



ENVIRONMENTAL STATEMENT: 6.3 APPENDIX 7-6: BOTANICAL SURVEY REPORT

DECARBONISATION

Cory Decarbonisation Project

PINS Reference: EN010128

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Revision A

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
1. INTRODUCTION	2
1.2. Brief and Objectives	2
1.3. Relevant Legislation, Policy and Conservation Designations.....	2
2. METHODS	4
2.1. Desk Study.....	4
2.2. Habitat and Notable Plant Survey.....	4
2.3. Data Analysis	4
2.4. Notes and Limitations.....	5
3. RESULTS	6
3.1. Desk Study.....	6
3.2. Habitat and Notable Plant Survey.....	6
3.3. Invasive Species	8
4. DISCUSSIONS AND CONCLUSIONS	9
4.1. Designated Sites	9
4.2. Protected and Notable Species	9
4.3. Habitats of Principal Importance.....	9
4.4. Invasive Plant Species	9
5. REFERENCES	16

ANNEXES

ANNEX A	
BM4.0 Condition Assessment.....	
ANNEX B	
Photographs.....	

EXECUTIVE SUMMARY

WSP UK Ltd has been commissioned by Cory Environmental Holdings Limited (Cory) (hereafter referred to as 'the Applicant') to undertake a botanical survey, for the Cory Decarbonisation Project to be located at Norman Road, Belvedere in the London Borough of Bexley (LBB; National Grid Reference/NGR 549572, 180512).

WSP UK Ltd was commissioned by Cory Environmental Holdings Ltd (the 'Applicant') to complete a botanical survey for the Proposed Scheme.

A Preliminary Ecological Appraisal (**Appendix 7-2: Preliminary Ecological Appraisal (Volume 3)**) determined four habitats on Site as Habitats of Principal Importance (HPI): coastal floodplain and grazing marsh; reedbeds; lowland mixed deciduous woodland; and intertidal mudflats. On 14th July 2023, WSP undertook a botanical survey of the Site to confirm the presence and condition of the coastal floodplain and grazing marsh HPI and to identify any populations of rare or notable plants which may be present. A secondary aim of the survey was to gather incidental records of invasive plants, if encountered.

The survey confirmed that the fields to the south of Riverside 1 can be classified as coastal floodplain and grazing marsh HPI and other neutral grassland. No legally protected plant species were recorded, although one Section 41 of the Natural Environment and Rural Communities Act 2006 SPI listed, Vascular Plant Red listed vulnerable species and the London Priority Species listed species was identified – sea barley *Hordeum marinum*.

The presence of the coastal floodplain and grazing marsh HPI and the presence of the sea barley is a material consideration for the Proposed Scheme to ensure compliance with Government planning policy and biodiversity net gain legislation. Measures should be adopted and included within this Environmental Statement (ES) to avoid affecting this habitat as a priority. Where avoidance is not possible, suitable measures should be designed to compensate for any habitat loss and included within this Environmental Statement (ES).

An invasive species treatment strategy will be required to avoid spreading goat's rue *Galega officinalis*.

1. INTRODUCTION

- 1.1.1. WSP UK Ltd has been commissioned by Cory Environmental Holdings Limited (Cory) (hereafter referred to as 'the Applicant') to undertake a botanical survey, for the Cory Decarbonisation Project to be located at Norman Road, Belvedere in the London Borough of Bexley (LBB; National Grid Reference/NGR 549572, 180512).
- 1.1.2. The land upon which the Proposed Scheme is to be located is referred to as the 'Site' and the edge of this land referred to as the 'Site Boundary'.
- 1.1.3. A Preliminary Ecological Appraisal (PEA) (**Appendix 7-2: Preliminary Ecological Appraisal (Volume 3)**) was undertaken during January and February 2023. UKHab survey identified fifteen habitat types, comprising the River Thames, coastal floodplain and grazing marsh, open mosaic habitat, developed land sealed surface, modified grassland, reedbeds, suburban mosaic of developed land/natural surface, other neutral grassland, artificial unvegetated unsealed surface, buildings, eutrophic standing water (ponds and ditches), lowland mixed deciduous woodland, bramble scrub and intertidal mudflats.
- 1.1.4. Four onsite habitats (coastal floodplain and grazing marsh, reedbed, lowland mixed deciduous woodland and intertidal mudflats) were identified as Habitat of Principal importance (HPI) in accordance with Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006¹. Further botanical surveys were recommended by the PEA to gather additional information and identify the potential for notable plant species (those protected under Schedule 8 of the Wildlife and Countryside Act or listed on one or more registers of general conservation concern) to be present on Site.

1.2. BRIEF AND OBJECTIVES

- 1.2.1. The Applicant commissioned WSP UK Ltd to complete a botanical survey to:
- confirm the presence and condition of HPI identified during the PEA; and
 - identify any populations of rare or notable plants, if present, in addition to any invasive plant species that may be present.

1.3. RELEVANT LEGISLATION, POLICY AND CONSERVATION DESIGNATIONS

- 1.3.1. The report has been compiled with reference to the following relevant nature conservation legislation, planning policy and the UK Biodiversity Framework from which the protection of sites, habitats and species is derived in England.
- The Conservation of Habitats and Species Regulations 2017 (Habitats Regulations)²;
 - The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019³;
 - The Wildlife and Countryside Act 1981 (as amended) (WCA)⁴;

- The Natural Environment and Rural Communities (NERC) Act 2006 (England)¹;
- The UK Post-2010 Biodiversity Framework (2011-2020)⁵; and
- The National Planning Policy Framework (NPPF)⁶.

1.3.2. The following species conservation registers were used to identify protected or notable plant species:

- A Vascular Plant Red List for England (Stroh et al, 2014)⁷;
- The list of Species of Principal Importance (SPI) in England listed in Section 41 of the NERC Act 2006¹;
- UK Biodiversity Action Plan; Priority Habitat Descriptions. BRIG (ed. Ant Maddock) 2008⁸;
- Wildlife and Countryside Act Schedule 8⁴;
- London Priority Species List within the London Environment Strategy (2019)⁹; and
- Kent Rare Plant Register (2021)¹⁰.

2. METHODS

2.1. DESK STUDY

2.1.1. A desk study for the Proposed Scheme was undertaken in February 2023 as part of the PEA (**Appendix 7-2: Preliminary Ecological Appraisal (Volume 3)**). The PEA was reviewed to identify areas of habitat warranting more detailed botanical survey.

2.2. HABITAT AND NOTABLE PLANT SURVEY

2.2.1. A botanical survey was undertaken on 14th July 2023 by two ecologists, holding a Field Identification Skills Certificate (FISC) level 3 qualification. The survey focussed on areas of habitat that could qualify as Habitats of Principal Importance (HPI). These areas were split into four compartments; as seen in **Figure 7-16: Botanical Survey Results (Volume 2)**. Compartment 1 is within East Paddock and Stable Paddock, Compartment 2 is within Norman Road Field and Crossness LNR, Compartment 3 is east of Riverside 1, and Compartment 4 is within Norman Road Field. The survey team carried out a structured walk of these compartments, making sure to cover a large proportion of the habitat (in all cases upwards of 80% of the area of each stand was visited). A single, combined list of vascular plants was collected for each area of vegetation.

2.2.2. The DAFOR scale was used to estimate the frequency and cover of the different plant species as follows:

- Dominant (D) - >75% cover;
- Abundant (A) – 51-75% cover;
- Frequent (F) – 26-50% cover;
- Occasional (O) – 11-25% cover; and
- Rare (R) – 1-10% cover.

2.2.3. The term 'Locally' (L) was used where the frequency and distribution of a species was patchy or clustered (e.g. LA indicates a species that is abundant but only in selected areas of the habitat). The term 'Very' (V) was used where a species only occurs singly or in a single patch.

2.2.4. Invasive plant species were searched for during the survey and were recorded when encountered. However, the survey does not constitute a comprehensive inventory of such species.

2.3. DATA ANALYSIS

2.3.1. Data were analysed in two ways:

- to identify the National¹¹ Vegetation Classification (NVC) communities present, qualitative comparisons were made to the published accounts and keys in British Plant Communities¹² using professional judgement and surveyor experience; and

- comparing the species recorded to the registers of species with a conservation status listed in **Section 1.3**.

2.4. NOTES AND LIMITATIONS

- 2.4.1. Ecological survey data is typically valid for two years unless otherwise specified, for example, if conditions are likely to change more quickly due to ecological processes or anticipated changes in management.
- 2.4.2. Records held by local biological record centres and local recording groups are generally collected on a voluntary basis; therefore, the absence of records does not demonstrate the absence of species, it may simply indicate a gap in recording coverage. To overcome this limitation, this report supplements desk study information with field survey evidence.
- 2.4.3. No safe access was available to the East Paddock (as detailed in **Figure 7-10: Ecological Survey Areas (Volume 2)**) due to the presence of horses. However, the plant species were recorded from the southern and eastern boundaries of the field and could be adequately surveyed from the other side of the fence using binoculars. It is unlikely notable species were missed. The habitat was homogeneous throughout the field; consequently, the survey as undertaken is considered sufficient for determining the habitat type and condition.
- 2.4.4. Access to ditches was not possible due to health and safety concerns and reeds blocking the view. Therefore, the presence of invasive non-native plant species as listed in the Crossness LNR may have been missed. However, the overall vegetation composition of the ditches was species poor, as assessed where accessible along their length.
- 2.4.5. Botanical surveys are seasonally limited, and throughout the year certain species will be more or less evident at different times (i.e. depending on the flowering season). However, it is considered that sufficient information was gathered to enable an assessment of the habitat types present.
- 2.4.6. The survey focused on higher plants. A comprehensive list of bryophytes was not compiled. Whilst notable species of bryophyte may have been overlooked (if present), this limitation did not restrict the sensitivity of the survey for identification of habitats qualifying as HPI. In general, the presence of notable bryophytes is likely to be associated with HPI vegetation, thus there is a low risk that important features were overlooked, especially considering that bryophytes are not characteristic to the coastal floodplain and grazing marsh HPI.

3. RESULTS

3.1. DESK STUDY

- 3.1.1. Crossness LNR is situated within the Site Boundary. It is designated for the protection of a network of ditches and open water, scrub and rough grassland, that support water vole *Arvicola amphibius*, over 130 different species of bird and a number of rare aquatic and terrestrial invertebrates.
- 3.1.2. According to the Thames Water data from Crossness LNR, a total of 254 plant species have been recorded within Crossness LNR in 2015 – 2023.
- 3.1.3. Records of 20 non-native invasive species within 2km of the Site, listed on Schedule 9 of the Wildlife and Countryside Act or the London Invasive Species Initiative (LISI) list were returned. The species comprised water fern *Azolla filiculoides*, tree of heaven *Ailanthus altissima*, butterfly bush, New Zealand pigmyweed *Crassula helmsii*, Japanese knotweed *Fallopia japonica*, goat's-rue, giant hogweed *Heracleum mantegazzianum*, floating pennywort *Hydrocotyle ranunculoides*, Himalayan balsam *Impatiens glandulifera*, least duckweed *Lemna minuta*, foxglove tree *Paulownia tomentosa*, Turkey oak *Quercus cerris*, evergreen oak *Quercus ilex* and false acacia *Robinia pseudoacacia*.

3.2. HABITAT AND NOTABLE PLANT SURVEY

- 3.2.1. A UKHab habitat map is provided in **Figure 7-6: Site UKHab Survey Map (Volume 2)** and shows all the habitats identified on Site. A description of all the compartments within the Site are detailed below, as detailed in **Figure 7-16: Botanical Survey Results (Volume 2)**. BM4.0 condition assessment is detailed in **Annex A**. Photographs are provided in **Annex B**.

COASTAL FLOODPLAIN AND GRAZING MARSH

Compartment 1

- 3.2.2. Rough grassland with a varied sward height (between 5-50cm) intensively grazed by horses and containing standing brackish water is present west of the Norman Road and south of the Riverside Campus. Artificial drainage is present in the form of a tidal gate and ditches/main land drain. Water level in ditches was 50cm below the surface at the time of the survey.
- 3.2.3. The habitat comprises an unusual mix of species that does not correspond to any NVC community description, consisting of sea barley *Hordeum marinum* (D), common bent *Agrostis capillaris* (R), dittander *Lepidium latifolium* (LD), narrow leaved pepperwort *Lepidium ruderale* (F) and red bartsia *Odontites vernus* (LO). Scattered hawthorn *Crataegus monogyna* (R) was present. The ditches were not botanically rich and contained common reed *Phragmites australis* (D) and dittander (A).
- 3.2.4. Overall cover of bare ground is higher than 5% due to inundation and heavy grazing.

3.2.5. The habitat meets the description of the coastal floodplain and grazing marsh HPI.

Compartment 2

- 3.2.6. This compartment is mapped as coastal floodplain and grazing marsh under the Priority Habitats inventory, however overall composition of the sward is more closely attributed to the NVC neutral grassland type MG1 *Arrhenatherum elatius* grassland, though with some evidence of saline influence (sea barley and dittander were occasional). It is a mosaic of rough grassland, predominantly consisting of false oat grass *Arrhenatherum elatius*, and scattered bramble *Rubus fruticosus* agg.
- 3.2.7. Grassland has a varied sward height (between 5-50cm) and is heavily grazed by horses. The field was bordered by brackish ditches. Two ponds with bordering reedbed and bramble scrub were present at the southern part of the field. Inundation may now be a controlled and rare event, due to a tidal gate on the main ditch/land drain.
- 3.2.8. There was evidence of habitat enhancement, with presence of field scabious *Knautia arvensis* (R), agrimony *Agrimonia eupatoria* (R) and common knapweed *Centaurea nigra* (R) that have the appearance of being introduced (incongruous within the otherwise species poor sward). Sea barley (O) and narrow leaved pepperwort (R) were less common than in Compartment 1 'East Paddock'. Heavily grazed areas were perennial rye grass *Lolium perenne* (D) dominant short sward with red bartsia (LA) (again possibly introduced).

OTHER NEUTRAL GRASSLAND

Compartment 3

- 3.2.9. A strip of false oat grass dominant grassland, with evidence of saline influence i.e. presence of sea beet *Beta vulgaris* (R). Compartment 3 has already been managed for conservation and appeared to have been seeded with agrimony, common knapweed, salad burnet *Sanguisorba minor* and lady's bedstraw *Galium verum*. The overall composition of the sward was most closely comparable to the NVC neutral grassland type MG1 *Arrhenatherum elatius* grassland.

Compartment 4

- 3.2.10. A mosaic of false oat grass dominant grassland with scattered bramble scrub at margins. There was evidence of some habitat enhancement, i.e. field scabious (R), agrimony (R) and common knapweed (R) have appearance of being introduced, as their presence was incongruous within the otherwise species poor sward. Central section and footpaths are perennial rye grass dominated. The overall composition of the sward can be attributed to the NVC neutral grassland type MG1 *Arrhenatherum elatius* grassland. The grassland was a relatively species-poor example of this habitat despite the presence of species recorded that are indicative of habitat enhancement.

3.3. INVASIVE SPECIES

- 3.3.1. No plants listed as invasive species under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were recorded. Goat's-rue *Galega officinalis*, a Category 4 LSI list species, was recorded throughout the Site.

4. DISCUSSIONS AND CONCLUSIONS

4.1. DESIGNATED SITES

- 4.1.1. Crossness LNR is situated within the Site Boundary of the Proposed Scheme. In the absence of mitigation, there would be a risk of adverse effects on Crossness LNR. Mitigation will be developed and presented in this Environmental Statement (ES) to offset such effects.

4.2. PROTECTED AND NOTABLE SPECIES

- 4.2.1. No plant species protected under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended)¹³ were recorded within the Site Boundary. Sea barley, which was recorded within the coastal floodplain and grazing marsh, is included in the SPI list under Section 41 of the Natural Environment and Rural Communities Act 2006, the Vascular Plant Red List for England as a vulnerable species and the London Priority Species List. The presence of this species is a material consideration for the Proposed Scheme. Measures to provide replacement habitat for this species should be considered in the development design.

4.3. HABITATS OF PRINCIPAL IMPORTANCE

- 4.3.1. The botanical survey confirmed the presence of coastal floodplain and grazing marsh HPI, listed in the Section 41 of the NERC Act 2006¹. The presence of HPI is a material consideration for the Proposed Scheme. Measures should be adopted to avoid impacting this habitat as a priority. Where avoidance is not possible, suitable measures should be designed to compensate for any habitat loss adopting Biodiversity Net Gain principles in compliance with Government planning policy and emerging legislation.

4.4. INVASIVE PLANT SPECIES

- 4.4.1. Goat's-rue is included in LISI as Category 4 species, which is described as "*Species which are widespread for which eradication is not feasible but where avoiding spread to other sites may be required*" (LISI, 2014). Adequate biosecurity measures on Site should be applied in order to avoid spread of goat's-rue.

Annex A

BM4.0 CONDITION ASSESSMENT

Table A-1: Coastal Floodplain and Grazing Marsh – Compartment 1

Criterion No	Passed?	Notes
1	No	Water level in ditches is 50cm below surface. Artificial drainage is present (tidal gate and ditches/main land drain).
2	No	Community present is not a clear fit for any NVC community. Ditches appeared to lower water levels as opposed to maintaining and were not botanically rich.
3	Yes	Water brackish but no signs of pollution.
4	Yes	Minimal scattered hawthorn trees/scrub.
5	No	High levels of horse grazing and associated poaching of ground.
6	Yes	No invasive species recorded.
7	No	Dittander locally dominant, floating and submerged vegetation absent.
Total:	Poor	

Table A-2: Coastal Floodplain and Grazing Marsh – Compartment 2

Criterion No	Passed?	Notes
1	No	Water level in ditches is 50cm below surface. Artificial drainage is present (tidal gate and ditches/main land drain).
2	No	Community present is not a clear fit for any NVC community (though most closely relatable to MG1). Ditches appeared to lower water levels as opposed to maintaining and were not botanically rich.
3	Yes	Water brackish but no signs of pollution.
4	No	Extensive scattered bramble, hawthorn and rare elder scrub at ~15%.
5	No	High levels of horse grazing but under 5% overall.
6	Yes	No invasive species recorded.
7	No	Dittander locally dominant, floating and submerged vegetation absent.
Total:	Poor	

Table A-3: Other Neutral Grassland – Compartment 3

Criterion No	Passed?	Notes
1	Yes	False oat grass dominant other neutral grassland.
2	No	Had recently been uniformly mown to short sward. Varied mowing pattern to leave some areas longer would be beneficial.
3	Yes	Minimal bare ground.
4	Yes	No bracken present, bramble scrub is under 5% on edges.
5	Yes	No invasive species or damage recorded.
6	Yes	10 vascular plant species per m ² present.
Total:	Moderate	

Table A-4: Other Neutral Grassland – Compartment 4

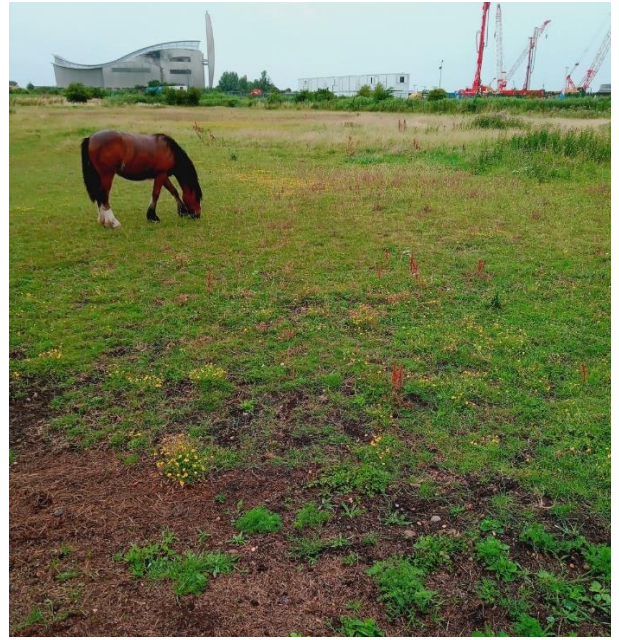
Criterion No	Passed?	Notes
1	Yes	False oat grass dominant other neutral grassland.
2	Yes	Foot traffic and possibly mowing created two sward lengths with a shorter area within the centre.
3	Yes	Minimal bare ground from footpath.
4	No	No bracken present, bramble scrub is under 5% and on the compartment edges.
5	No	No invasive species or damage recorded.
6	No	Areas of higher traffic were perennial rye dominant and had lower diversity. False oat grass dominant patch had diversity of 6-10 species.
Total:	Moderate	

Annex B

PHOTOGRAPHS



Dittander within coastal floodplain and grazing marsh.



Coastal floodplain and grazing marsh



Sea barley within coastal floodplain and grazing marsh.



Red bartsia within coastal floodplain and grazing marsh.



Coastal floodplain and grazing marsh



Coastal floodplain and grazing marsh



Field scabious within other neutral grassland.



Lady's bedstraw within other neutral grassland.



Other neutral grassland.



Dense scrub at the margins of other neutral grassland.

5. REFERENCES

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