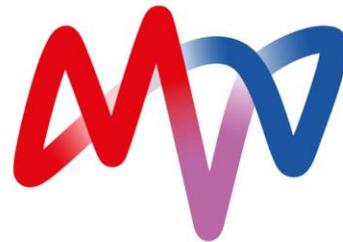


Medworth Energy from Waste Combined Heat and Power Facility



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Outline Landscape and Ecological Management Plan

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Executive Summary

Wood Group UK Limited (Wood) has been commissioned by Medworth CHP Limited, (the 'Applicant'), to provide consenting and environmental consultancy support services for the Proposed Development centring around an Energy from Waste Combined Heat and Power Facility (EfW CHP Facility) at Wisbech, Cambridgeshire.

This report provides an Outline Landscape and Ecological Management Plan (LEMP) for the Proposed Development which establishes a clear over-arching objective of seeking to create and sensitively manage new habitats at the EfW CHP Facility Site. It describes the outline methods and timing of management activities required to achieve each of the objectives.

The Outline LEMP sets out the long-term management objectives for the EfW CHP Facility Site. It has been produced to provide a framework for the delivery of detailed management operations so that the Outline Landscape and Ecology Strategy (see Appendix A) for the EfW CHP Facility Site, including landscape design intentions and ecological objectives, will be achieved.



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5. Summary

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1. Introduction

1.1 Background

- 1.1.1 Medworth CHP Limited (the Applicant) is applying to the Secretary of State for a Development Consent Order (DCO) to construct operate and maintain an Energy from Waste (EfW) Combined Heat and Power (CHP) Facility on the industrial estate, Algores Way, Wisbech, Cambridgeshire. Together with associated Grid Connection, CHP Connection, Water Connections, and Temporary Construction Compound (TCC), these works are the Proposed Development.
- 1.1.2 The Proposed Development would recover useful energy in the form of electricity and steam from over half a million tonnes of non-recyclable (residual), non-hazardous municipal, commercial and industrial waste each year. The Proposed Development has a generating capacity of over 50 megawatts and the electricity would be exported to the grid. The Proposed Development would also have the capability to export steam and electricity to users on the surrounding industrial estate.
- 1.1.3 The Proposed Development is a Nationally Significant Infrastructure Project (NSIP) under Part 3 Section 14 of the Planning Act 2008 (2008 Act) by virtue of the fact that the generating station is located in England and has a generating capacity of over 50 megawatts (section 15(2) of the 2008 Act). It, therefore, requires an application for a DCO to be submitted to the Planning Inspectorate (PINS) under the 2008 Act. PINS will examine the application for the Proposed Development and make a recommendation to the Secretary of State (SoS) for Business, Energy and Industrial Strategy (BEIS) to grant or refuse consent. On receipt of the report and recommendation from PINS, the SoS will then make the final decision on whether to grant the Medworth EfW CHP Facility DCO.

1.2 The Applicant and the project team

- 1.2.1 The Applicant is a wholly owned subsidiary of MVV Environment Limited (MVV). MVV is part of the MVV Energie AG group of companies. MVV Energie AG is one of Germany's leading energy companies, employing approx. 6,500 people with assets of around €5 billion and annual sales of around €4. 1 billion. The Proposed Development represents an investment of approximately £450m.
- 1.2.2 The company has over 50-years' experience in constructing, operating, and maintaining EfW CHP facilities in Germany and the UK. MVV Energie's portfolio includes a 700,000 tonnes per annum residual EfW CHP facility in Mannheim, Germany.
- 1.2.3 MVV Energie has a growth strategy to be carbon neutral by 2040 and thereafter carbon negative, i.e., climate positive. Specifically, MVV Energie intends to:
- reduce its direct carbon dioxide (CO₂) emissions by over 80% by 2030 compared to 2018;
 - reduce its indirect CO₂ emissions by 82% compared to 2018;



- be climate neutral by 2040; and
- be climate positive from 2040.

1.2.4 MVV's UK business retains the overall group ethos of 'belonging' to the communities it serves whilst benefitting from over 50 years' experience gained by its German sister companies.

1.2.5 MVV's largest project in the UK is the Devonport EfW CHP Facility in Plymouth. Since 2015, this modern and efficient facility has been using around 265,000 tonnes of municipal, commercial and industrial residual waste per year to generate electricity and heat, notably for Her Majesty's Naval Base Devonport in Plymouth, and exporting electricity to the grid.

1.2.6 In Dundee, MVV has taken over the existing Baldovie EfW Facility and has developed a new, modern facility alongside the existing facility. Operating from 2021, it uses up to 220,000 tonnes of municipal, commercial and industrial waste each year as fuel for the generation of usable energy.

1.2.7 Biomass is another key focus of MVV's activities in the UK market. The biomass power plant at Ridham Dock, Kent, uses up to 195,000 tonnes of waste and non-recyclable wood per year to generate green electricity and is capable of exporting heat.

1.2.8 To prepare the ES for the Proposed Development, the Applicant has engaged Wood Group UK Limited (Wood). Wood is registered with the Institute of Environmental Management and Assessment (IEMA)'s Environmental Impact Assessment (EIA) Quality Mark scheme. The scheme allows organisations that lead the co-ordination of EIAs in the UK to make a commitment to excellence in their EIA activities and have this commitment independently reviewed.

1.3 The Proposed Development

1.3.1 The Proposed Development comprises the following key elements:

- The EfW CHP Facility;
- CHP Connection;
- Temporary Construction Compound (TCC);
- Access Improvements;
- Water Connections; and
- Grid Connection.

1.3.2 A summary description of each Proposed Development element is provided below. A more detailed description is provided in **ES Chapter 3: Description of the Proposed Development (Volume 6.2)** of the ES. A list of terms and abbreviations can be found in **Chapter 1 Introduction, Appendix 1F Terms and Abbreviations (Volume 6.4)**.

- EfW CHP Facility Site: A site of approximately 5.3ha located south-west of Wisbech, located within the administrative areas of Fenland District Council



(FDC) and Cambridgeshire County Council (CCC). The main buildings of the EfW CHP Facility would be located in the area to the north of the Hundred of Wisbech Internal Drainage Board (HWIDB) drain bisecting the site and would house many development elements including the tipping hall, waste bunkers, boiler house, turbine hall, air cooled condenser, air pollution control building, chimneys and administration building. The gatehouse, weighbridges, 132kV switching compound and laydown maintenance area would be located in the southern section of the EfW CHP Facility Site.

- **CHP Connection:** The EfW CHP Facility would be designed to allow the export of steam and electricity from the facility to surrounding business users via dedicated pipelines and private wire cables located along the disused March to Wisbech railway. The pipeline and cables would be located on a raised, steel structure.
- **TCC:** Located adjacent to the EfW CHP Facility Site, the compound would be used to support the construction of the Proposed Development. The compound would be in place for the duration of construction.
- **Access Improvements:** includes access improvements on New Bridge Lane (road widening and site access) and Algores Way (relocation of site access 20m to the south).
- **Water Connections:** A new water main connecting the EfW CHP Facility into the local network will run underground from the EfW CHP Facility Site along New Bridge Lane before crossing underneath the A47 (open cut trenching or horizontal directional drilling (HDD)) to join an existing Anglian Water main. An additional foul sewer connection is required to an existing pumping station operated by Anglian Water located to the northeast of the Algores Way site entrance and into the EfW CHP Facility Site.
- **Grid Connection:** This comprises a 132kV electrical connection using underground cables. The Grid Connection route begins at the 132kV switching compound in the EfW CHP Facility Site and runs underneath New Bridge Lane, before heading north within the verge of the A47 to the Walsoken Substation on Broadend Road. From this point the cable would be connected underground to the Walsoken DNO Substation.

1.4 Purpose of this report

1.4.1 This report provides an Outline Landscape and Ecological Management Plan (LEMP), which establishes a clear over-arching objective of seeking to create and sensitively manage new habitats (see **Section 2**) on the EfW CHP Facility Site. It has been produced to provide a framework for the delivery of detailed management operations (see **Section 3**) to achieve the Outline Landscape and Ecology Strategy for the EfW CHP Facility Site (see **Appendix A**), including landscape design intentions and ecological objectives.

1.4.2 Although the subject of the Outline LEMP is primarily the delivery of the Outline Landscape and Ecology Strategy for the EfW CHP Facility Site (**Appendix A**), proposed native tree and hedgerow planting for the proposed Walsoken Substation, as shown on **Figure 3.4 Walsoken Substation (Volume 6. 3)** in **Chapter 3**



Description of the Proposed Development (Volume 6.2), would accord with the objectives and methods for creation and management of the respective habitat types as outlined within **Section 2 and 3** of the Outline LEMP.

- 1.4.3 For all other parts of the Proposed Development (i.e., the remainder of the Grid Connection, and the TCC, CHP Connection, Access Improvements and Water Connections), areas of temporary habitat loss during construction of the Proposed Development would be reinstated like-for-like. Consequently, habitat composition and species mixes would vary on a location-by-location basis, however the prescriptions for undertaking habitat creation, management and monitoring would accord with the principles described for broad habitat types (i.e., individual trees; hedgerows; native shrub; and grassland) described in **Section 2 and 3** of the Outline LEMP with the exception of the Grid Connection which will be in highway land controlled by the relevant highway authority.
- 1.4.4 Detailed habitat creation and reinstatement details and associated management and monitoring consistent with those established within this Outline LEMP, would be agreed as part of a DCO Requirement. However, where these habitats do not form part of the Biodiversity Net Gain (BNG) obligations, it is proposed that they would be subject to a 5-year management period to ensure establishment in line with typical DCO landscape Requirements.
- 1.4.5 The Outline LEMP should be read in conjunction with the **Outline Construction Environmental Management Plan (CEMP) (Volume 7.12)** for the Proposed Development, which includes measures for protecting landscape and ecological features during the construction phase.
- 1.4.6 At the detailed design stage, a detailed Landscape and Ecological Management Plan, to be in substantial accordance with this Outline Landscape and Ecological Management Plan, will be submitted for approval to the relevant local planning authority.



2. Site description

2.1 Introduction

- 2.1.1 This section provides a general description of the key elements of the Proposed Development and then a summary of the broad habitats encountered during survey work, focusing on the EfW CHP Facility Site. Full details of the habitats types encountered during field work are reported in **Chapter 11: Biodiversity (Volume 6.2)**.

General description

EfW CHP Facility Site

- 2.1.2 The EfW CHP Facility Site is approximately 5.3 hectares (ha) in size and is located south-west of Wisbech, centred at National Grid Reference TF 45564 07955. It is within the administrative areas of FDC and CCC. The location of the EfW CHP Facility Site is illustrated on ES **Figure 3.2 Project Components (Volume 6.3)**.
- 2.1.3 The EfW CHP Facility Site forms part of a wider industrial estate centred on Algores Way. The location of the EfW CHP Facility would be predominantly on an area of land currently operated as a waste and aggregates recycling facility and waste transfer station (WTS) and is accessed off Algores Way. This part of the EfW CHP Facility Site in its current form includes a Waste Reception Building (WRB), office and welfare facilities and there is a raised gatehouse and single weighbridge control for vehicle access into and out of the site. Vehicle parking is located off the site's entrance and adjacent to the office and welfare accommodation. To the west of the WRB, various types of primary aggregates are stored in an open yard whilst to the south, secondary aggregate storage and processing, including crushing, takes place.
- 2.1.4 The topsoil which previously covered the site was scraped back from the working area when its current use was first established and now forms perimeter bunds. The surface of the site is predominantly hardstanding, including a concrete apron approximately 25m by 50m immediately to the south of the WRB. Drainage ditches maintained by the HWIDB run through and around the perimeter of this part of the EfW CHP Facility Site.
- 2.1.5 The existing entrance off Algores Way is gated and fenced with a 1.8m high metal palisade fence. The operational area immediately south-east of the WRB is partly bounded by a 4m tall mesh litter fence.
- 2.1.6 The south-east section of the EfW CHP Facility Site is unoccupied scrubland owned by FDC. It is separated from the current WTS by an earth bund and trees.
- 2.1.7 The EfW CHP Facility Site is located within the southwest corner of the Algores Way industrial estate; the land to the north and east comprises industrial units and land to the south comprises vacant land. The EfW CHP Facility Site is bounded to the north and east by commercial/industrial uses. Along the southern boundary of the EfW CHP Facility Site is New Bridge Lane. This connects with Cromwell Road to



the west which provides direct access to the A47. New Bridge Lane is currently closed to through-traffic at the point at which it crosses the disused March to Wisbech Railway. This is immediately to the west of the site frontage. To the east, New Bridge Lane terminates after the junction with New Drove Lane.

- 2.1.8 The closest residential properties to the EfW CHP Facility Site consist of individual properties along New Bridge Lane at approximately 20m to the west and south. Further afield, the Oakdale Place Travellers Site and Caravan Site are located south-east of the intersection of New Bridge Lane and the A47, at 400m and distance 500m respectively. The principal residential areas and town centre of Wisbech lie beyond the industrial estate approximately 1.7km to the north and 1km to the east.
- 2.1.9 Land to the west of the EfW CHP Facility Site is bordered by scrubland and a mature strip of vegetation, comprising self-set trees and undergrowth. This land includes the disused March to Wisbech Railway, known locally as the 'Bramley Line'. West of the disused railway line, an industrial estate extends for a further 300m until it reaches Cromwell Road, after which there is a retail park.
- 2.1.10 To the south and beyond the A47, the landscape becomes predominantly agricultural in nature, interspersed with small villages such as Begdale (approximately 1.6km to the south), Friday Bridge (approximately 3.4km to the south) and Elm (approximately 1.7km to the south-east).

CHP Connection

- 2.1.11 The CHP Connection Corridor runs north, along the route of the disused March to Wisbech Railway, from the EfW CHP Facility Site crossing Weasenham Lane via a pipe-bridge and terminating at the Nestlé Purina pet food manufacturing factory, which is itself accessed from Coalwharf Road/Somers Road. The CHP Connection Corridor also includes a section immediately south of Weasenham Lane into the Lamb Weston factory.
- 2.1.12 The CHP Connection Corridor is bounded on both sides by industrial uses other than at its north-eastern end where the rear gardens of residential properties on Victory Road, Great Eastern Road, Burdett Road, Hillburn Road and Oldfield Lane back onto it.
- 2.1.13 The location of the CHP Connection Corridor is illustrated on ES **Figure 3.2 Project Components (Volume 6.3)**.

Access Improvements

- 2.1.14 The existing WTS on the EfW CHP Facility Site is accessed from Algores Way. This access point will be reconfigured to provide staff and visitor car and pedestrian access to the EfW CHP Facility. It is proposed to create a new access/egress to the EfW CHP Facility Site for HGVs from New Bridge Lane, located on the southern boundary of the EfW CHP Facility Site.
- 2.1.15 Direct vehicular access to Cromwell Road along New Bridge Lane from the proposed site access is not currently possible. New Bridge Lane crosses the disused March to Wisbech Railway and in this location the road narrows and bollards are in place to prevent vehicular access. Improvements to, and the



reopening of, this road for vehicular access would be required to facilitate access off New Bridge Lane.

- 2.1.16 New Bridge Lane is bounded mainly by industrial premises. A single residential property (9 New Bridge Lane) lies approximately 20m to the south-west boundary of the site on the opposite side of the disused March to Wisbech Railway Line whilst 10 New Bridge Lane is located on the southern side of the highway, opposite the EfW CHP Facility Site frontage. There are a small number of additional residential properties located close to the New Bridge Lane/Cromwell Road Junction, adjacent to the location of the proposed Access Improvements.
- 2.1.17 The Order limits extend from the EfW CHP Facility Site entrance on Algores Way to 19 Algores Way. No highway improvement works are proposed, other than works to reconfigure the existing access to provide staff and visitor car and pedestrian access to the EfW CHP Facility. However, Algores Way has been included within the Order limits because, although it is openly in public use, it is an unadopted highway from a point south of 19 Algores Way and therefore powers relating to a right of access are being sought as part of the DCO application.

Water Connections

- 2.1.18 The proposed Water Connections (potable) water supply would run underground from the southern boundary of the EfW CHP Facility Site southeast along New Bridge Lane before either entering an orchard and then crossing underneath the A47, or crossing the A47 and the southern end of New Bridge Lane. The Water connections (foul) would run from an existing pumping station operated by Anglian Water to the north-east of the Algores Way site entrance into the EfW CHP Facility.
- 2.1.19 The area of land proposed for the route of the water main is shown on ES **Figure 3.2 Project Components (Volume 6.3)**.

Temporary Construction Compound

- 2.1.20 The TCC associated with the construction of the Proposed Development would be located adjacent to the eastern boundary of the EfW CHP Facility Site, separated by a drainage ditch. The land is currently undeveloped, vegetated, grass scrubland and is 1.8ha in area.
- 2.1.21 The TCC site is bounded by commercial/industrial uses to the north and east and further vacant grassland to the south. HGV construction traffic would initially access the EfW CHP Facility Site via Algores Way, and once the Access Improvements are implemented, both New Bridge Lane and Algores Way would be used for the duration of construction works.
- 2.1.22 The remainder of the construction compound requirements would be provided on the southern or northern portion of the EfW CHP Facility Site.
- 2.1.23 The land allocated for the TCC is shown on ES **Figure 3.2 Project Components (Volume 6.3)**.



Grid Connection

- 2.1.24 From the onsite substation located in the southern area of the EfW CHP Facility Site, the Grid Connection would run underground for its entire length to a point of connection (POC) to the National Electricity Transmission Network distribution system at UK Power Network's (UKPN) substation off Broadend Road, Walsoken.
- 2.1.25 The Grid Connection would exit the EfW CHP Facility Site at New Bridge Lane then head east to the A47. Here, the Grid Connection would head north following the western verge of the A47 to Broadend Road. At Broadend Road, the route would head west within the highway to the Applicant's proposed substation. The Applicant's proposed substation (Walsoken Substation) is to be located to the front of the UKPN Walsoken Distribution Network Operator (DNO) Substation (Walsoken DNO Substation) on land belonging to UKPN.
- 2.1.26 The location of the Grid Connection and the Walsoken Substation is shown on ES **Figure 3.2 Project Components (Volume 6.3)**.

Habitats

- 2.1.27 The distribution of broad habitat types recorded within the Order limits is summarised below.

Overview – EfW CHP Facility Site, Access Improvements, CHP Connection, Temporary Construction Compound and Water Connections

- 2.1.28 The broad habitat types recorded within the field survey area include:
- Woodland and trees (including plantation woodland – broadleaved; individual trees – broadleaved);
 - Scrub (dense);
 - grassland (including poor semi-improved and improved);
 - running water (ditches);
 - standing water (ditches);
 - hedgerows (native species-poor);
 - ephemeral/short-perennial; and
 - other habitats (including tall ruderal; earth bank; fences; bare ground; hardstanding/tarmac; buildings).

Overview – Grid Connection

- 2.1.29 The broad habitat types recorded within the field survey area include:
- Woodland and trees (including traditional orchard; plantation woodland – broadleaved; plantation woodland – orchard; plantation woodland – coniferous; individual trees – broadleaved; individual trees - coniferous);
 - Scrub (including dense and scattered);



- grassland (including poor semi-improved improved and amenity);
- running water (ditches);
- standing water (including ponds and ditches);
- ditches (dry);
- arable (including arable field margins);
- hedgerows (including native species-poor hedgerows; native species-poor hedgerows with trees); and
- other habitats (including tall ruderal; bare ground; fences; hardstanding/tarmac; buildings).

Habitat considerations (EfW CHP Facility Site)

- 2.1.30 Existing habitats within the EfW CHP Facility Site are dominated by hardstanding and bare ground with several operational structures and buildings. The EfW CHP Facility Site is enclosed by earth bunds along most of its perimeters. The bunds have variable vegetation cover and are periodically cleared of vegetation. During the intervening period the bunds support vegetation cover such as ephemeral/short-perennial vegetation, tall ruderal, and bramble scrub. A range of ditches (dry, standing and running water) are present. There are small areas of poor semi-improved grassland at the north and east of the EfW CHP Facility Site, and an area of mature treeline which encloses an area of dense scrub at the south adjacent to New Bridge Lane.
- 2.1.31 The existing habitat within the EfW CHP Facility Site would be predominantly lost to accommodate the Proposed Development. Small areas of habitat would be retained, including existing ditches (albeit with sections of additional culverting), and a section of the mature treeline at the south adjacent to New Bridge Lane.
- 2.1.32 The proposed habitats comprise, native trees, wet woodland, native hedgerows, species-rich neutral grassland, and temporally wet Sustainable urban Drainage Systems (SuDS) features including a swale and attenuation basin and associated permanent attenuation pond and associated wet species-rich grassland margins. There are green walls to be established with climbing plants on the administration building and brown roofs to be installed on the administration building and Weighbridge. A native hedge and trees are proposed to the frontage of the Walsoken Substation adjacent to the highway verge of Broadend Road as illustrated in **Figure 3.4: Walsoken Substation (Volume 6.3)** and would be subject to a detailed planting scheme which would be secured via a DCO Requirement.



3. Design and Management Objectives

3.1 Overview and local context

3.1.1 The Outline LEMP includes a range of site-specific and general design and management objectives, which are described in the following sections. These objectives are intended to contribute towards providing ecological benefits (in terms of habitats and species), an attractive external environment, to help integrate built development, and generally contribute towards the green infrastructure of the Proposed Development.

3.1.2 The following information has been used to guide the objectives of the Outline Landscape and Ecology Strategy (**Appendix A**) and thus the Outline LEMP:

- **The Natural England National Habitat Network¹**; Review of the Natural Habitat Network (NHN) mapping identified regularly occurring areas of the Habitat of Principal Importance (HPI)² 'Traditional Orchard' and a few scattered parcels of HPI 'Other habitat' within the locality surrounding the Proposed Development. Review of satellite imagery indicates the parcels of HPI Other habitat to include habitat such as grassland and broadleaved plantation woodland. The land within the Proposed Development boundary falls within Network Enhancement Zone 1; denoting an area where habitat creation should be targeted to expanding and improving connectivity between existing patches of primary and associated habitats.
- **Cambridgeshire and Peterborough habitat Opportunity Mapping³**; Review of habitat Opportunity Mapping identifies land within the Proposed Development boundary as being within buffer opportunity and stepping-stone opportunity zones for grassland and woodland within the local ecological network; where habitat creation can provide strategic benefits to the extent and connectivity of existing grassland and woodland habitat.
- **Natural Cambridgeshire Developing with Nature Toolkit**; Natural Cambridgeshire nature partnership provides a toolkit of ten objectives to help developers and infrastructure providers demonstrate their commitment to achieving a net biodiversity gain. The objectives of the toolkit are relevant to Natural Cambridgeshire's overall ambition of 'doubling nature' across Cambridgeshire and Peterborough by 2050. The ethos of the toolkit includes that: development and landscape plans should be guided by ecological

¹ The Government's 25 Year Environment Plan includes provision for a Nature Recovery Network (NRN) which set out the essence of what needs to be done to enhance the resilience and coherence of England's ecological networks. Natural England have produced a series of National Habitat Network (NHN) maps to provide a baseline for the development of an NRN. The NHN maps identify areas of existing HPI and associated habitats with surrounding strategic zones where network enhancement and expansion could be achieved through targeted creation of complementary habitat.

² Habitats of Principal Importance and Species of Principal Importance are those habitats and species listed pursuant to the requirements of Section 41 of the Natural Environment and Rural Communities Act 2006, referred to in the LEMP as HPI and SPI respectively.

³ Opportunity Mapping information was obtained from the Cambridgeshire & Peterborough Environmental Records Centre. The opportunity maps identify ecological networks of existing wetland, woodland and grassland habitat, surrounded by immediately adjoining 'buffer opportunity' zones where habitat creation can buffer and extend existing habitats within the network, and 'stepping-stone opportunity' zones outside of the ecological network but immediately adjacent to it, where habitat creation could link up more distant areas of existing habitat within the network.



expertise, informed by an ecological audit of the site and adhere to ecological best practice; understand the surrounding landscape context and provide contributions that are relevant to strategic biodiversity conservation and green infrastructure in the local context; design green infrastructure concurrently with hard infrastructure to maximise opportunities to retain existing biodiversity features and provide additional biodiversity and green infrastructure contributions; provide sustainable drainage systems; and provide biodiversity enhancements that are sustainable (e.g. providing nest sites for species occurring in the local area, where there is appropriate habitat for year-round foraging by the intended species). These objectives have informed the measures set out in this document.

- 3.1.3 Considering the location of the Proposed Development, the NHN and Opportunity Mapping identified strategic opportunities for contributing to habitat and linkages relating mainly to HPI Traditional Orchard and grassland. Although there is insufficient land within the Proposed Development boundary to provide a meaningful contribution to traditional orchard habitat, the Outline Landscape and Ecology Strategy (**Appendix A**) does include complementary habitats such as trees and shrubs that would include fruit and nut bearing native species, and species-rich neutral grassland, which collectively would provide habitat for similar species that would be associated with traditional orchard habitat and contribute to habitat connectivity.
- 3.1.4 Creation of species-rich grassland is a central theme within the Outline Landscape and Ecology Strategy (**Appendix A**), providing approximately 1.05 ha of suitable habitat for the majority of the species assemblage recorded within and around the EfW CHP Facility Site during baseline surveys (see **Chapter 11 Biodiversity (Volume 6.2)** and associated **Appendices 11. D-L (Volume 6.4)**), as well as providing a wider strategic contribution to the grassland habitat network within the local area.

3.2 Site-specific design strategy

- 3.2.1 The replacement habitats and landscape elements proposed within the EfW CHP Facility Site are illustrated on the **Outline Landscape and Ecology Strategy** (see **Appendix A** and which is replicated as **Figure 3.14 (Volume 6.3)**)
- 3.2.2 As outlined above, the site-specific design strategy has been tailored to local conservation objectives and initiatives, and aim to provide a range of habitat types and features to support a diversity of species (in terms of providing nesting/roosting/resting opportunities, as well as foraging and commuting habitats) which occur in the locality.
- 3.2.3 The creation of habitats will provide corridors of connectivity, link to habitat features in the wider landscape and result in opportunities to provide biodiversity value on the main EfW CHP Facility Site within the operational constraints. These constraints include drainage and service easements and access for the Internal Drainage Board to facilitate periodic maintenance of existing drainage ditches within and adjacent to the Order limits.



- 3.2.4 All works contained within the Outline LEMP shall be carried out in accordance with the current British Standards with particular reference to:
- BS 3998:2010 Recommendations for tree work;
 - BS 5837:2012 Trees in relation to design, demolition and construction;
 - BS 3882:2015 Specification for topsoil; and
 - BS 4428:1989 Code of practice for general landscape operations (excluding hard surfaces).
- 3.2.5 The works shall also be carried out in accordance with:
- Forestry and arboricultural safety and training council safety guidelines.
- 3.2.6 All works will be carried out by suitable qualified and trained operatives. All works to existing trees and hedgerows to be carried out by a qualified tree surgeon. The operatives of equipment are to have had the necessary training to ensure Health and Safety requirements are met.
- 3.2.7 The strategy relating to individual habitat types and species are described in the following sections. Further information on habitat types and species composition is set out in **Section 4**.

Wet woodland

- 3.2.8 The EfW CHP Facility Site incorporates a sustainable drainage system. This objective is to diversify areas of wetland habitat within the EfW CHP Facility Site, by creating wet woodland in an area of attenuation basin within the wider drainage system. This area would be subject to temporary inundation and is intended to support a range of tree and shrub species associated with wet conditions. The habitat type and species composition is intended to contribute to the provision of scrub and woodland habitat within the local area, and be reflective of surrounding habitat such as scrub which occurs along un-managed ditches and other watercourses.
- 3.2.9 Completion of this objective will provide habitat for a range of species such as birds, invertebrates, reptiles, water vole and common toad.
- 3.2.10 Wet woodland is an HPI and Cambridgeshire and Peterborough Local Priority Habitat. The habitat created will be managed to ensure good form and growth and to retain attenuation capacity to allow functioning of the SuDS.

Individual trees

- 3.2.11 Planting of cultivars of native broadleaved tree species will be provided as a component of hedgerows and occasional individual scattered trees. The objective of the habitat is to provide connectivity with existing treelines which would be retained adjoining the south of the EfW CHP Facility Site. Further to this, cultivars of native trees within the EfW CHP Facility Site, including as part of native hedgerows, have been designed to optimise landscape amenity, improve air quality, provide vertical relief and soften views of the built form, introduce colour, texture,



scent and movement into the environment and generally contribute towards a green infrastructure.

- 3.2.12 Completion of this objective will provide habitat for a range of invertebrate species associated with native broadleaved trees, while the habitat type and linear habitat features provide opportunities for other species, such as foraging and nesting birds and commuting and foraging bats.
- 3.2.13 Management of trees will be carried out in accordance with the requirements of the appropriate regulations.

Hedgerows

- 3.2.14 Native species-rich hedgerows would be created. The objective of the habitat is to provide connectivity with existing treelines which would be retained adjoining the south of the EfW CHP Facility Site, and linear scrub habitat along the disused March to Wisbech Railway to the west. The hedgerows would also strengthen landscape structure and complement areas of open habitat such as grassland.
- 3.2.15 Completion of this objective will provide habitat for a range of invertebrate species associated with native shrubs and trees, while a diversity of seed- and fruit-bearing species and linear habitat features provide opportunities for other species, such as foraging and nesting birds and commuting and foraging bats. Cover afforded by hedgerow provides opportunities for sheltering by species such as reptiles, amphibians and hedgehog.
- 3.2.16 Hedgerow is an HPI and Cambridgeshire and Peterborough Local Priority Habitat. The habitat created will be managed to ensure good form and growth.

Native shrubs

- 3.2.17 Native shrubs will be planted using a diverse range of species. The objective of the habitat is to strengthen landscape structure and complement areas of open habitat such as grassland, while reflecting the presence of stands of scrub habitat found in the local area.
- 3.2.18 Whilst only specified in a localised area, completion of this objective will provide habitat for a range of invertebrate species associated with native shrubs, while a diversity of seed and fruit-bearing species provide opportunities for other species, such as foraging and nesting birds.
- 3.2.19 The habitat created will be managed to ensure good form and growth, being trimmed back as managed as a low hedge where it adjoins footways within the EfW CHP Facility Site.

Grassland

- 3.2.20 Creation of species-rich grassland is a central theme within the Outline Landscape and Ecology Strategy (**Appendix A**), and the objective is to provide a strategic contribution to the grassland habitat network within the local area. Grassland creation will include species-rich wet grassland associated with the sustainable drainage system and species-rich neutral grassland within other areas, providing varied botanical diversity transitioning from wet to dry areas.



- 3.2.21 Completion of this objective will provide high-quality grassland that encourages pollinating invertebrate species such as bees, moths and butterflies, supports a range of other species including mammals, birds, reptiles and amphibians, and enhances connectivity with other areas of grassland habitat located to the east and south of the EfW CHP Facility Site.
- 3.2.22 The combination of grassland habitat creation is intended to be reflective of lowland meadow which is an HPI and Cambridgeshire and Peterborough Local Priority Habitat.
- 3.2.23 The habitat created will be managed to maximise botanical diversity, control undesirable plant species (such as dominant grasses and herbs, and invasive non-native plant species) and maintain a varied sward structure to provide ecotones for a range of species.

Sustainable urban drainage system (SuDS)

- 3.2.24 A sustainable urban drainage system would be created consisting of an attenuation basin and pond with connecting swales and drains. Wet woodland would be created within the attenuation basin, while the margins of the attenuation pond and swale and adjoining low-lying areas would be sown with a native species-rich wet grassland mix to create ecotones transitioning from areas of periodic inundation through to surrounding dry species-rich neutral grassland areas.
- 3.2.25 The objective is to create a range of wetland features to encourage species such as amphibians, aquatic invertebrates, and water voles, while providing foraging areas for other species such as reptiles and bats.
- 3.2.26 While the individual habitat types associated with the sustainable urban drainage system reflect HPI and Cambridgeshire and Peterborough Local Priority Habitats (as described for the individual habitat types above), sustainable urban drainage systems are a Cambridgeshire and Peterborough Additional Habitat of Interest included under urban habitats.
- 3.2.27 The management of habitat components of the sustainable urban drainage system is covered under the individual associated habitat types.

Brown roofs

- 3.2.28 Brown roofs would be created on the administration building and weighbridge. Brown roofs are designed to be synonymous with habitat of urban and industrial environments, reflecting the context of the EfW CHP Facility Site. The objective is to create habitat typical of waysides and brownfield land using inert site-won materials (such as aggregate, crushed brick, rocks and decaying wood), intended to create a mosaic of bare ground and patches of ephemeral/short-perennial vegetation. The habitat will replicate the patchy bare ground habitat that was extensive within the EfW CHP Facility Site baseline prior to the Proposed Development. Further to this, brown roofs will help attenuate water runoff from the rooftop.
- 3.2.29 Completion of this objective will provide habitat for a range of early-colonising plant species and provide ecotones for a diversity of invertebrates. The sparse sward and



nutrient-poor substrate will provide opportunities for a diversity of botanical species to thrive which would not usually persist in other habitat types such as grassland.

- 3.2.30 The habitat is designed to reflect a component of open mosaic habitats on previously developed land, which is an HPI and Cambridgeshire and Peterborough Local Priority Habitat.
- 3.2.31 The habitat type requires a low level of management, limited to controlling control undesirable plant species.

Green walls

- 3.2.32 This objective is to create a ground-based green wall on the administration building at the entrance to the EfW CHP Facility Site, softening the built form. The green wall will support nectar-rich climbers, which are intended to support pollinating invertebrate species such as bees, moths and butterflies.
- 3.2.33 Green walls potentially qualify as a Cambridgeshire and Peterborough Additional Habitat of Interest included under urban habitats.

Enhancement for species

- 3.2.34 An ecological desk study and baseline surveys undertaken within the Order limits and adjoining land (see **Chapter 11 Biodiversity (Volume 6.2)** and associated **Appendices 11. D-L (Volume 6.4)**), recorded a range of legally protected⁴ and conservation notable⁵ species, or presence of suitable habitat to potentially support such species, including badger, at least six species of bat, water vole, reptiles, great crested newt, common toad, and a diversity of bird species.
- 3.2.35 While the habitat objectives outlined above include the provision of HPis, Cambridgeshire and Peterborough Local Priority Habitat, and contribute to other local strategic conservation objectives, collectively, an over-arching objective is the provision of habitats targeted to supporting species groups which occur in the locality. A range of associated additional habitat features would be provided to support these species groups.
- 3.2.36 Together with the creation of habitats, the additional habitat features contribute to the objective of providing a sustainable habitat contribution for species (i.e. , habitat for nests, roosts and other rest sites, supported by opportunities for foraging, and connectivity providing access to wider habitat resources within the locality).
- 3.2.37 Completion of this objective will provide habitat for a range of species which are legally protected and conservation notable, with target species groups including birds (including an assemblage of urban and farmland species), mammals (such as bats, badger and hedgehog), reptiles, amphibians, and terrestrial and aquatic invertebrates.

⁴ Including species that receive protection under the Conservation of Habitats and Species Regulations 2017 (as amended), the Wildlife and Countryside Act 1981 (as amended), and the Protection of Badgers Act 1992.

⁵ Including SPI, Cambridgeshire and Peterborough Local Priority Species and Additional Species of Interest, other species such as Birds of Conservation Concern.



General management objectives

3.2.38 The following objectives set out a framework for the future improvement and management of the EfW CHP Facility Site and provide a basis for development of specific maintenance operations within the newly developed landscape.

Sustainable site management

3.2.39 Objectives:

- Maximise the sustainability of site maintenance operations;
- Promote a cost-effective management strategy which demonstrates value for money;
- Comply with all statutory duties and demonstrate use of best practice;
- Promote an ecological based best practice management approach; and
- Maintain a flexible management approach which responds to landscape change and user requirements.

Maintain and enhance amenity value

3.2.40 Objectives:

- Maintain a high quality, visually attractive setting for visitors and personnel of the EfW CHP Facility;
- Maintain a high level of cleanliness and maintenance throughout the EfW CHP Facility Site; and
- Enhance and maintain amenity provision throughout the EfW CHP Facility Site.

Conserve and enhance the character of the landscape and ecological value

3.2.41 Objectives:

- Take all practicable steps to minimise the impact of the Proposed Development on the surrounding landscape;
- Protect and enhance local biodiversity and ecological value of the EfW CHP Facility Site;
- Protect areas of trees and shrubs on immediately adjoining land, and retained trees within the EfW CHP Facility Site, and following construction of the EfW CHP Facility replant tree, shrub and hedgerow cover where possible; and
- Ensure compliance with the legislation relevant to legally protected species which occur in the locality.

Management responsibilities

3.2.42 The maintenance and any necessary replacement of any soft and hard landscape elements will be covered initially under the 12 months Defects Liability Period for the works contracts. Within this period, the employed landscape contractor will



undertake maintenance of the soft landscape, after which the Applicant will appoint a contractor for ongoing management obligations. Any defective soft landscape elements will be replaced or restored during the 5-year period following the commencement of operations at the EfW CHP Facility.

3.2.43 All works to be carried out in accordance with the general standards and stated objectives.

Monitoring and review of the Management Plan

3.2.44 The Management Plan will be subject of monitoring and a bi-annual review by the Applicant and its contractors. The periodic reviews will focus on the success of the Management Plan in delivering the initial design objectives through the established regime of maintenance and management. Should amendments to the Management Plan be necessary details of the amendments will be submitted to the relevant local authority and agreed in writing under the provisions of the relevant DCO Requirement.



4. Management Plan

4.1 Wet woodland

Creation

Species composition

4.1.1 The wet woodland areas will be planted with the following native species using stock of local provenance where possible or UK provenance:

- 20% *Alnus glutinosa* (alder);
- 15% *Betula pubescens* (downy birch);
- 15% *Cornus sanguinea* (dogwood);
- 15% *Crataegus monogyna* (hawthorn);
- 5% *Prunus spinosa* (blackthorn);
- 10% *Rhamnus frangula* (alder buckthorn);
- 5% *Salix caprea* (goat willow);
- 5% *Salix cinerea* (grey willow); and
- 10% *Viburnum opulus* (guelder rose).

4.1.2 The trees and shrubs will be rooted transplants 40-60cm in height and planted at random 1.5m spacing and a mosaic will be established of 7-15 No. single species groups. Small clearings will be left unplanted and allowed to self-seed from the surrounding trees and colonise with ground flora to create natural variation in the structure of the habitat.

Timing

4.1.3 Planting will take place between November to March (inclusive) with a preference for completion prior to the end of December in any one year, when the ground is free from frost and snow.

4.1.4 Wet woodlands will be designed with an uneven edge and edge planting will also become more broadly spaced, to feather the woodland margin; softening the transition between the wet woodland and surrounding open habitats.

Management and monitoring

4.1.5 Beating up would be carried out for two years following planting if failures exceed 10% and undertaken on a one for one basis. During the first two years, development of weeds will be monitored. If weed growth impedes tree development, appropriate targeted weed control would be undertaken until trees become established.



- 4.1.6 Following this, management will mostly be non-intervention, with the exception of occasional thinning when required to maintain small gaps in the wet woodland to maintain structural diversity and promote growth of ground flora.

4.2 Individual specimen trees

Creation

Species composition

- 4.2.1 The individual specimen trees will be selected from the following cultivars of native species using stock of UK provenance:
- *Acer campestre* 'Streetwise' (field maple);
 - *Sorbus aucuparia* 'Cardinal Royal' (rowan); and
 - *Prunus padus* 'Albertii' (bird cherry).

Timing

- 4.2.2 Planting will take place between November to March (inclusive) with a preference for completion prior to the end of December in any one year, when the ground is free from frost and snow. Flexible PVC perforated pipes to facilitate watering shall be wrapped around the rootball of each tree prior to backfilling of the tree pits during planting and the ends of the watering pipes shall be set c. 50mm above the finished soil/mulch level and sealed with end caps.

Management and monitoring

- 4.2.3 During and following the establishment of the planting ensure that sufficient water is applied, via the watering pipes, to maintain healthy growth as required. Ensure that full depth of topsoil is saturated. The watering programme should be monitored to ensure that at times of water shortage (e.g. drought) sufficient water is applied to meet the conditions.
- 4.2.4 Trees will be managed to retain a well-balanced crown, shape and character typical of the species; avoid conflict with road users, services and visitors; and allowing a clear stem (minimum 1.5m above ground level – not applicable to feathered specimen trees) immediately adjacent to footpaths and roads.
- 4.2.5 Pruning shall be carried out as necessary to establish a well-balanced head relative to the natural form and shape of the species and purpose. Remedial pruning/tree surgery will be undertaken as necessary and in accordance with BS 3998:2010 or to remove growth obstructing pedestrian paths or sight lines. If crown lifting is required, then this should be carried out by a qualified tree surgeon to ensure that natural form is maintained.
- 4.2.6 All wood cut should be stacked in agreed locations to encourage ecological diversity where feasible and agreed with the company responsible for managing the EfW CHP Facility Site.



- 4.2.7 Tree support systems (tree stakes and ties) shall be checked, adjusted and replaced as necessary during the establishment period. Redundant tree support systems shall be removed once trees are fully established (generally in year five).
- 4.2.8 Any dead or severely damaged trees shall be replaced in the next available planting season (generally November to March inclusive). Replacement planting is to be in accordance with the original specification.
- 4.2.9 Where not planted in a hedgerow a 1m diameter area around each tree shall be mulched with bark mulch and cleared of all weeds on the first routine visit at the start of the growing season (and between April and October thereafter). All mulched areas are to be raked and topped up to maintain a depth of 50mm on the first visit annually and finished level of mulch should be 30mm below adjacent grassed/paved areas. All arisings are to be disposed of to an appropriately licensed facility off site. Care should be taken not to disturb or expose the plant roots.
- 4.2.10 Care should be taken to ensure that trees are not damaged by the use of nylon filament rotary cutters or similar powered tools. Plants/tools subject to damage shall be replaced with the same at the contractor's expense.
- 4.2.11 Routine monitoring shall ensure that operations are undertaken to fulfil the performance requirements and appropriate action shall be taken to deal with damage and debris arising from vandalism and periods of heavy rainfall, high winds and heavy snowfall.
- 4.2.12 Clearance, pruning and trimming operations during the bird nesting periods shall be avoided. It is an offence to kill/injure a wild bird or damage or destroy an active nest under the Wildlife and Countryside Act 1981 (as amended), and also to disturb those species listed on Schedule 1 of the Act, generally between March to August inclusive. In all cases, checks should be made in advance by a suitably experienced operative to ensure that there are no birds nesting in the area of operation. If in doubt, the advice of a suitably trained ecologist should be sought.

4.3 Hedgerows

Creation

Species composition

- 4.3.1 Hedgerows will be planted with the following native species using stock of local provenance where possible or UK provenance:
- 5% *Cornus sanguinea* (dogwood);
 - 10% *Corylus avellana* (hazel);
 - 30% *Crataegus monogyna* (hawthorn);
 - 10% *Euonymus europaeus* (spindle);
 - 10% *Ilex aquifolium* (holly);
 - 5% *Ligustrum vulgare* (privet);



- 5% *Lonicera periclymenum* (honeysuckle);
- 10% *Prunus spinosa* (blackthorn);
- 5% *Rosa canina* (dog rose);
- 5% *Rhamnus frangula* (alder buckthorn); and
- 5% *Viburnum opulus* (guelder rose).

4.3.2 Shrubs will be 40-60cm transplants apart from Holly that will be in a 3L pot and will be planted in double staggered rows (rows approximately 25cm apart, with plants spaced approximately 30cm apart in each row) at a density of 7 plants per metre to achieve a dense hedge. Beating up will be carried out for two years following planting and undertaken on a one for one basis. Each plant will be protected by a spiral tree guard or shrub guard in the case of Holly. Guards will be removed once plant stock is established or no later than five years after planting.

Timing

4.3.3 Planting will take place between November to March (inclusive) with a preference for completion prior to the end of December in any one year, when the ground is free from frost and snow, when there is no drought and in the absence of severe water-logging.

Management and monitoring

4.3.4 Management of all hedgerows within the EfW CHP Facility Site and Walsoken Substation shall continue following planting.

4.3.5 During and following the establishment of the planting ensure that sufficient water is applied to maintain healthy growth as required. Ensure that full depth of topsoil is saturated. The watering programme should be monitored to ensure that at times of water shortage (e.g. drought) sufficient water is applied to meet the conditions.

4.3.6 Weed control will be undertaken by the application of an approved herbicide (glyphosate) to maintain a weed-free area of c. 0. 6m either side of the hedgerow during the establishment period. This would normally be applied in May to provide maximum benefit to the tree/shrub plants and necessary precautions will be followed taking care that the herbicide does not contact the hedgerow trees/shrubs. Weed control will be maintained for a period of five years following planting, or until such times as the trees are suitably established.

4.3.7 In years one to three, newly planted sections of hedgerow will be trimmed to encourage dense growth. Cutting will be undertaken in late January or February to avoid the nesting bird season.



4.4 Native shrubs

Creation

Species composition

- 4.4.1 Shrubs will be planted with the following native species using stock of UK provenance:
- 35% *Corylus avellana* (hazel);
 - 10% *Euonymus europaeus* (spindle);
 - 20% *Ilex aquifolium* (holly);
 - 5% *Sambucus nigra* (elder);
 - 10% *Taxus baccata* (yew); and
 - 20% *Viburnum opulus* (guelder rose).
- 4.4.2 Shrubs will typically be 40-60cm transplants apart from Holly and Yew that will be container grown. Shrubs will be planted in groups of 3 -9 species at 1m centres with holly, yew and guelder rose near the perimeter of the planting bed. Beating up will be carried out for two years following planting and undertaken on a one for one basis. Each plant will be protected by a spiral tree guard or shrub guard in the case of holly and yew. Guards will be removed once plant stock is established or no later than five years after planting.

Timing

- 4.4.3 Planting will take place between November to March (inclusive) with a preference for completion prior to the end of December in any one year, when the ground is free from frost and snow, when there is no drought and in the absence of severe water-logging.

Management and monitoring

- 4.4.4 During and following the establishment of the planting ensure that sufficient water is applied to maintain healthy growth as required. Ensure that full depth of topsoil is saturated. The watering programme should be monitored to ensure that at times of water shortage (e.g. drought) sufficient water is applied to meet the conditions.
- 4.4.5 Prune and re-shape shrub species at the appropriate time according to individual requirements. Remove dead or dying wood, in order to promote healthy growth and attractive form. Shrubs should be prevented from becoming overgrown, with particular attention to plants adjacent to windows, footpaths and roads to prevent obstruction. Avoid hard pruning to bare wood.
- 4.4.6 Keep all beds clear of weeds by maintaining a full depth of mulch and hand weeding if required.
- 4.4.7 Apply an annual single dose of evenly spread, 11:22:9 NPK slow-release fertiliser at a rate of 60g per m², in March - April.



- 4.4.8 Mulch the surface of the planting beds with chipped tree bark following planting, to a depth of c. 75mm. Regularly monitor mulch levels and re-mulch in July to original depth, or when required.
- 4.4.9 Regularly check for plantings which have been loosened by wind or frost and re-firm any loose plants back into the ground.
- 4.4.10 Regularly check planting areas on routine visits to assess whether thinning is required. When planting is starting to overlap it may be necessary to remove some individual plants to retain the character of the bed.
- 4.4.11 Monitor and replace failed planting with new equivalent plants between November and March. All plants should be maintained in a disease and pest free state through the application of a suitable proprietary herbicide/pesticide.
- 4.4.12 Thinning should take place as required in a logical process over several stages.
- 4.4.13 Dead head flowering shrubs following the flowering period to promote further flowering.
- 4.4.14 Clearance, pruning and trimming operations during the bird nesting periods shall be avoided (between March to August inclusive). If in doubt, the advice of a suitably trained ecologist should be sought.

4.5 Grassland

Creation

Species-rich neutral grassland

Species composition

- 4.5.1 The following native wildflower and grass species using stock of local provenance where possible or UK provenance will be used (or an alternative mix as agreed with the local planning authority as part of the detailed landscape and ecological management plan):
- 0.2% Agrimonia eupatoria;
 - 1.4% Borago officinalis;
 - 0.8% Salvia verbenaca;
 - 0.6% Trifolium pratense;
 - 0.2% Trifolium repens;
 - 1.6% Agrostemma githago;
 - 1.2% Centaurea cyanus;
 - 1.0% Leucanthemum vulgare;
 - 0.6% Digitalis purpurea;



- 1. 2% Centaurea nigra;
- 1. 0% Centaurea scabiosa;
- 0. 2% Lythrum salicaria;
- 0. 2% Origanum vulgare;
- 0. 2% Geranium pratense;
- 1. 0% Malva moschata;
- 1. 0% Papaver rhoeas;
- 0. 4% Lychnis flos-cuculi;
- 1. 4% Onobrychis viciifolia;
- 1. 4% Knautia arvensis;
- 0. 6% Scabiosa columbaria;
- 0. 2% Dipsacus fullonum;
- 0. 4% Lotus corniculatus;
- 0. 4% Anthyllis vulneraria;
- 0. 4% Echium vulgare;
- 1. 0% Achillea millefolium;
- 1. 4% Rhinanthus minorl;
- 4. 0% Agrostis castellana;
- 20. 0% Cynosurus cristatus;
- 16. 0% Festuca ovina;
- 24. 0% Festuca rubra, litoralis;
- 6. 4% Poa pratensis; and
- 9. 6% Phleum pratense ssp Bertolinii.

Ground preparation

- 4.5.2 Wildflowers and grasses can be successfully established from seed following cultivation and regrading of land following completion of the construction phase. The sowing medium should not highly fertile (i.e., subsoil not topsoil) or have a problem with perennial weeds or other coarse vegetation. Any unwanted vegetation and weeds that have established should be removed using an appropriate method (e.g., repeated cultivation). The soil should be cultivated to sufficient depth to alleviate compaction, then raked or harrowed and rolled to produce a fairly fine, firm surface. To aid future management such as mowing, the surface should be clear of obstructions such as ridges, ruts and large stones.
- 4.5.3 Subject to a site assessment of ground conditions and the quality of any remaining grassland at the end of the construction phase it may be possible to retain some



areas of peripheral grassland and overseed into this. Where retained grassland is to be overseeded, a regime of cutting will take place at least one year before sowing to reduce coarser grasses and develop a more diverse sward structure. The sward will be cut in the autumn to a level of approximately 50mm. The hay cut would be left for 7-days to dry and drop seed before being removed from site.

- 4.5.4 To improve the uptake of seeds sown into any existing grassland, gaps will be created to expose soil for seed to germinate in. Targeted mechanical harrowing or raking aims to expose bare soil and produce a medium tilth and firm surface, this will be undertaken during periods of reduced grass growth in the autumn.

Sowing

- 4.5.5 Upon completion of ground preparation, seed can be sown by surface broadcasting and firmed in with a roll.

Timing

- 4.5.6 Sowing usually takes place in spring and late summer/early autumn. However, advice should be sought from the supplier of the seed mix, as seasonal timing of sowing can vary between species and local conditions. Sowing into areas of existing grassland is best undertaken during autumn.

Species-rich wet grassland

Species composition

- 4.5.7 The following native wildflower and grass species using stock of local provenance where possible or UK provenance will be used (or an alternative mix as agreed with the local planning authority as part of the detailed landscape and ecological management plan) :
- 0. 2% Eupatorium cannabinum;
 - 1. 6% Angelica sylvestris;
 - 0. 6% Geum rivale;
 - 1. 2% Galium mollugo;
 - 1. 2% Galium verum;
 - 1. 6% Ranunculus acris;
 - 1. 4% Silene dioica;
 - 0. 2% Scrophularia Nodosa;
 - 0. 4% Lycopus europaeus;
 - 0. 6% Juncus inflexus;
 - 2. 0% Iris pseudacorus;
 - 0. 4% Lythrum salicaria;



- 1. 4% Filipendula ulmaria;
- 0. 8% Lychnis flos-cuculi;
- 0. 8% Succisa pratensis;
- 0. 8% Carex pendula;
- 1. 8% Prunella vulgaris;
- 0. 6% Achillea ptarmica;
- 0. 6% Juncus effusus;
- 0. 4% Hypericum tetrapterum;
- 0. 8% Lotus uliginosus;
- 0. 6% Vicia cracca;
- 3. 2% Agrostis stolonifera;
- 16% Cynosurus cristatus;
- 19. 2% Festuca rubra, commutate;
- 16% Festuca rubra, litoralis;
- 2. 4% Alopecurus pratensis;
- 4. 0% Poa trivalis;
- 6. 4% Poa pratensis;
- 0. 8% Anthoxanthum odoratum;
- 8. 0% Phleum pratense ssp Bertolinii; and
- 4. 0% Deschampsia cespitosa.

Ground preparation

4.5.8 Perennial wildflowers and grasses can be successfully established from seed following formation of the sustainable drainage system features. The sowing medium should not highly fertile (i.e., subsoil not topsoil) or have a problem with perennial weeds or other coarse vegetation. Any unwanted vegetation and weeds that have established should be removed using an appropriate method (e.g., repeated cultivation). The soil should be cultivated to sufficient depth to alleviate compaction, then raked or harrowed and rolled to produce a fairly fine, firm surface. To aid future management such as mowing, the surface should be clear of obstructions such as ridges, ruts and large stones.

Sowing

4.5.9 Upon completion of ground preparation, seed can be sown by surface broadcasting and firmed in with a roll.



Timing

- 4.5.10 Sowing usually takes place in spring and late summer/early autumn. However, advice should be sought from the supplier of the seed mix, as seasonal timing of sowing can vary between species and local conditions.

Management and monitoring

Species-rich neutral grassland

- 4.5.11 During the first year, the developing sward would be topped or mown in mid-summer to remove annual weeds. From the second-year traditional hay meadow management would be undertaken, with a hay cut in late July/August to approximately 50mm. The cut hay would be left for up to 7-days to dry and drop seed before being removed from site. Regrowth would be mown through to late autumn/winter to reduce the sward to approximately 50mm, and again in spring if necessary.
- 4.5.12 Development of the sward would be monitored by a suitably qualified ecologist during years one, two, and five, and every 5-years thereafter, and the management regime appropriately amended if required to best obtain the desired sward development and restrict undesirable dominant grass and weed species.

Species-rich wet grassland

- 4.5.13 During the first year, the developing sward would be topped or mown in mid-summer to remove annual weeds. From the second-year traditional hay meadow management would be undertaken, with a hay cut in late July/August to approximately 50mm. The cut hay would be left for up to 7-days to dry and drop seed before being removed from site. Regrowth would be mown through to late autumn/winter to reduce the sward to approximately 50mm, and again in spring if necessary.
- 4.5.14 Development of the sward would be monitored by a suitably qualified ecologist during years one, two, and five, and every 5-years thereafter, and the management regime appropriately amended if required to best obtain the desired sward development and restrict undesirable dominant grass and weed species.

4.6 Brown roofs

Creation

Species composition

- 4.6.1 The following native wildflower species using stock of local provenance will be used where possible or UK provenance will be used (or an alternative mix as agreed with the local planning authority as part of the detailed landscape and ecological management plan):
- 0.5% Achillea millefolium;



- 6. 5% Anthyllis vulneraria;
- 12. 5% Centaurea nigra;
- 5. 0% Cruciata laevipes;
- 0. 5% Filipendula vulgaris;
- 5% Galium album - (Galium mollugo);
- 2. 5% Galium verum;
- 0. 5% Hippocrepis comosa;
- 5. 0% Leucanthemum vulgare;
- 1. 0% Lotus corniculatus;
- 15. 0% Malva moschata;
- 0. 5% Origanum vulgare;
- 5. 0% Plantago lanceolata;
- 5. 0% Plantago media;
- 10. 0% Poterium sanguisorba -(Sanguisorba minor);
- 0. 5% Primula veris;
- 10. 0% Prunella vulgaris;
- 5. 0% Rhinanthus minor;
- 5. 0% Rumex acetosella; and
- 5. 0% Silene vulgaris.

Substrate preparation

4.6.2 To best replicate the patchy bare ground habitat that was extensive within the EfW CHP Facility Site baseline prior to the Proposed Development, the substrate should comprise of a variety site-won inert materials collected from the EfW CHP Facility Site prior to and during the construction phase including crushed brick, crushed concrete, sand, gravel and aggregate, nutrient-poor subsoil, rocks and stones, and decaying logs/stumps. The substrate types should be varied across the brown roof surface, with patches comprising single-substrate types of and other areas consisting of mixed-substrates. Micro-topography should be varied across all substrate types (i.e. crating shallow slopes, ridges, and hollows) and other features such as rock piles and decaying wood scattered across the brown roof.

Sowing

4.6.3 Upon completion of substrate preparation, seed can be sown by surface broadcasting.



Timing

- 4.6.4 Sowing usually takes place in spring and late summer/early autumn. However, advice should be sought from the supplier of the seed mix, as seasonal timing of sowing can vary between species and local conditions.

Management and monitoring

- 4.6.5 Management of the brown roofs shall continue in perpetuity following creation.
- 4.6.6 Brown roof habitat requires a low level of management. Annual checks should be undertaken to remove any undesirable plant species (such as deep-rooted weeds and tree and shrub saplings such as buddleia) during the establishment period in years 1, 2 and 3, then as identified after monitoring.
- 4.6.7 Development of the brown roof would be monitored by a suitably qualified ecologist during years one, two, and five, and every 5-years thereafter, and the management regime appropriately amended if required to promote desirable plant species and restrict undesirable species.

4.7 Green walls

Creation

Species composition

- 4.7.1 Climbers will be planted using 3 No. specimens of each of the following species on separate panels:
- *Jasminum officinale* (common jasmine); and
 - *Trachelospermum jasminoides* (star jasmine).
- 4.7.2 The dimensions of the planting beds and specialist growing substrate shall be specified to ensure long term health of the plants. Climbers will be container grown, pre-trained on a temporary trellis structure and planted in pits topped with a gravel mulch to restrict weeds and loss of soil moisture. A framework of wires will be secured to panels set away from the building.

Timing

- 4.7.3 Planting will take place between November to March (inclusive) with a preference for completion prior to the end of December in any one year, when the ground is free from frost and snow, when there is no drought and in the absence of severe water-logging.

Management and monitoring

- 4.7.4 Management of the green walls shall continue in perpetuity following planting.
- 4.7.5 Species have been selected for the hardiness and have moderate drought resistance, however manual watering or use of an automatic irrigation system fed primarily from rainwater will be required in the growing season to maintain good health.



4.7.6 Every year the climbing plants will be trimmed to ensure the vegetation growth does not extend beyond the edge of the panels and/or becomes congested. Cutting will be undertaken in late January or February to avoid the nesting bird season.

4.8 Enhancement for species

4.8.1 The following are examples of species-specific habitat creation measures that will be implemented on the EfW CHP Facility Site:

- Bat boxes will be provided within suitable areas of new and retained habitats and at appropriate locations on the administration building. To maximise longevity, these features will be long-lasting woodcrete boxes and/or features built-in to the fabric of the administration building. Different types of boxes will be used to provide general, maternity and hibernation roosting opportunities for a range of bat species.
- Bird boxes will be provided within suitable areas of new and retained habitats and at appropriate locations on the administration building. To maximise longevity, these features will be long-lasting woodcrete boxes and/or features built-in to the fabric of the administration building. Different types of boxes will be used to benefit a range of species such as swifts, house martins, starlings, tits, sparrows and other small birds.
- Refugia and hibernacula for amphibians and reptiles will be constructed of materials such as logs, rocks and earth to provide shelter and temperature-stable cavities, within areas of grassland, hedgerow and treeline, and adjacent to areas of scrub that bound the EfW CHP Facility Site to the west.
- Habitat features for sheltering invertebrates including 'bug hotels', decaying log piles, open patches of ground and shallow banks of sand/gravel/rubble, and retained areas of un-cut grassland to provide over-wintering habitat will be created.
- Hedgehog hibernation boxes will be installed within suitable areas of dense vegetation cover.

4.8.2 Site-won materials such as logs, rocks, rubble and earth would be re-used wherever possible during the creation of habitat features; to minimise the requirement to import virgin raw materials.

Management and monitoring

4.8.3 A suitably qualified ecologist will monitor bat boxes to establish if they are in use. This will be taken on a yearly basis. Moving or disturbing a box used by roosting may be a legal offence, even when bats are not in the box, therefore the ecologist should advise on necessary maintenance.

4.8.4 Bird boxes will be checked annually each autumn/winter, after the breeding bird season, to clear out old nests and debris, and ensure the boxes are still located correctly and in good condition. Where necessary boxes should be replaced or repositioned prior to the following breeding season (March to August inclusive).



- 4.8.5 Refugia and hibernacula for amphibians and reptiles will be checked annually to ensure habitat features remain in functional condition, and subsequent replacement of materials to maintain structural integrity will be completed where necessary. Maintenance works would be undertaken during spring/summer/early autumn (April to October inclusive) to avoid the sensitive hibernation period.
- 4.8.6 Invertebrate habitat features, bug hotels and hedgehog hibernation boxes will be checked annually to ensure habitat features remain in functional condition, and subsequent maintenance/replacement will be completed where necessary. Maintenance works would be undertaken during spring/summer/early autumn (April to October inclusive) to avoid the sensitive hibernation period.



5. Summary

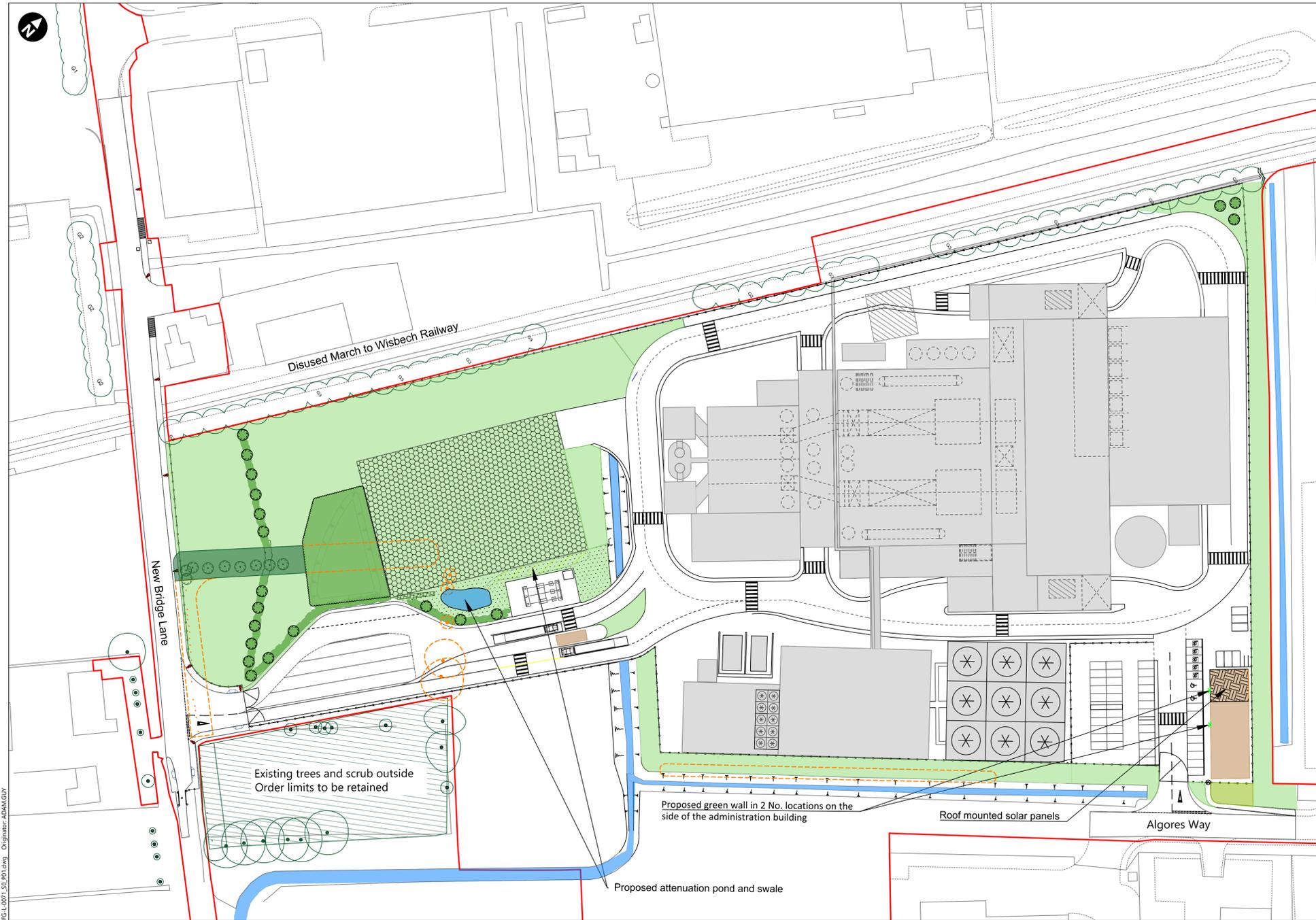
- 5.1.1 The management and monitoring regimes set out in this Outline LEMP are required for a period of five years in the first instance to help ensure good establishment of planting, extending to regular monitoring and management thereafter for the lifetime of the development with a statutory obligation of 30 years in total for all habitats covered by Biodiversity Net Gain⁶. Where relevant, monitoring and review should be undertaken by a suitably qualified ecologist and landscape architect and the results will inform on-going management and maintenance of the retained and newly created landscape elements and habitats on site.
- 5.1.2 The detailed LEMP will be finalised with and agreed by the relevant local authority prior to the commencement of development. The LEMP will remain a live document which will be reviewed after the initial five-year period by a suitably qualified ecologist and landscape architect. This will determine the post-construction status of the retained and newly created key habitats and landscape elements on site and will be the basis for the requirement of future habitat and landscape management activities.

⁶ A Biodiversity Net Gain assessment has been prepared for the Proposed Development. The requirement to manage habitat for 30 years is the current prerequisite for any habitat enhancement included within the Biodiversity Net Gain provision for a development.



Appendix A

Outline Landscape and Ecology Strategy (ES Figure 3.14)



Species rich wet grassland

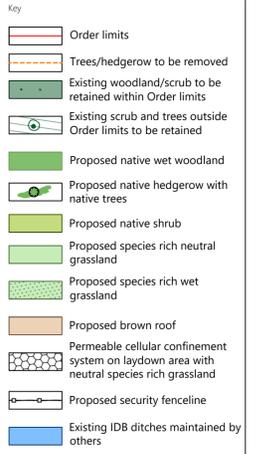
% Mix	Latin Name
0.2	<i>Eupatorium cannabinum</i>
1.6	<i>Angelica sylvestris</i>
0.6	<i>Geum rivale</i>
1.2	<i>Galium mollugo</i>
1.2	<i>Galium verum</i>
1.6	<i>Ranunculus acris</i>
1.4	<i>Silene dioica</i>
0.2	<i>Scrophularia Nodosa</i>
0.4	<i>Lycopus europaeus</i>
0.6	<i>Juncus inflexus</i>
2	<i>Iris pseudacorus</i>
0.4	<i>Lythrum salicaria</i>
1.4	<i>Filipendula ulmaria</i>
0.8	<i>Lychnis flos-cuculi</i>
0.8	<i>Succisa pratensis</i>
0.8	<i>Carex pendula</i>
1.8	<i>Prunella vulgaris</i>
0.6	<i>Achillea ptarmica</i>
0.6	<i>Juncus effusus</i>
0.4	<i>Hypericum tetraperum</i>
0.8	<i>Lotus uliginosus</i>
0.6	<i>Vicia cracca</i>
3.2	<i>Agrostis stolonifera</i>
16	<i>Cynosurus cristatus</i>
19.2	<i>Festuca rubra, commutata</i>
16	<i>Festuca rubra, litoralis</i>
2.4	<i>Alopecurus pratensis</i>
4	<i>Poa trivialis</i>
6.4	<i>Poa pratensis</i>
0.8	<i>Anthoxanthum odoratum</i>
8	<i>Phleum pratense ssp Bertolinii</i>
4	<i>Deschampsia cespitosa</i>

Species rich neutral grassland

% Mix	Latin Name
0.2	<i>Agrimonia eupatoria</i>
1.4	<i>Borago officinalis</i>
0.8	<i>Salvia verbenaca</i>
0.6	<i>Trifolium pratense</i>
0.2	<i>Trifolium repens</i>
1.6	<i>Agrostemma githago</i>
1.2	<i>Centaurea cyanus</i>
1	<i>Leucanthemum vulgare</i>
0.6	<i>Digitalis purpurea</i>
1.2	<i>Centaurea nigra</i>
1	<i>Centaurea scabiosa</i>
0.2	<i>Lythrum salicaria</i>
0.2	<i>Origanum vulgare</i>
0.2	<i>Geranium pratense</i>
1	<i>Malva moschata</i>
1	<i>Papaver rhoeas</i>
0.4	<i>Lychnis flos-cuculi</i>
1.4	<i>Onobrychis vicifolia</i>
1.4	<i>Knautia arvensis</i>
0.6	<i>Scabiosa columbaria</i>
0.2	<i>Dipsacus fullonum</i>
0.4	<i>Lotus corniculatus</i>
0.4	<i>Anthyllis vulneraria</i>
0.4	<i>Echium vulgare</i>
1	<i>Achillea millefolium</i>
1.4	<i>Rhinanthus minor</i>
4	<i>Agrostis castellana</i>
20	<i>Cynosurus cristatus</i>
16	<i>Festuca ovina</i>
24	<i>Festuca rubra, litoralis</i>
6.4	<i>Poa pratensis</i>
9.6	<i>Phleum pratense ssp Bertolinii</i>

Species rich biodiverse roof seeding

% Mix	Latin Name
0.5	<i>Achillea millefolium</i>
6.5	<i>Anthyllis vulneraria</i>
12.5	<i>Centaurea nigra</i>
5	<i>Cruciata laevipes</i>
0.5	<i>Filipendula vulgaris</i>
5	<i>Galium album - (Galium mollugo)</i>
2.5	<i>Galium verum</i>
0.5	<i>Hippocrepis comosa</i>
5	<i>Leucanthemum vulgare</i>
1	<i>Lotus corniculatus</i>
15	<i>Malva moschata</i>
0.5	<i>Origanum vulgare</i>
5	<i>Plantago lanceolata</i>
5	<i>Plantago media</i>
10	<i>Poterium sanguisorba - (Sanguisorba minor)</i>
0.5	<i>Primula veris</i>
10	<i>Prunella vulgaris</i>
5	<i>Rhinanthus minor</i>
5	<i>Rumex acetosella</i>
5	<i>Silene vulgaris</i>



Native Wet Woodland Species Mix - (Planted at 2m centres)

Species	Height	Specification	Mix
<i>Alnus glutinosa</i>	60-80cm	1+1: Transplant	20%
<i>Betula pubescens</i>	60-80cm	1+1: Transplant	15%
<i>Cornus sanguinea</i>	60-80cm	1+1: Transplant	15%
<i>Crataegus monogyna</i>	60-80cm	1+1: Transplant	15%
<i>Prunus spinosa</i>	60-80cm	Branched, 2 breaks	5%
<i>Rhamnus frangula</i>	60-80cm	1+1: Transplant	10%
<i>Salix caprea</i>	60-80cm	1+1: Transplant	5%
<i>Salix cinerea</i>	60-80cm	1+1: Transplant	5%
<i>Viburnum opulus</i>	60-80cm	1+1: Transplant	10%

Hedgerow trees

Species	Specification	Girth	Height
<i>Acer campestre</i> "Streetwise"	Heavy standard	12-14cm	350-400cm
<i>Sorbus aucuparia</i> "Cardinal Royal"	Heavy standard	12-14cm	350-400cm
<i>Prunus padus</i> 'Albertii'	Heavy standard	12-14cm	350-400cm

Native Hedgerow Species Mix - (Double staggered row at 6 plants per m)

Species	Height	Specification	Mix
<i>Cornus sanguinea</i>	60-80cm	1+1: Transplant	5%
<i>Corylus avellana</i>	60-80cm	1+1: Transplant	10%
<i>Crataegus monogyna</i>	60-80cm	1+1: Transplant	30%
<i>Euonymus europaeus</i>	60-80cm	1+1: Transplant	10%
<i>Ilex aquifolium</i>	60-80cm	1+1: Transplant	10%
<i>Ligustrum vulgare</i>	60-80cm	1+1: Transplant	5%
<i>Lonicera periclymenum</i>	60-80cm	1+1: Transplant	5%
<i>Prunus spinosa</i>	60-80cm	Branched, 2 breaks	10%
<i>Rosa canina</i>	60-80cm	1+1: Transplant	5%
<i>Rhamnus frangula</i>	60-80cm	1+1: Transplant	5%
<i>Viburnum opulus</i>	60-80cm	1+1: Transplant	5%

Native Shrub Mix - (Shrubs at 1m centres)

Species	Height	Mix
<i>Corylus avellana</i>	45-60cm	35%
<i>Euonymus europaeus</i>	45-60cm	10%
<i>Ilex aquifolium</i>	30-45cm	20%
<i>Sambucus nigra</i>	40-60cm	5%
<i>Taxus baccata</i>	40-60cm	10%
<i>Viburnum opulus</i>	45-60cm	20%

Green Wall - climbing plants (3 No. single species group planted per panel)

Species	Height	Container	No.
<i>Jasminum officinale</i>	150-200cm	10L pot	3
<i>Trachelospermum jasminoides</i>	150-200cm	10L pot	3



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Medworth CHP Limited
Medworth Energy from Waste Combined Heat and Power Facility DCO
Environmental Statement
Chapter 3 - Description of the Proposed Development

Figure 3.14
Outline Landscape and Ecology Strategy

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Appendix B Creation, Management and Monitoring Timetable

Habitat creation programme

Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Woodland, tree, shrub, green wall and hedgerow planting	Active	Active	Active	Grey	Active	Active						
Grassland sowing and brown roof sowing	Grey	Grey	Active	Active	Active	Grey	Grey	Active	Active	Active	Grey	Grey
Enhancement for species (e.g. installation of bat and bird boxes, and creation of refugia and hibernacula features etc.)	Active											

Management and monitoring

Management activity	Years post creation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Wet woodland and trees</i>													
Weed control	1, 2, 3 and when required after monitoring	Grey	Grey	Grey	Grey	Active	Active	Grey	Grey	Grey	Grey	Grey	Grey
Firming in	1	Grey	Grey	Active	Active	Active	Grey	Grey	Grey	Grey	Grey	Grey	Grey
Encroaching vegetation cut	1, 2, 3 and every 3 years thereafter	Grey	Grey	Grey	Grey	Grey	Active	Grey	Grey	Active	Grey	Grey	Grey



Management activity	Years post creation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Beating up	1, 2	█	█	█								█	█
Monitoring	1, 2, 5 and every 3 years thereafter	█	█	█	█	█	█	█	█	█	█	█	█
<i>Species-rich grassland</i>													
Weed control	1, 2, 3 and when required after monitoring					█	█						
Cutting regime	Every Year								█	█			
Monitoring	1, 2, 5 and every 5 years thereafter	█	█	█	█	█	█	█	█	█	█	█	█
<i>Hedgerow</i>													
Weed control	1, 2, 3 and when required after monitoring					█	█						
Beating up	1, 2	█	█	█								█	█
Cutting to promote dense growth	1,2,3 and when required after monitoring	█	█										
Monitoring	1, 2, 5 and every 5 years thereafter	█	█	█	█	█	█	█	█	█	█	█	█
<i>Brown roof</i>													

B3 Outline Landscape and Ecology Management Plan



Management activity	Years post creation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Weed control	1, 2, 3 and when required after monitoring												
Cutting regime	Only if/when advised after monitoring												
Monitoring	1, 2, 5 and every 5 years thereafter												
<i>Green wall</i>													
Pruning regime	Every Year												
Monitoring	Every Year												
<i>Enhancement for species</i>													
Amphibian and reptile refugia and hibernacula monitoring	1, 2, 5 and every 5 years thereafter												
Bat box monitoring	Every year												
Bird box monitoring	Every year												
Invertebrate habitat feature and hedgehog box monitoring	Every year												

