this habitat is maintained as a medium sward and is tussocky in places resulting in rough grassland which is dominated by Yorkshire Fog (*Holcus lanatus*).

3.2.6 Target Note 2 (TN2) shows the location of two smaller areas of this habitat that were dominated by Common Reed (*Phragmites australis*) grass, indicating these areas of grassland are more prone to flooding.

Plate 4 Poor Semi-Improved Grassland (see Photo Point 3 for Location)

Scattered Trees (Plantation)

3.2.7 A single line of equally spaced Scattered Trees is located in the western extent of the Site adjacent to Wet Ditch 1 (see Plate 5). Willow species (*Salix* sp.) and Poplar species (*Populus* sp.) were present.

Plate 5 Scattered Trees (Plantation) (see Photo Point 4 for Location)

Tall Ruderal

3.2.8 A small area of Tall Ruderal vegetation is present (see Plate 6) in the south-western extent of the Site. This habitat is dominated by Rosebay Willowherb (*Chamerion angusifolium*) and bordered by Bramble. A stand of Greater Reedmace (*Typha latifolia*) and some Common Reed grass is also present within this habitat.

Plate 6 Tall Ruderal (see Photo Point 5 for Location)

Wet Ditches

3.2.9 Two Wet Ditches are present at the Site, located adjacent to the western boundary. These Wet Ditches are not connected to the drain network that bounds the Site.

Ditch 1

3.2.10 Ditch 1 is located adjacent to the southern extent of the western boundary and is c.7-8m wide with occasional Willow species within the channel. (see Plate 7) The water within the channel was very turbid, contained a poor macrophyte assemblage and evidence of waterfowl was present. The banks of this ditch were densely vegetated with Rosebay Willowherb, Bramble and Pendulous Sedge (*Carex pendula*).

Plate 7 Wet Ditch 1 (see Photo Point 6 for Location)

Ditch 2

3.2.11 Ditch 2 is located adjacent to the northernmost section of the western boundary (see Plate 8). This Ditch is wide at its southern extent tapering off to become very narrow (c.25cm) at its northern extent. The water factors within the channel are similar to that of Ditch 1.

Plate 8 Wet Ditch 2 (see Photo Point 7 for Location)

Plant Species

3.2.12 No rare, protected or invasive plant species were present within the survey boundary.

3.3 FAUNA

GENERAL

3.3.1 It should be noted that unless otherwise stated within the brief, no species-specific surveys were carried out as part of the Extended Phase 1 Habitat Survey and the information provided below is based solely on incidental observations.

Amphibians and Reptiles

Great Crested Newt

3.3.2 Based on OS mapping and aerial photography, there are no ponds at the Site and one pond within 500m of the Site which is not separated by significant barriers to dispersal for amphibians. This pond was no longer extant at the time of the survey.

3.3.3 The areas of Poor Semi-Improved Grassland at the Site are considered to provide **suitable terrestrial habitat for Great Crested Newt** as rough grassland provides opportunities for both foraging and refuge.

3.3.4 The compost spoil heaps (as shown by TN1 on Figure E1 (Appendix E2)) could provide suitable habitat for hibernation and refuge for Great Crested Newts.

Reptiles

3.3.5 The areas of Poor Semi-Improved Grassland at the Site are considered to provide **suitable habitat for Reptiles** as the rough grassland provides opportunities for foraging and refuge, furthermore the edge habitats of Bare Earth provide open areas for Reptiles to bask. The network of drains that surround the Site also provide suitable foraging habitat for Grass Snakes (*Natrix natrix*).

3.3.6 The compost spoil heaps (as shown by TN1 on Figure E1 (Appendix E2)) could provide suitable habitat for hibernation and refuge for Reptile species, as well as suitable egg-laying habitat for Grass Snakes which use decomposing material to incubate their eggs.

Mammals

Badger

3.3.7 No evidence of Badger activity was found at or within 30m of the Site (where accessible) during the survey. The habitats at the Site are considered to provide **suitable foraging habitat for Badgers**, particularly the dominant habitats of Poor Semi-Improved Grassland and Bare Earth.

3.3.8 Due to the inundation of the soils at the Site, it is considered that the habitats present would be mostly unsuitable for sett building Badgers.

Bat Species

3.3.9 The Scattered Trees were all immature specimens with narrow trunks and no PRF's were found to be present. The Scattered Trees at the Site are therefore considered to be of **negligible importance to**

roosting Bats.

3.3.10 The habitats present at the Site are considered to be **suitable for foraging Bats** and the linear features within and directly adjacent to the boundaries of the Site are considered to provide **suitable commuting habitat for Bats**.

Other Mammals

3.3.11 The Wet Ditches at the Site are considered to provide habitat of **low suitability for Otter (*Lutra lutra*) and Water Vole (*Arvicola amphibius*)** due to the limited extent of the ditches and their isolation from the adjacent drain network. However, the ditches may contain fish which would provide foraging opportunities for Otter, and the adjacent terrestrial habitat is considered suitable for Otter. The banks of the ditches bounding the Site are considered to provide low suitability for Water Vole.

3.3.12 The habitats at the Site are considered to provide suitable habitat for a range of other mammal species such as Rabbit (*Oryctolagus cuniculus*) and Red Fox (*Vulpes vulpes*).

Birds

3.3.13 The Scattered Trees provide **suitable habitat for nesting Birds** and a Birds nest was observed within one of the trees during the survey. The Poor Semi-Improved Grassland is also considered **suitable for ground-nesting Birds** and the inundation of the grassland habitats may provide **suitable habitat for wintering Bird species.**

Invertebrates (Aquatic and Terrestrial)

3.3.14 The turbid water and poor macrophyte assemblage within the Wet Ditches at the Site provide habitat of **low suitability for aquatic invertebrates**. The poor water quality and lack of suitable substrate make the aquatic habitat **unsuitable for White-Clawed Crayfish (*Austropotamobius pallipes*)**.

3.3.15 The poor floral species assemblage within the terrestrial habitats at the Site is likely to be reflected in any terrestrial invertebrate assemblages at the Site. Furthermore, the habitats present are both common and widespread in the local area and the Site lacks features of particular terrestrial invertebrate interest, such as deadwood. Therefore, the habitats at the Site are considered to be of **low suitability for Terrestrial Invertebrates**.

OVERALL HABITAT EVALUATION

3.3.16 The habitat types detailed above are evaluated against the Local Biodiversity Action Plan and habitats of Principal Importance according to Section 42 of the NERC Act 2006 in Table 5. They are also assessed for their suitability to support protected species in order to assess their Ecological Importance, using the criteria in Table 2. The geographical level of Importance of these habitats is then related to Site, Local, Regional, National, or International scales to further inform the understanding of their ecological Importance.

Table 5 Evaluation of Importance of Habitats at the Site

Habitat	LBAP Habitat Type	Section 42 Habitat of Principal Importance (NERC Act 2006)	Importance (incorporating floral diversity of habitat and suitable habitat for protected species)
Bare Earth	N	N	**Very Low** – No floral species diversity and unlikely to support protected species.
Dense Scrub	N	N	**Low** – Low floral species diversity, suitable for nesting Bird species, however unlikely to support other protected species.
Poor Semi-Improved Grassland	N	N	**Low** - Low floral species diversity (present at the time of the survey), potential for more diverse species during the optimum survey period. Suitable for Great Crested Newts and Reptiles.
Scattered Trees (Plantation)	N	N	**Low** - Low floral species diversity. Suitable for nesting Birds, however too immature for roosting Bats.
Tall Ruderal	N	N	**Very Low** – Low floral species diversity, unlikely to support protected species.
Wet Ditch	N	N	**Low** – Low floral species diversity, low potential to support Water Vole and Otter.

3.3.17 At a site-specific level, the habitats range from Very Low - Low ecological importance. Floral species diversity is low for the Site and the overall importance of the Site is increased only by its limited suitability for protected species (see Section 3.3 above for further details regarding protected species).

3.3.18 Due to the location of the Site within the Gwent Levels SSSI, the Site is considered to be of National level importance.

4 ASSESSMENT OF EFFECTS

4.1 INTRODUCTION

4.1.1 This section provides an assessment of the impacts and effects on ecological features as a result of the Permitted Development.

4.2 ASSUMPTIONS

4.2.1 It is assumed that the Permitted Development will follow good practice environmental guidelines to avoid any breach of wildlife legislation during the construction period and be aware of the potential presence of protected species.

4.2.2 It is assumed that the Permitted Development will commence within two years of the date of survey. Should the Permitted Development not commence within this timeframe then update ecological surveys may be required.

4.3 SCREENING OF ECOLOGICAL FEATURES

4.3.1 Table 6 identifies ecological features which will not be considered further in this report and provides justification for their exclusion from the assessment process.

Table 6 Screening of Ecological Features

Ecological Feature	Justification for Exclusion from Further Assessment
Ancient Woodland and Veteran Trees	There are no veteran trees at the Site. The Site does not contain and is not within 30m of any Ancient Woodland.
Badger	No evidence of Badger activity at and within 30m of the Site. The loss of suitable foraging habitat at the Site is temporary and there is abundant suitable foraging habitat in the local area.
Bats	The loss of suitable foraging habitat is temporary and there is abundant suitable foraging habitat in the local area.
Great Crested Newt	Although suitable terrestrial habitat is present at the Site, the lack of ponds within 500m significantly reduces the likelihood of this species being present at the Site.
White Clawed Crayfish (*Austropotamobius pallipes*)	The Site supports no suitable aquatic habitat for the species.
Aquatic Invertebrates	The wet ditches are to be unaffected by the Permitted Development.
Hazel Dormouse	No habitats present at the Site considered suitable for the species. The Site is also isolated from better quality habitat.
Smooth Snake, Sand Lizard and Natterjack Toad	Outside the typical geographic range of the species. No sites known to support the species in the local area based on information from LRERC (LRERC, 2015).

4.4 IDENTIFICATION AND ASSESSMENT OF POTENTIAL IMPACTS AND LIKELY EFFECTS

HABITATS AND FLORA

4.4.1 The habitats at the Site are considered to be of Very Low - Low ecological importance; however the location of the Site within a national level designation increases the ecological importance of the Site.

4.4.2 The floral diversity at the Site at the time of the survey was low, however due to the Site being located within the Gwent Levels SSSI, which is designated for its botanical interest *et. alia*; it is considered possible that more diverse floral species could be detected at the Site during the optimum season.

FAUNA

4.4.3 No protected faunal species were found at the Site during the survey, and the habitats present are considered to be of only low suitability for protected species, with the exception of the scattered trees.

4.4.4 The wet ditches were considered to provide aquatic habitat of low suitability for Otter and Water Vole. The ditches will not be infilled as part of the restoration proposals and the loss of terrestrial habitat proximal to the ditches is temporary.

4.4.5 The loss of suitable habitat for Terrestrial Invertebrates is temporary and enhancement at the Site

will improve the botanical diversity of the Site and provide more suitable habitat for Terrestrial Invertebrates.

5 CONCLUSIONS AND RECOMMENDATIONS

5.1.1 At the time of survey, the botanical interest at the Site was considered to be low, however it is recommended that a Site walkover is undertaken by a suitably qualified ecologist during the optimum survey period of April - September (inclusive). This will determine the presence of any notable floral species at the Site.

5.1.2 The Site provides limited suitability for some protected species and it is therefore recommended that a walkover of the Site is undertaken prior to commencement of works to assess the Site for the potential presence of protected faunal species.

5.1.3 Initial works should be conducted between March and September inclusive which is when most protected species are active. If any protected species are present at the Site at the time of commencement of works individuals can easily disperse.

5.1.4 It is recommended that the spoil heaps (as shown by TN1 on Figure E1 (Appendix E2)) are removed/dispersed across the Site (as required) under the supervision of a suitably qualified ecologist using light machinery with a large toothed bucket, in order to prevent any injury/killing of any potential Reptiles present within the spoil heaps.

5.1.5 Should any trees be removed at the Site; in order to reduce any impact upon breeding Birds, avoid any breach in wildlife legislation and maintain the local breeding populations, **any vegetation should be removed outside the bird breeding season** (March-September inclusive for most species). If this is not possible then vegetation should be checked by a suitably qualified ecologist prior to removal.

5.1.6 It is recommended the works are undertaken in phases, to allow easy dispersal of protected species using the Site, as well as allowing for the removal, translocation or avoidance of any protected botanical species.

5.1.7 If any protected species are found to be present at the Site during the works, then works should cease and an ecologist consulted for advice.

5.1.8 It is considered that implementation of sensitive working methods as set out in the Waste Recovery Plan will ensure that site restoration works will have no significant impact on the SSSI designated areas or nearby Severn Estuary SAC, SPA and Ramsar Site.

5.2 ENHANCEMENTS

5.2.1 In line with the NPPF, enhancements for biodiversity enhancements have been recommended below.

5.2.2 As the Site is part of the Gwent Levels SSSI, wildflower mixes could include species that are regionally notable, such as; Grass Vetchling (*Lathyrus nissolia*) and Common Meadow-Rue (*Thalictrum falvum*) to further increase the botanical diversity and importance of the Site.

5.2.3 A sensitive lighting scheme should be employed at the Site to prevent unnecessary light spill into naturally dark corridors currently used by nocturnal species (including Bats). The Institution of Lighting Professional's "*Guidance Notes for the Reduction of Obtrusive Light GN01:2011*" document

should be used as a design reference.

5.2.4 A range of Bird and Bat boxes could be implemented at the Site to provide suitable nesting/roosting habitat for protected species. Such boxes can be erected on retained trees.

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APPENDICES:

APPENDIX E1	Definitions, Abbreviations and Glossary
APPENDIX E2	Figure E1 – Phase 1 Habitat Plan

Appendix E1: Definitions, Abbreviations and Glossary

For the avoidance of confusion, abbreviations used within the report have the meanings detailed below:

AONB	Area of Outstanding Natural Beauty	**NNR**	National Nature Reserve
AoSP	Area of Special Protection	**NPPF**	National Planning Policy Framework
BAP	Biodiversity Action Plan	**NVC**	National Vegetation Classification
BAS	Biodiversity Alert Site	**PPG**	Planning Policy Guidance
BBS	Breeding Bird Survey	**PRA**	Preliminary Roost Assessment
BRC	Biological Records Centre	**PRF**	Potential Roost Feature
DAFOR	The DAFOR Scale of Abundance: D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare	**PSI**	Potential Site of Importance
DEFRA	Dept. for Environment, Food & Rural Affairs	**RAMs**	Reasonable Avoidance Measures
EcIA	Ecological Impact Assessment	**RAMSAR**	Wetland sites of international importance designated under the Ramsar Convention.
eDNA	Environmental DNA	**Retained BAS**	Retained Biodiversity Alert Site
EIA	Environmental Impact Assessment	**RIGS**	Regionally Important Geological and Geomorphological Sites
EMP	Environmental Management Plan	**RSPB**	Royal Society for the Protection of Birds
EPS	European Protected Species	**SAC**	Special Areas of Conservation
ES	Environmental Statement	**SBI**	Site of Biological Importance
Ha	Hectare	**SINC**	Site of Importance for Nature Conservation
HAP	Habitat Action Plan	**SLINC**	Site of Local Importance for Nature Conservatio
HPI	Habitat of Principal Importance	**SNCI**	Site of Nature Conservation Interest
HRA	Habitat Regulations Assessment	**sp.**	Species (Singular)
HSI	Habitat Suitability Index	**SPI**	Species of Principal Importance
IUCN	International Union for the Conservation of Nature	**spp.**	Species (Multiple)
JNCC	Joint Nature Conservation Committee	**SPA**	Special Protection Area
LBAP	Local Biodiversity Action Plan	**SSSI**	Site of Special Scientific Interest
LDF	Local Development Framework	**SuDS**	Sustainable Drainage Systems
LNR	Local Nature Reserve	**TPO**	Tree Protection Order
LWS	Local Wildlife Site	**WBS**	Wintering Bird Survey
MS	Method Statement	**WCA (Act)**	Wildlife and Countryside Act 1981
NBN	National Biodiversity Network	**WFD**	Water Framework Directive
NCC	Nature Conservancy Council	**ZoI**	Zone of Influence
NERC (Act)	Natural Environment & Rural Communities Act		
NGO	Non-Governmental Organisation		
NGR	National Grid Reference		

Glossary:

For the avoidance of confusion, the terms used in this report follow the definitions given below:

Assemblage	A group of species found in the same location (CIEEM, 2016).
BAP Habitat	Biodiversity Action Plan Habitat: Natural and semi-natural priority habitats identified as being the most threatened and requiring conservation action under the UK Biodiversity Action Plan (JNCC, 2016).
BAP Species	A Biodiversity Action Plan Species identified as being the most threatened and requiring conservation action under the UK Biodiversity Action Plan (JNCC, 2016).
Biodiversity	The biological diversity of the earth's living resources. The total range of variability among systems and organisms at the following levels of organisation: bioregional, landscape, ecosystem, habitat, communities, species, populations, individuals, genes and the structural and functional relationships within and between these different levels (CIEEM, 2016).
Biodiversity Alert Site	These sites are of lesser significance on a County basis due to lower intrinsic quality, smaller size, damage or disturbance. They collectively form a significant part of the County's nature conservation resource, and in some cases a valuable 'reserve series' for some of the Sites of Biological Importance (Staffordshire Ecological Record, 2016).
Buffer Zone	An area (human-made or natural) that helps to protect a habitat from damage, disturbance or pollution. It is managed to protect the 'integrity' of the valued habitat and/or the conservation status of species that it supports (CIEEM, 2016).
Compensation	Measures taken to make up for the loss of, or permanent damage to, biological resources through the provision of replacement areas. Any replacement area should be similar to or, with appropriate management, have the ability to reproduce the ecological functions and conditions of those biological resources that have been lost or damaged (CIEEM, 2016).
Commuting	The activity of flying between the roost and foraging area (Stone, 2013).
Connectivity	A measure of the functional availability of the habitats needed for a particular species to move through a given area. Examples include movements of migratory fish from feeding grounds to spawning grounds or linking areas of appropriate habitat needed by some slow colonising species if they are to spread (CIEEM, 2016).
Conservation	The protection, preservation, management or restoration of the natural environment and wildlife (Oxford Dictionary, 2016).
Dispersal	The dissemination, or scattering, of organisms over periods within a given area or over the Earth (Encyclopaedia Brittanica, 2016).
Dominant (Habitat/Species)	Denoting the predominant species in a plant (or animal) community (Oxford Dictionary, 2016).
Ecological Impact Assessment (EcIA)	Ecological Impact Assessment is the process of identifying, quantifying and evaluating the potential impacts of defined actions on ecosystems or their components. If properly implemented it provides a scientifically defensible approach to ecosystem management (CIEEM, 2016).
Ecological Stepping Stones	Discontinuous patches of habitat and natural features that enable wildlife to disperse and migrate have sometimes been called 'stepping stones', There is a gradation between a series of 'stepping stones' and what might be thought of as a wildlife corridor (English Nature, 1993).
Ecosystem	A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit. Systems in which species evolve (CIEEM, 2016).

eDNA	Genetic material obtained directly from environmental samples (soil, sediment, water, etc.) without any obvious signs of biological source material.
Effect	This report uses the word impact rather than effect when referring to how ecological resources might be affected by a project (CIEEM, 2016).
European Protected Species	Schedule 2 lists those species of animals listed in Annex IV(a) to the Habitats Directive (Habitats Regulations) which have a natural range which includes any area in Great Britain (HMO, 2010).
Enhancement	The genuine enhancement of the natural heritage interest of a site or area because the project includes improved management or new habitats or features, which are better than the prospective management, or the habitats or features present there now. There is, therefore, a net or new benefit to the natural heritage (CIEEM, 2016).
Environmental Impact Assessment (EIA)	This is an assessment carried out under the EIA Regulations (CIEEM, 2016).
European Protected Species (EPS) License	A license issued by Natural England that allows for the mitigation of impacts on a European Protected Species that would otherwise be illegal. Based on (HMO, 2016).
Fauna	The animals of a particular region, habitat, or geological period (Oxford Dictionary, 2016).
Flora	The plants of a particular region, habitat, or geological period (Oxford Dictionary, 2016).
Foraging	The activity of searching for food (Oxford Dictionary, 2016).
Fragmentation	The breaking up of a habitat, ecosystem or biotope into smaller parcels with a consequent impairment of functioning (CIEEM, 2016).
Habitat	A place in which a particular plant or animal lives. Often used in the wider sense referring to major assemblages of plants and animals found together (CIEEM, 2016).
Habitat of Principal Importance	Habitats identified as requiring action in the UK Biodiversity Action Plan (UK BAP) and continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework (Natural England, 2016).
Hibernation	The condition or period of an animal or plant spending the winter in a dormant state (Oxford Dictionary, 2016).
Impact	The way in which an ecological resource/receptor is affected by a project (see effect) (CIEEM, 2016).
Invasive Species	Species introduced outside its normal distribution (HMO, 2011).
Keystone Species	A species that has a disproportionately large effect on the communities in which it occurs. Such species help to maintain local biodiversity within a community either by controlling populations of other species that would otherwise dominate the community or by providing critical resources for a wide range of species (Encyclopaedia Brittanica, 2016).
Latrine	Dung pit (Harris et al, 1989).
LBAP Habitat	Local Biodiversity Action Plan Habitat: Priority habitats identified as being the most threatened, within a local area, and require conservation action under Local Biodiversity Action Plan (JNCC, 2016).
LBAP Species	Local Biodiversity Action Plan Species: Priority species identified as being the most threatened, within a local area, and require conservation action under Local Biodiversity Action Plan (JNCC, 2016).
Mitigation	Measures taken to avoid or reduce negative impacts. Measures may include: locating the development and its working areas and access routes away from areas of high ecological interest, or timing works to avoid sensitive periods (CIEEM, 2016).
Native Species	An animal or plant species indigenous to a place (Oxford Dictionary, 2016).

Net Ecological Gain	The point at which the quality and quantity of habitats or species improves compared to their original condition, i.e. improvements over and above those required for mitigation/compensation (CIEEM, 2016).
No Net Loss	The point at which habitat or biodiversity losses equal their gains, both quantitatively and qualitatively (CIEEM, 2016).
Non-Statutory Sites	'Non-statutory' sites of nature conservation value that have been designated 'locally' (i.e. excluding SSSIs, ASSIs, SPAs, SACs, and Ramsar Sites). Local Nature Reserves are included as they are a designation made by the Local Authority not statutory country conservation agencies. These are often called Wildlife Sites, Sites of Importance for Nature Conservation or other similar names (CIEEM, 2016).
Population	A collection of individuals (plants or animals), all of the same species and in a defined geographical area (CIEEM, 2016).
Protected Species	A species of animal or plant which it is forbidden by law to harm or destroy (Collins English Dictionary, 2016). See also 'European Protected Species'.
Reasonable Avoidance Measures	The use of a non-licenced method statement to avoid injury or killing to protected species where an activity or the careful timing of an activity is considered highly unlikely to result in an offence (Natural England, 2015).
Receptor	Any ecological or other defined feature (e.g. human beings) that is sensitive to or has the potential to be affected by an impact (CIEEM, 2016).
Restoration	The active re-establishment of a damaged or degraded system or habitat to a close approximation of its pre-degraded condition (CIEEM, 2016).
Retained Biodiversity Alert Site	A Site which attained the level of BAS at the time of survey, which was either more than 10 years ago or has not subsequently been surveyed under current guidelines, but is considered likely to pass (Staffordshire Ecological Record, 2016)
Riparian	Something related to, living on, or located at the banks of a watercourse, usually a river or stream (HMO, 2011).
Roost	A structure (either natural or man-made) where Bats congregate to rest during the day (Oxford Dictionary, 2016). Protected under the Wildlife and Countryside Act 1981 and the Conservation of Habitats and Species Regulations 2010 'The Habitat Regulations' (HMO, 2010).
Sett	Any structure or place which displays signs indicating current use by a Badger (HMO, 1992). Protected under the Protection of Badgers Act 1992.
Significant Barrier	A natural or man-made obstacle that prevents the dispersal of species e.g. a major road or fast flowing river. Based on (Natural England, 2016).
Site of Biological Importance	Sites representing the best remaining examples of habitats which rate highly on the basis of; naturalness, diversity, or rarity of species or communities within a County. These sites are frequently the remnants of larger areas of semi-natural vegetation, which may not be either sufficiently extensive or undisturbed to warrant SSSI status, but are important examples of characteristic or notable vegetation types or habitat complexes, sometimes with associated dependant plant or animal species (Staffordshire Ecological Record, 2016).
Species	A group of living organisms consisting of similar individuals capable of exchanging genes or interbreeding (Oxford Dictionary, 2016).
Species of Principal Importance	These are the species found in England which were identified as requiring action under the UK BAP and which continue to be regarded as conservation priorities under the UK Post-2010 Biodiversity Framework (Natural England, 2016).
Statutory Sites	Statutory sites of nature conservation value that have been designated nationally (i.e. SSSI's). Also included are Sites that are designated internationally (i.e. SPA's, SAC's and Ramsar Sites). Based on (CIEEM, 2016).

Wildlife Corridor	A wildlife corridor is used to refer to linear features that are used for migration and dispersal or otherwise act to link habitats in ways that reduce the isolation of populations (English Nature, 1993).
Zone of Influence	The areas/resources that may be affected by the biophysical changes caused by activities associated with a project (CIEEM, 2016).

Appendix E2:

Figure E1 – Phase 1 Habitat Plan