



**Development of Waste Treatment Facility,
comprising Reception and Recycling Hall;
Mechanical Biological Treatment (MBT) Facility;
Advanced Conversion Technology (ACT) Facility;
Power Generation and Export Facility; Education
and Office Accommodation; Landscaping and,
Access.**

Sinfin Lane, Derby

Resource Recovery Solutions (Derbyshire) Ltd

Environmental Statement

Chapter 9:

Ecology and Nature Conservation

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9 ECOLOGY

9.1 Introduction

- 9.1.1 This chapter provides an assessment of the potential effects on the ecology and biodiversity of the proposed development of the application site at Sinfin Lane, Derby. The chapter describes the baseline ecological conditions currently existing at the application site and its surroundings; the potential direct and indirect effects arising from the development works; the mitigation measures required to prevent, reduce or offset any adverse effects; and the likely residual effects after the mitigation measures have been implemented.
- 9.1.2 There are many factors that influence the ecology of a development site and the discipline of Ecology has interactions with many other areas considered in an Environmental Impact Assessment (EIA). In light of this, the ecological assessment draws on the findings of the other discipline areas and aims to provide:
1. An objective and comprehensive understanding of the effect of this project on the ecology of the site;
 2. An objective and comprehensive understanding of the consequences of this project in relation to national, regional and local policies concerned with biodiversity and nature conservation; and
 3. Recommendations of the necessary steps that will need to be taken to meet legal requirements related to designated/protected sites and legally protected/controlled species.
- 9.1.3 The site, which is the location of a former tannery, covers an area of approximately 3.4 hectares principally comprising a mosaic of rank neutral grassland and bramble scrub. In the southwest corner is an area of more dense woody scrub; while in the southeast corner is a small field of rank neutral grassland separated from the main site area by a row of semi-mature trees.
- 9.1.4 The site and immediate surrounds are bounded to the north and east by operational railway lines. To the west the site adjoins Sinfin Lane beyond which are allotments and residential areas. Residential properties adjoin the northwest and southwest corners of the site while beyond the southern boundary is an industrial area with associated car parks. The on-site habitats extend beyond the northern and western boundaries. These areas outside the site boundaries comprise dense scrub and tall ruderal vegetation adjoining the railway lines.

- 9.1.5 The site is being proposed as a waste transfer station incorporating mechanical & biological treatment (MBT) and advanced conversion technology (ACT).

9.2 Planning Policy and Legislation

Planning Policy Statement 9: Biodiversity and Geological Conservation

- 9.2.1 Planning Policy Statement 9: Biodiversity and Geological Conservation (PPS9), published in 2005, superseded Planning Policy Guidance 9 (PPG9) in setting out national planning policy with respect to Biodiversity and Geological conservation. In particular, PPS9 states that the aim of planning decisions should be to prevent harm to biodiversity and geological conservation interests.
- 9.2.2 Where significant harm from development is identified, it will need to be shown that the development cannot reasonably be located on any alternative sites that would result in less or no harm.
- 9.2.3 In the absence of alternatives, adequate mitigation measures will need to be put in place, in combination with appropriate compensation measures, where necessary. In situations where significant harm cannot be prevented, adequately mitigated against, or compensated for, PPS9 states that planning permission should be refused.
- 9.2.4 PPS9 is accompanied by Government Circular Biodiversity and Geological Conservation – Statutory Obligations and their Effect within the Planning System (ODPM Circular 06/2005). This aims to support PPS9 by *‘providing guidance on the application of the law in relation to planning and nature conservation as it applies in England’*. In addition, the Government has also produced further guidance to complement these two documents in the form of Planning for Biodiversity and Geological Conservation: A Guide to Good Practice (ODPM 2006). This document provides guidance, through case studies, and examples are aimed to help achieve the key principles of PPS9, and comply with the legal requirements set out in the Circular.
- 9.2.5 PPS9 aims to ensure that *‘construction development and regeneration should have minimal effects on biodiversity and enhance it where possible’*. The guidance proposes to ensure that planning decisions are made based on up-to-date information and ensure the maintenance, enhancement, restoration or addition of biodiversity within scheme design and ensure planning decisions *‘prevent harm to biodiversity and geological conservation interests’* (ODPM 2005). The Government Circular makes reference to the UK Biodiversity Action Plan, England Biodiversity Strategy and Local Biodiversity Partnerships. These documents outline

strategic action for biodiversity at both the national and local level, and are considered further below.

The East Midlands Regional Plan

9.2.6 The East Midlands Regional Spatial Strategy (also known as the Region Plan) was published in March 2005, to provide a long-term strategy for the development of the region over a period of 15-20 years. The RSS was subsequently reviewed in 2006 with a further partial review in 2008 in order to bring the document into line with new legislation. The Final East Midlands Regional Plan was adopted and published on 12th March 2009.

9.2.7 Policy 29 – Priorities for Enhancing the Region’s Biodiversity contained within the Regional Plan highlights the requirement for local authorities and statutory environmental bodies to implement the regional biodiversity strategy through measures that should, amongst other things include:

- *‘creating, protecting and enhancing networks of semi-natural green spaces in urban areas’*

and

- *‘development and implementation of mechanisms to ensure that development results in no net loss of BAP habitats and species, particularly for restricted habitats with special environmental requirements, and that net gain is achieved’.*

9.2.8 In 2006 the regional biodiversity strategy “Putting Wildlife Back on the Map - A Biodiversity Strategy for the East Midlands” was published and adopted. The implementation of this strategy is referenced in Policy 29 of the East Midland Regional Plan (see above paragraph 1.12). Paragraph 7.1.2 of the Regional Biodiversity Strategy describes the regional vision for urban and post-industrial habitats in the context of enhancing the regions biodiversity:

All new developments will incorporate new habitats and make provision for their long-term management. New landscaping, traditionally lacking in vision and long-term provision for wildlife, will reflect LBAP priorities, make wider use of native species and improve habitat connectivity. Consideration of how wildlife can be encouraged through innovative and high quality design should become the norm. Features such as ‘green roofs’ that can have substantial benefits for wildlife, energy efficiency, and sustainable urban drainage will become widely used.

9.2.9 Objective 12 of the regional biodiversity strategy lists several objectives and targets along with recommended actions required in order to enhance and maintain urban and post-industrial sites of significant biodiversity value. In particular objectives 12b states the aim for:

95% of all new build to incorporate good provision for biodiversity, both in terms of protection and new habitat creation.

Objective 12c requires that:

That the value of urban and post-industrial habitats is weighted properly in the development planning process.

The goal of objective 12e is that:

All sites of the value of Wildlife Site or above protected from development in LDFs and Sub-Regional Strategies, or where there are reasons that outweigh the need to protect the site, sufficient ecological compensation is made.

- 9.2.10 The Derby and Derbyshire Joint Structure Plan was adopted in 2001. Following government direction in 2007, several policies were dropped from the plan. Within the revised plan, Environment Policy 4: Environmental Priority Areas was saved. This policy states that:

Measures will be taken to conserve or enhance the environment.

In addition, Environment Policy 14: Sites and Features of Nature Conservation Importance states:

Development will take full account of its likely impact on nature conservation value. Where proposed development may have adverse effects, the local planning authority will request a statement detailing the natural character and value of the site, the impact of proposed development on its conservation value and any mitigating measures which it is proposed to take. Where the need for the development overrides the need for protection, measures will be taken to minimise the impact and/or seek the provision of compensatory habitats by means of planning conditions and planning obligations.

Local Plans

- 9.2.11 The Derby City Local Plan Review was adopted in January 2006. Chapter 9 of the Local Plan Review describes Derby City Council's strategic approach to Nature Conservation and Biodiversity, and provides specific policies to achieve the council's objectives. In particular Policy E5 - Biodiversity states that:

Applications for new development on sites which have features of nature conservation interest will only be approved where provision is made for the retention of those features. These will include mature trees, established hedgerows and shrub areas, water features and geological resources, and other Biodiversity Action Plan priority habitats and priority species. Where the loss of significant features is unavoidable the City Council may require by condition, or seek to negotiate a planning obligation to secure, suitable mitigation to compensate for that loss.

Policy E7 Protection of Habitats states:

Development which would materially affect sites supporting wildlife species protected by law will only be permitted where:

- a. Proposals are made to minimise disturbance to, and to facilitate the survival of, the affected species on the site; or,
- b. An offer of the creation of alternative habitats is made, supported by a planning obligation, which would sustain the current levels of the species population.

9.2.12 Policy E7 of the Local Plan Review is also stated as Policy E9 of the Derby City Council's Derby Nature Conservation Strategy published in April 2006. This strategy states several specific aims regarding the objectives of Derby City Council with regard to nature conservation. In particular, Aim 3 is:

To maintain, at least at its present level, the stock of natural heritage features which do not qualify as the most important, but which make an important contribution to environmental quality.

Specific natural heritage features are defined within the plan and include sites which:

are known to support semi-natural features, which benefit wildlife, or geological heritage, called "local city sites"

9.2.13 Local city sites are listed in Appendix 9.1 and include the Melbourne Junction Local Wildlife Site, which is located in close proximity to the application site.

Wildlife Legislation

9.2.14 The Wildlife and Countryside Act (WCA) 1981 (as amended) consolidates and amends existing national legislation to implement the European Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive) in the UK. The WCA 1981 is complemented by the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended); referred to as the Habitat Regulations. The WCA 1981 has also been amended and reinforced in England and Wales by the Countryside and Rights of Way (CRoW) Act 2000. Individual species receive different levels of protection under the WCA 1981 and Habitat Regulations as listed below.

9.2.15 The CRoW Act applies to England and Wales and contains five Parts and 16 Schedules, and increases protection for Sites of Special Scientific Interest (SSSI) and strengthens wildlife enforcement legislation.

9.2.16 The CRoW Act places a duty on the Government to have regard for the conservation of biodiversity and maintain lists of species and habitats for which conservation action should be taken or promoted, in accordance with the Convention on Biological Diversity. Schedule 9 of

the CRoW Act amends the WCA 1981 by altering the notification procedures for SSSIs and providing increased powers for the protection and management of SSSIs.

- 9.2.17 Habitats and Species of Principal Importance for nature conservation in England are listed under the provisions of Section 74 of the CRoW Act. This section of the legislation was subsequently replaced in England by Section 41 of the Natural Environment and Rural Communities Act 2006. In summary, this places a duty on all public bodies including local and national government to have regard to biodiversity in the exercise of all of their functions. It also places a duty on the Secretary of State to take, or promote, steps to enhance the conservation of relevant habitats and species.
- 9.2.18 Schedule 12 of the CRoW Act amends the WCA 1981 and strengthens the legal protection for threatened species. The provisions make certain offences 'arrestable' and create a new offence of reckless disturbance. With regard to the protection of bird species in England and Wales, enforcement provisions have been extended by Section 81 and Schedule 12.
- 9.2.19 Further details are provided below of the protection under the WCA, CRoW Act and the Habitats Regulations, afforded to those species for which the site was considered to have potential value, specifically bats, badgers, nesting birds, reptiles and great crested newts. Details of the legislation pertaining to the invasive plant Japanese knotweed (which was identified on site) are also provided.

Bats

- 9.2.20 All bat species in the UK are protected under the WCA 1981 and are listed Annex IV species under the Habitat Regulations 1994 (as amended). This legislation states that a person commits an offence if he (a) deliberately captures, injures or kills any bat, and (b) deliberately disturbs bats in any such way as to be likely to significantly affect: i) the ability of any significant group of bats to survive, breed or rear their young; or ii) the local distribution or abundance of that species. Bat roosts are protected at all times of the year whether or not bats are present. Any disturbance of a significant roost due to development must be licensed. The legislation protects roost sites and consideration needs to be given to circumstances where loss of foraging habitat could indirectly result in the loss of the roost.

Badgers

- 9.2.21 Badgers are protected under the Badgers Act 1992. This makes it an offence to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so; or to intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett, or obstructing access to it.

Nesting birds

9.2.22 Nesting birds are protected under the WCA 1981, which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs. In addition to this, for some rarer species (listed on Schedule 1 of the Act), it is an offence to intentionally or recklessly disturb them while they are nest building or at or near a nest with eggs or young, or to disturb the dependent young of such a bird.

Reptiles

9.2.23 All native British reptiles are protected under the WCA 1981 (as amended). The four most widespread reptile species (grass snake, slow-worm, common lizard and adder) are protected from intentional killing or injury.

Great crested newt

9.2.24 Great crested newts are listed as Annex I species under the Habitats Regulations 1994 (amended in 2007). This species also receives protection under the WCA 1981 and under the CRoW Act. In summary, this legislation makes it an offence to damage or destroy a breeding site or resting place, intentionally or recklessly obstruct any place used for shelter or protection, deliberately, intentionally or recklessly disturb an animal, or intentionally kill, injure or take an animal.

Japanese knotweed

9.2.25 Japanese Knotweed *Fallopia japonica* is listed in Schedule 9 Part II of the Wildlife and Countryside Act 1980 (as amended). Under section 14 of the act it is an offence for any person to plant or otherwise cause this species to grow in the wild.

9.2.26 Waste or spoil containing Japanese knotweed is considered controlled waste under the Environmental Protection Act 1990 (EPA 1990) and under the Environmental Protection (Duty of Care) Regulations (1991) such waste must be disposed of at a suitably licensed landfill facility.

Biodiversity Action Plans

9.2.27 As a result of the Convention on Biological Diversity, that took place in June 1992, Biodiversity: the UK Biodiversity Action Plan (UK BAP) was published in 1994. Within the UK BAP, habitats and species were identified that should be the target of conservation action and as such are the focus of Habitat Action Plans (HAPs) and Species Action Plans (SAPs) respectively. The list of priority BAP habitats and species was updated in September 2007 to

reflect their current conservation status.

- 9.2.28 In order to provide and implement more area specific conservation objectives, Local Authorities have produced Local Biodiversity Action Plans (LBAPs). The Lowland Derbyshire Biodiversity Action Plan lists habitats and species of local/county significance in need of conservation action.
- 9.2.29 Derby City Greenprint is a strategy through which priority habitats and species which occur in the city can be targeted for nature conservation action. Species listed in the Greenprint include all species of bats, great crested newt and song thrush. Habitats include wildflower rich grassland, broadleaved woodland and hedgerows.
- 9.2.30 Biodiversity Action Plans (BAPs) produced at both central Government and Local Authority level throughout the country contain measures to promote the conservation of a range of priority habitats and species.

9.3 Assessment Methodology

- 9.3.1 As a matter of best practice, the assessment of the application site has been undertaken based on the relevant guidance on ecological and nature conservation assessment, following recognised standards set out for Phase 1 Habitat Surveys and Environmental Impact Assessment (EclA).
- 9.3.2 The extended Phase 1 Habitat Survey was undertaken at the application site in May 2007. This comprised three sections: (i) a desktop review; (ii) a Phase 1 Habitat Survey; and (iii) a Protected Species Audit. Further walkover surveys were conducted in April 2008 and January 2009 in order to confirm whether the findings of the original Phase 1 Habitat Survey still accurately represented the ecology of the site. The results of the Phase 1 Habitat Survey and follow up walkover surveys have been used to provide the baseline ecological profile for the site. Each of the elements that make up the Phase 1 Habitat Survey is described below.

Desk Study

- 9.3.3 The conservation status of the site and surrounding area was determined by conducting a desk study and data trawl. Information was obtained from the Derbyshire Wildlife Trust (<http://www.derbyshirewildlifetrust.org.uk/>) regarding the status and location of sites with regional and national nature conservation designations within 2km of the site, and European level nature conservation designations within 10km of the site. A plan of designated sites

within 2km of the application site is included within Appendix 9.1.

- 9.3.4 Records of protected species within 2km of the application site boundary were also obtained from Derbyshire Wildlife Trust. In addition, records of bats within the 1km grid square in which the application site lies, along with the nine surrounding 1 km grid squares was obtained from the Derbyshire Bat Conservation Group (<http://www.derbyshirebats.org.uk/>). Data was also requested for this area of search from Derbyshire County Museum, Derbyshire Ornithological Society and South Derbyshire Badger Group.

Phase 1 Habitat Survey

- 9.3.5 The Phase 1 Habitat Survey was conducted in May 2007 following the standardised methodology for the classification and map
- 9.3.6 ping of habitat types in the UK (JNCC, 1990). The Phase 1 Habitat Survey comprised a walkover survey of the study site, during which the habitats present were classified according to the published habitat classification methodology, based on their structure and botanical composition. The study site and its constituent habitats were then mapped with target notes providing more detailed descriptions of habitat status, composition, and management and conservation interest. The Phase 1 report with the 2007 Phase 1 Habitat Map is included as Appendix 9.1.
- 9.3.7 Two further walkover surveys were conducted in April 2008 & January 2009 and the results of the Phase 1 habitat survey were updated accordingly. An updated Phase 1 Habitat map with Phase 1 habitat target notes are presented as Appendix 9.2.

Protected Species Audit

- 9.3.8 In conjunction with the Phase 1 Habitat Survey and walkover surveys, protected species audits were conducted during each survey with the aim of assessing the potential of the application site and immediate surrounding land to support protected species. The protected species audit was based on the walkover survey, during which habitats with potential to support protected species were identified. Targeted searches for signs of protected species such as tracks, burrows and droppings were also conducted during the surveys. A review of records of protected species activity within a 2km radius of the application site (part of the desk study) was also used to inform the protected species audit. Protected species considered in this site assessment include bats, badgers, great crested newts, reptiles, and breeding birds including those protected under Schedule 1.

Ecological Impact Assessment Methodology

- 9.3.9 Guidelines have been developed by IEEM to promote good practice in EclA relating to

terrestrial, freshwater and marine environments in the UK (Institute of Ecology and Environmental Management (IEEM), version 7 July 2006). The methodology used for the EclA is adapted from the IEEM Guidelines. The stages in the EclA process are:

- Identification and evaluation of the ecological resources and features likely to be affected by the development, including sites designated for their nature conservation or biodiversity value;
- Identification of the changes at the site likely to affect valued ecological resources and features;
- Assessment of the impact that could potentially arise from the proposed development on any ecological features and resources that have been identified as sensitive receptors, both directly and indirectly.

9.3.10 A number of factors are taken into consideration when determining the value of ecological features and resources. These include: geographic frame of reference; designation status; biodiversity and conservation value; potential, secondary or supporting value for biodiversity and conservation; social value, economic value and legal issues.

9.3.11 The nature conservation value of an ecological resource or feature is determined within a defined geographical context. The geographic scales used in this EclA are:

- International,
- UK,
- National (i.e. England/Northern Ireland/Scotland/Wales),
- Regional,
- County,
- District,
- Local,
- Site (and immediate surroundings).

9.3.12 Sites, habitats and species are evaluated based on their nature conservation designations, and the local wildlife site selection guidelines. There are several other frameworks that help place designated sites, habitats or species into the geographical hierarchy. These include the legislation and policies listed below:

- International law – EU Wild Birds and Habitats Directives;
- National law – Wildlife and Countryside Act (WCA) 1981, Countryside and Rights of Way (CRoW) Act 2000, Natural Environment and Rural Communities (NERC) Act 2006,

Hedgerow Regulations 1997;

- National Policy and Criteria – Planning Policy Statement 9: Biodiversity and Geological Conservation (PPS9), UK Biodiversity Action Plan, Birds of Conservation Concern, Natural Areas, National and County Red Data Book species;
- Local Policy – Local Biodiversity Action Plan, County Red Data Book; and
- Derby City Greenprint

9.3.13 The IEEM guidance on Ecological Impact Assessment states that impacts should be determined as being significant when they have an adverse or positive effect “on the integrity of a defined site or ecosystem, and/or the conservation status of habitats or species within a given geographical area”. In this EclA, the value of ecological resources is assessed at a National, Regional, County, District, Local and Site level. Therefore, the impact on a resource may be significant at the level of importance of the ecological receptor or at a lesser geographical scale. For example, an impact on a habitat of district importance might be assessed as being significant at the district, local or site level but not necessarily be significant at county level and above.

9.3.14 The impact assessment describes changes to and impacts on ecosystem structure and function. In describing these changes/impacts, reference is made to the following parameters: quality (positive or negative); magnitude; extent; duration; reversibility, timing and frequency.

9.3.15 In order to be consistent with other chapters within this ES, the ecological impacts which have been categorised as being at a geographic significance have been cross-referenced in terms of being adverse or positive and of Minor, Moderate, or Major significance as follows:

- Impacts that are considered to be significant at the level of the site or local area have been defined as being of Minor significance;
- Impacts that are considered to be significant at a regional / county level have been defined as being of Moderate significance;
- Impacts that are considered to be significant at a national or international level have been defined as being of Major significance.

Assumptions / Limitations.

9.3.16 The limitations of the desk study and baseline Phase 1 Habitat and walkover surveys are summarised below:

- 1 The biological data obtained during the desk study contains record of organised wildlife surveys as well as records of incidental sightings of species. However, It is not a definitive record of species distribution, and the absence of data records of a

particular species does not necessarily confirm its absence, as a number of species are under-recorded.

- 2 The second walkover survey used to ground truth the original Phase 1 Habitats Survey was conducted outside the optimal botanical survey season.
- 3 Faunal species are generally very mobile and presence/likely absence status can change over time and, therefore, an assessment of the use of the site by a species needs to take this into account.
- 4 All works, including temporary activities associated with construction such as storage of materials, will take place within the application site area as indicated on the Phase 1 Habitat Map (Appendix 9.2).

9.4 Baseline Conditions

- 9.4.1 This section documents the results of the desk study of existing information including records held by relevant biological record centres, and local species groups, and the findings of the Extended Phase 1 Habitat Survey and walkover surveys, including protected species audits.

Statutory Conservation Designations

- 9.4.2 The application site does not lie within or overlap any statutory or non-statutory nature conservation designated sites. There are no international designated nature conservation sites within 10km.
- 9.4.3 There is one statutory designated nature conservation site within 2km. Sunnysdale Park Local Nature Reserve (LNR) is located approximately 1200m to the west of the application site. The LNR incorporates Sunnysdale Park Local Wildlife Site (LWS) and is designated for its mosaic of habitats. The Park largely comprises mown amenity grassland with areas of planted woodland and naturally regenerating scrub and woodland. A stream flows through the park feeding an on-line pond with lush marginal vegetation. The park also contains areas of more diverse grassland that have been sown with traditional grass and wildflower mixes, and which are managed to maximise their benefit to biodiversity.
- 9.4.4 Kedleston Park SSSI is situated just over 2 km north-west of the edge of the city of Derby in the valley of Cutler Brook, a small tributary of the River Derwent. The site includes three areas of the Park in which ancient trees are concentrated and is coincident in part with a former Medieval deer park. The main interest of Kedleston Park is the rich and diverse deadwood invertebrate fauna which is primarily dependent upon the large number of mature and over-mature beech *Fagus sylvatica* and pedunculate oak *Quercus robur* trees which have survived here providing a link through time with the formerly extensive areas of open structured wood-pasture of this part of lowland England.

Non-Statutory Conservation Designations

- 9.4.5 Melbourne Junction LWS is located to the northeast of the application site. Melbourne Junction LWS comprises an area of regenerated post-industrial land bounded by the railway line. The site is designated for its neutral grassland, and due to the presence of hoary cinquefoil *Potentilla argentea*, which is scarce in the county. Melbourne Junction is considered to be of nature conservation value at the county level.
- 9.4.6 Less than 25% of the designated site lies on land between the railway security fencing and the application site. A brief assessment of a separate section of the LWS (on the other side of the railway line) was undertaken by Derbyshire Wildlife Trust in 2008 which concluded that much of the LWS had been lost due to development and the integrity of at least part of the designated site had been lost.
- 9.4.7 A further 10 Local Wildlife Sites (LWS) of county value are located within 2km of the proposal area site. Of these Peartree Station LWS is notable as it lies immediately to the north of Melbourne Junction LWS with land on either side of the railway line included in the designated site. The locations of the LNR and each of the LWS in relation to the site are listed in Table 9.1. A map indicating the locations of these sites is given in Appendix 9.3.

Table 9.1: Designated nature conservation sites within 2km of the application site.

Designated Site	Location in relation to the Application Site	Map reference in Appendix 9.1
Statutory sites		
Sunnydale Park LNR	1200m to the west	DE034
Non-statutory sites		
Melbourne Junction	Adjoining	DE030
Moor Plantation	1850m to the southeast	DE032
Wilmore Road Meadow	750m to the southeast	DE048
Elm Wood	1000m to the east	DE067
Rolls Royce Land	1050m to the southeast	DE086
Raleigh Depot	1000m to the southwest	DE037
Peartree Station	300m to the northeast	DE084
Sunnydale Park LWS	1200m to the west	DE034
Sinfin Golf Course Pond	1330m to the south	DE040
Sinfin Moor Lane Meadows	1500m to the southeast	DE041
Cuttle Brook	1400m to the south	DE063
Sinfin Moor Park	1420m to the south	DE089

9.4.8 The application site is situated on the southern edge of Derby within the northern part of the Trent Valley and Rises Natural Area. The immediately surrounding land use is primarily urban residential and commercial / industrial. Further afield, the city of Derby extends to the west, north and east, with the area to the south of the application site mainly comprising agricultural land.

Extended Phase 1 Habitat Survey Results

Habitats

9.4.9 The Phase 1 Habitat Survey Map (Appendix 9.2) illustrates the type, extent and distribution of habitats present within the application site margins immediately surrounding the site.

Neutral grassland

9.4.10 The majority of the application site is a mosaic of low spreading patches of bramble *Rubus fruticosus* scrub, interspersed with areas of rank neutral grassland with a high proportion of tall ruderal species. The most frequently occurring grasses are cock's-foot *Dactylis glomerata*, false oat-grass *Arrhenatherum elatius*, red fescue *Festuca rubra*, and perennial rye-grass

Lolium perenne. The composition of broad-leaved herbaceous species varies throughout, and includes black medick *Medicago lupulina*, creeping cinquefoil *Potentilla reptans*, ribwort plantain *Plantago lanceolata* and yarrow *Achillea millefolium*. The bramble adds structural diversity to the neutral grassland to create a mosaic that is likely to have some value for invertebrates and birds in the immediate context of the site, as well as providing a food source for foxes and other small mammals that are likely to be present.

- 9.4.11 In the southeast corner of the site is a low lying field of rank neutral grassland separated from the main area of the site by a row of semi-mature trees including Lombardy poplar *Populus nigra* var. *Italica*, and lime *Tilia* spp. The grassland here differs in composition from that within the main site area, and is characterised by abundant meadow foxtail *Alopecurus pratensis*, with frequent false oat-grass and cock's-foot. Herb cover is low and comprises occasional common species such as creeping buttercup *Ranunculus repens* and ribwort plantain, with locally abundant cow parsley *Anthriscus sylvestris*.
- 9.4.12 The neutral grassland provides an area of unmanaged habitat in an urban area within which most of the green space comprises gardens that are likely to be subject to higher disturbance and more intensive management. Green space in the wider urban area includes public playing fields, amenity grassland and allotments to the northwest of the site plus the large number of gardens in residential areas also provide for local biodiversity.
- 9.4.13 Within the application site, the mosaic of neutral grassland and bramble thicket (although a widespread habitat) is likely to be larger in extent than in other areas of green space in the local area. Nevertheless, the plant species recorded are likely to be present in green spaces within the surrounding urban area. Therefore, this habitat is considered to have value at the local level.

Dense Scrub

- 9.4.14 In the application area, the dense scrub is present as a linear boundary feature in the south-western corner of the site and around the property adjoining the western site boundary. This habitat is relatively limited in extent and lacks connectivity with off site habitats that would otherwise enhance its value. Hawthorn and elder are the principal species together with blackthorn and silver birch.
- 9.4.15 Extensive scrub habitat on a north-facing railway embankment adjoins the northern boundary of the application site. Some individual and small groups of native shrubs (located inside the northern boundary of the application site) are continuous with the dense scrub habitat running the length of the railway embankment. The number of shrubs is small and represents a minor proportion of the wider scrub habitat. Scattered mature scrub and trees extend to the north-east of the site and along part of the eastern boundary with the railway.

9.4.16 The scrub habitat within the application site (when considered in isolation from the railway embankment) is of relatively limited extent and comprises widespread species and is thus considered to be of value only in the context of the site.

9.4.17 The scrub habitat in combination with the wider off-site scrub habitat would have biodiversity value in the context of the local area.

Semi-mature trees

9.4.18 There is a row of Lombardy poplars and semi-mature limes *Tilia* spp. around the margin of the low-lying field in the south-eastern corner of the site with the row of semi-mature Lombardy poplars extending along the southern boundary.

9.4.19 The semi-mature trees are likely to provide habitat for invertebrates and common birds species although they lack features that would be of value to roosting bats. Some dieback and decay was present, most notably in the bases of the many of the Lombardy poplars but the trees were not of sufficient age or size to be considered ecologically mature. In the context of the surrounding area the tree resource within the application site will be typical of planted trees in green space areas, and there will be many trees in urban and suburban gardens in the local area. Therefore, the semi-mature trees on site are considered to be of value at the site level and immediate surroundings.

Tall Ruderal

9.4.20 There is a small area of tall ruderal vegetation close to the site entrance on the western site margin. There is also a broad swathe of tall ruderal vegetation along the eastern margin and in the northeast corner of the site, which extends onto the railway embankment on the eastern boundary. The tall ruderal vegetation is characterised by abundant, bramble and common cleavers *Gallium aparine*, with frequent creeping thistle *Cirsium arvense*, nettle *Urtica dioica* and locally frequent great willowherb *Epilobium hirsutum*. Other common herb species also occur occasionally.

9.4.21 The tall ruderal vegetation provides unmanaged habitat within an urban context that is likely to have value for common species of birds, small mammals and invertebrates. However, this habitat is limited in extent and comprises common plant species and consequently it is considered unlikely that a notable assemblage of faunal species would be associated with this habitat. Therefore the tall ruderal habitat is considered to be of value only at the level of the site.

Short perennial/ephemeral

9.4.22 There is a very small area of short ephemeral / perennial vegetation which has established over the former asphalt entrance track adjacent to the entrance point on the western site boundary. This habitat is very small in extent and comprises common widespread species. No areas of nutrient-poor substrate typical of post-industrial sites occur within the application area. This pioneer habitat is considered to be of negligible ecological value.

Overall Site

9.4.23 Immediately adjoining the northern boundary is a north-facing railway embankment supporting dense continuous scrub. A lower railway embankment along the eastern boundary supports tall ruderal vegetation with scattered mature scrub.

9.4.24 This wider area incorporates several habitat types and has good connectivity with the railway lines to the north and to the east, and the Melbourne Junction LWS located immediately to the northeast.

9.4.25 The dense continuous scrub along the railway embankment to the north is likely to function as a wildlife corridor for less mobile species such as invertebrates, reptiles and small mammals, providing connectivity to other areas of green space within the local area which largely comprise gardens, along with a golf course, smaller areas of allotments and post-industrial land adjacent to the railway. The railway lines also provide potential connectivity to the arable land beyond the urban fringe to the southwest and southeast.

9.4.26 The entire site provides a large extent of unmanaged habitat, which is likely to support species of small mammal and birds that are less common in the more managed areas of green space surrounding the site, which largely comprise gardens. The ecological value of the site as a whole is enhanced by the connectivity provided by the habitats along the immediately adjoining railway lines. Consequently the application site and immediately adjacent habitats function as an ecological unit providing a mosaic of habitats with value for a range of common species of invertebrates, small mammals, birds both as foraging / breeding habitat, and as a wildlife corridor providing connectivity between other suitable habitat areas. Therefore, the wider survey site is considered to be of value in the context of the local area.

Species*Bats*

9.4.27 Records of bats and bat activity within the local areas were provided by the Derbyshire Bat Conservation Group. There are no records of bats within the application site and few records of bats within the local area. There are seven records of individual bats including whiskered

bat *Myotis mystacinus*, pipistrelle *Pipistrellus* spp. brown long-eared bat *Plecotus auritus*, and of unspecified bat species. These records were of individual bats either grounded or found in buildings within adjacent 1km grid squares. There is also a single record of a roost of an unspecified bat species approximately 400m to the west.

- 9.4.28 There are no buildings in the application site, and the semi-mature trees on site lacked features such as above ground holes, splits, cracks and cavities that would provide potential roost locations for bats.
- 9.4.29 Dense scrub and the lines of trees within the site provide potential foraging habitat and could serve as linear navigational features providing connectivity with the wider landscape. Although the surrounding land use is urban (residential and industrial), there are a number of areas of green space, including a golf course to the south of the site and agricultural land beyond the edge of Derby. However, the site itself has an urban context and artificial lighting in the surrounding area is likely to limit the number of bat species that would potentially forage in the local area. *Pipistrelle Pipistrellus* spp. frequently utilises urban habitats and is the most likely to forage at or commute across the Sinfin site/ railway embankment.
- 9.4.30 Green spaces within the wider local area will also have value for foraging bats and the site forms part of this connected network of green spaces. As one of the larger areas of green space with linear mature scrub the habitats within and around the site have the potential to be used by any bats roosting in houses in the surrounding area. Consequently the site is likely to have value for foraging bats in the context of the site / local area.

Badger

- 9.4.31 The desk study returned no records of badger *Meles meles* within 2km. Many entrances to mammal holes are present within the site, the majority of which relate to current rabbit activity. A number of wide entrances to mammal holes are present at the southern end of the central linear row of shrubs and trees. The size and shape of some of the entrances and in some instances features that may have been spoil mounds indicate that this may have been used as a badger sett in the past. However, all but one of the tunnels into the burrows narrows significantly making it impossible for them to be in current use by badger and will be in use as a rabbit warren.
- 9.4.32 One wide entrance at the northern end of the group did not narrow and from its shape would have the potential to be used by badger. However, there was vegetation growing in the entrance with a minimal amount of soil. A fox *Vulpes vulpes* faeces was present in front of the hole and fox scent was evident in the hole.

- 9.4.33 The adjoining railway line embankment provides cover and foraging habitat and the margins of the railway provide connections to other green spaces. Many rabbit warren entrance holes were noted on the embankment. A further large entrance to a mammal burrow is located on the north western boundary of the application area at the top of the railway embankment. This entrance was not typical of a badger sett with a linear run leading from the entrance and no evidence of any spoil dug from underground chambers. There was no associated badger activity such as a clear path, foraging or a dung pit found in the search of the wider area including the few gaps beneath the railway security fence that would be large enough to be used by badger. Furthermore, there was a strong smell of fox, which was considered to be resident in this hole. The mammal track along the base of the embankment was also characteristic of regular use by fox with several territorial signs present.
- 9.4.34 Therefore, from the survey information it has been concluded that badger is not currently resident in the application site or on the adjoining railway embankment.
- 9.4.35 The neutral grassland, scattered scrub and tall ruderal habitats within the application site have the potential to be used as foraging habitat but no evidence of activity was recorded during any of the three habitat surveys. Therefore, due to the absence of any clear signs of badger activity it has also been concluded that the application site is unlikely to be regularly used part of a wider foraging territory.
- 9.4.36 Notwithstanding this, badger activity can change over time and checks of the site should be made prior to construction to confirm whether there is a continued absence of badger activity at the site.

Other Mammals

- 9.4.37 Evidence of fox including droppings and paths were found throughout the eastern part of the site during the most recent walkover survey. A single adult fox was seen in the northeast corner of the survey site, close to the recorded fox den. Foxes have become well adapted to living in urban areas and are likely to occur throughout the wider landscape.
- 9.4.38 The neutral grassland and bramble mosaic along with the dense scrub on the embankment to the north provide suitable habitat for common species of small mammal. Smaller mammal species such as field vole *Microtus agrestis* and bank vole *Clethrionomys glareolus* are less likely to occur within the surrounding urban green space, which largely comprises gardens and amenity areas. These species are likely to be more widespread in established hedgerows and areas of unmanaged grassland such as hedge banks within the arable land beyond the urban fringe to the south.

9.4.39 Given the connectivity of the site with surrounding areas of habitat, and the absence of extensive areas of unmanaged green space within the wider urban area, the application site is considered to have the potential be of value for common small mammals at the level of the local area.

Breeding Birds

9.4.40 The desk study returned a very small number of records of birds within 2km of the site. Species recorded include starling *Sturnus vulgaris*, bullfinch *Pyrrhula pyrrhula*, willow tit *Parus montanus*, swift *Apus apus* and song thrush *Turdus philomelos*. The records did not provide information about the time of year these species were recorded. Starling, bullfinch, willow tit and song thrush are UK BAP species and listed as species of high conservation concern. Song thrush is one of the priority biodiversity species for the city of Derby.

9.4.41 Several migrant breeding species have been recorded in the local area including whitethroat *Sylvia communis*, willow warbler *Phylloscopus trochillus*, chiffchaff *Phylloscopus collybita*, and lesser whitethroat *Sylvia curruca*. Kestrel *Falco tinnunculus* and sparrowhawk *Accipter nisus* are also resident in the local area.

9.4.42 There are numerous residential properties within the local area with gardens that are likely to provide both nesting habitat and a source of food for a range common bird species.

9.4.43 The mosaic of bramble and grassland is considered to provide foraging and potentially nesting habitat for a common bird species such as blackbird *Turdus merula* and dunnock *Prunella vulgaris* are commonly associated with gardens. However, bramble is low and has a relatively open structure, lacking areas of dense thicket and is consequently considered to be sub-optimal. The off-site dense scrub to the north of the site provides potential nesting habitat for birds including migrant breeding species such willow warbler.

9.4.44 The neutral grassland could also be used as a foraging resource by song thrush, a species of conservation concern, as well as blackbird. Birds are mobile species and an abundance of nesting and foraging habitat would be provided by gardens for species such as blackbird.

9.4.45 The on-site habitats are sub-optimal for ground nesting species such as skylark *Alauda arvensis* with the grass being uniformly long and lacking a tussocky structure which provides cover for nest sites. Skylark which is listed as a National and County Biodiversity Action Plan species will be resident in the local area, particularly agricultural land on the urban fringe.

9.4.46 Given the habitat conditions, the application site is predicted to be of value for breeding and foraging birds in the context of the site and immediate surrounds, however the scrub habitat

on the railway embankment adjoining the site potentially supports a wider assemblage of common species.

Reptiles

- 9.4.47 The desk study returned no records of reptiles within the search area. The main area of grassland / bramble in the application area contains primarily an open vegetation cover with limited dense cover but several small patches of rubble were noted potentially suitable for refuge and basking. Overall, there is only a limited degree of structural diversity in the mosaic of rank neutral grassland and bramble with the recent annual cutting back of bramble (and Japanese knotweed).
- 9.4.48 Searches of rubble during walkover surveys have found no reptiles at the site. Given the relatively patchy distribution of reptile species it is considered unlikely that any reptile species are resident in the application site.
- 9.4.49 The railway embankment and margins of the operational lines to the east and north provide connectivity to surrounding habitat such as gardens and allotments, and also because the railway verges and ballast provide additional potential reptile habitat. The surrounding habitats and railway verges, particularly the gardens and allotments, are more suitable for slow-worm *Anguis fragilis* than other widespread reptile species. Sinfin Lane to the west of the site is likely to serve as a barrier to reptile movement.
- 9.4.50 Given the more specific habitat requirements of grass snake *Natrix natrix*, adder *Vipera berus* and common lizard *Lacerta vivipara*, the site is considered to be more suitable for slow-worm than other widespread reptiles. Slow-worm records are sparse within the county being largely confined to rural areas in the north of the county, and there are very few records of slow-worm in urban areas within Derbyshire.
- 9.4.51 The site is unsuitable for adder, which prefers dry woodland and heath-land habitats. . Given the lack of water bodies and the absence of obvious refugia on site it is considered highly unlikely that grass snake would occur.
- 9.4.52 Overall, given the extent of the site, and its limited connectivity with suitable habitat in the wider area, it is anticipated that populations of reptile species will be absent from the application site.

Amphibians

- 9.4.53 There are five known records of great crested newt *Triturus cristatus* within the search area, the closest from approximately 1000m to the southwest of the application site. Great crested

newts can utilise terrestrial habitat around breeding ponds for much of the year. Suitable terrestrial habitat within 250m of a breeding pond is considered to be of importance for the species, and animals are not infrequently found within 500m (Langton et al, 2001).

- 9.4.54 There is a single pond located within an industrial site approximately 390m to the southwest. The immediate surroundings of the pond are almost entirely hard standing and/or buildings, and the pond is separated from the application site by both a large industrial development and Sinfin Lane. Given the distance between the pond and the site, and the lack of suitable intervening habitat, it is considered very unlikely that great crested newts would use terrestrial habitats in the application site. Therefore, great crested newts are not considered any further in this assessment.
- 9.4.55 Other amphibian species could utilise terrestrial habitats in the application site (particularly common frog *Rana temporaria*) which can breed in ephemeral water bodies early in spring with the terrestrial habitats and adjoining scrub providing suitable foraging habitat and shelter.

Invertebrates

- 9.4.56 The combination of rank neutral grassland with scattered patches of bramble creates a degree of structural and floristic diversity, which is likely to support a range of common invertebrate species, many of which are also likely to be present in gardens and other areas of green space throughout the local area. Habitats that are typically associated with notable invertebrate assemblages such as south-facing banks of bare soil, areas of herb rich vegetation and deadwood habitats are not present within the site. Therefore, based on the habitats and plant species recorded the site is considered to be of value for invertebrates only in the context of the site and immediate surroundings.

Invasive species

- 9.4.57 Numerous stands of Japanese knotweed *Fallopia japonica* were identified in the centre and western parts of the site. The stands had mostly been cut back along with some of the surrounding bramble scrub, and appeared to have been dead for some time. The presence of vehicle track within the site along with the apparent cutting of the knotweed indicates evidence of control measures to eradicate this species from the site. No new growth was visible during the most recent survey visit in January and consequently it was not possible to determine the extent to which the stands were still viable.

9.5 Incorporated Enhancement and Mitigation

- 9.5.1 Measures that have been built into the design of the site including the habitat creation proposals are described in the Mitigation section where appropriate relating them back to

specific impacts that have been predicted to arise as a result of the construction stage and/or the operational stage of the development.

9.6 Identification of Likely Significant Effects

- 9.6.1 The significance of the ecological impacts on the proposed development will depend on several factors including the nature, duration, extent, reversibility, magnitude and timing / frequency of potential impacts, as well as the nature of the habitats and species affected and the mitigation measures which are put in place to limit or avoid any adverse impacts. The purpose of this assessment is to establish if any species or habitats of value are likely to be impacted upon as a result of the proposed development, and if so, what mitigation measures can be undertaken to avoid or minimise these impacts.
- 9.6.2 The proposed development will comprise a new waste transfer facility, which will make use of mechanical and biological treatment (MBT) and advanced conversion technology (ACT) in the treatment of waste. The development will incorporate the buildings that will house the treatment facilities, along with associated areas of hardstanding as well as a small building housing an office and education centre, with 16 parking spaces. There will also be areas of amenity planting and landscaping incorporated into the new waste transfer facility, primarily around the perimeter. A new internal road will be constructed at the western end of the development to provide access from Sinfin Lane.

Construction Phase

Designated Sites

- 9.6.3 There are no internationally designated sites within 10km of the site but there are eight biological SSSIs the closest of which lies over 2km from the application site. The majority of non-statutory sites are located greater than 1000m from the application site. There are no direct or indirect connections through which these designated areas could be impacted and no potential impact pathways have been identified during the construction phase.
- 9.6.4 The western end of the Melbourne Junction Local Wildlife Site (LWS), located on ground on all sides of the fork between the two railway lines has the potential to be impacted by the proposed development. This site is designated for its grassland habitat and the presence of an uncommon plant species (hoary cinquefoil).
- 9.6.5 The proximity of the development to Melbourne Junction LWS creates the potential for both direct and indirect impacts. The designation lies in close proximity to the application boundary on ground that is at a lower level than the site. An old bank, with partial retaining

wall separates the two. To facilitate development ground levels across the application site will be re-graded prior to construction of infrastructure and internal roads. This movement of material will change the existing site and depending on working practices there is potential for the run off of surface water and/or mud from the working areas during earth movements.

- 9.6.6 The grassland and scrub habitats found at the western of the LWS (in closest proximity to the site) is not considered to be particularly sensitive to this type of impact. However, some areas of pioneer vegetation from on bare soils remain and hoary cinquefoil, a key plant species listed in the designation could still be present in the habitat. Accidental soil deposition during the construction phase would have localised affects on the designation. However the deposition of mud on the designated site is considered unlikely to occur given the presence of a bank between the designation and the working area.
- 9.6.7 With regard to dust, the airborne dust has the potential to be blown from the construction area into offsite habitats. This could result in localised surface covering of vegetation generally in close proximity to the working areas. Uncontrolled surface water run off from the working area to the north-east of the site could also impact have a localised impact on vegetation in the LWS if it continued for an extended period of time.
- 9.6.8 In the absence of mitigation measures during the construction phase, the potential exists for the development to result in an adverse indirect impact on the LWS, but these would be unlikely to be significant at more than the local area if not mitigated against as proposed.

Habitats

Neutral grassland

- 9.6.9 The entire area of neutral grassland within the site, including the main site area and the field in the southeast corner of the site will be permanently lost through site clearance at the outset of construction. There are no equivalent areas of unmanaged grassland in the immediate surrounding area. Based on the characteristics of the neutral grassland, it is considered to have some value for common species of small mammal, foraging birds and will support a limited range of invertebrates, but is not considered to be of high ecological value. Therefore, the loss of this habitat that will accrue from this development, is considered to be an impact of local significance (Minor significance).

Tall Ruderal

- 9.6.10 The tall ruderal vegetation along the eastern site boundary and in the northeast corner of the site, along with the small area of tall ruderal vegetation adjacent to the western site boundary will be removed during site clearance at the outset of the construction phase. Although this habitat is limited in extent and of low floristic diversity, it is considered to have some value for

common bird, small mammal and invertebrate species.

- 9.6.11 An equivalent area of tall herb habitat extends beyond the site boundary to the northeast. The loss of this habitat on-site will reduce the total expanse of this habitat in the wider site by approximately 60%, however the presence of tall ruderal habitat outside the site will decrease the magnitude of the adverse ecological impact, which is therefore considered to be significant in the context of the site (Minor significance).

Bramble scrub

- 9.6.12 The scattered bramble scrub throughout the tall ruderal and neutral grassland areas will be lost through site clearance during construction. The bramble is a foraging and nesting resource for some bird species and contributes to the overall value of the site with the scattered stands creating a structural mosaic within the neutral grassland. However, as a habitat unit, its relative ecological value is considered to be limited. Therefore, the adverse impact on the scattered bramble scrub is considered to be of significance only in the context of the site (Minor significance).

Dense woody scrub

- 9.6.13 The dense scrub in the northeast corner, and just over half of the dense woody (non-bramble) scrub in the southwest corner will be removed during site clearance. A small area of dense woody scrub around the boundary of the residential property adjacent to the northwest corner of the site will also be removed.
- 9.6.14 On-site scrub provides suitable nesting habitat for common bird species, but this is small in extent. The dense scrub habitat extends beyond the northern application site boundary, and the total loss from within the application site makes up only a small proportion of the total area of scrub habitat in the immediate surrounds.
- 9.6.15 The dense scrub on the railway embankment between the application site and railway line will be retained and protected. Shrubs above the top of the railway embankment towards the north-eastern corner of the site will be felled resulting in the limited loss of the established scrub edge and a localised reduction in the width of the linear scrub habitat (primarily off-site).
- 9.6.16 The scrub habitat also has the potential to be indirectly impacted during construction activities. The development area will need to be levelled to provide a base on which to construct the development. Earth moving operations will be undertaken in the early stages of construction phase and the retained scrub on the embankment below the re-levelled application site has the potential to be indirectly impacted by surface water run off from the working areas, or soil / dust deposition on vegetation. These potential indirect impacts will have a short duration. No

particularly sensitive plant species or habitats occur beneath the scrub and under the assumption of standard good working practices being implemented the likely impact magnitude is considered to be small.

- 9.6.17 Although there will be a reduction in habitat extent affecting any individual species that use these habitats, the removal of small areas of dense established scrub should not have an impact on the ecological functioning of the adjoining scrub habitats in the immediate surroundings. Tree protection fencing will be erected along the northern site boundary during construction to prevent damage to the trees and dense scrub to be retained along the railway embankment. Consequently during construction the adverse impact is predicted to be of significance only in the context of the site and immediate surrounds (Minor significance).

Semi-mature trees

- 9.6.18 The rows of semi-mature trees will be felled during site clearance. The tree resource is generally even-aged and is not considered ecologically mature enough for their loss to affect a wide range of faunal species. However some of the trees had a few features that could provide habitat for fauna such as nesting birds. The felling of some of the larger semi-mature trees will effectively remove a resource that would take newly planted trees 20-30 years to develop. If retained, the lime trees would mature and would have continued to contribute to the ecological value of the site over time.

- 9.6.19 However, the loss of the tree resource on site is considered unlikely to result in an ecological impact on the local area given the presence of similar trees in gardens, railway embankments and the wider green space. Therefore, the loss of the trees on site is an adverse impact that is considered to be significant at the level of the site and immediate surrounds.

Short ephemeral / perennial

- 9.6.20 The construction works will result in the complete loss of the area of short ephemeral / perennial vegetation located in the western part of the site. Given the very small extent of this habitat and its low ecological value for flora and fauna, the adverse impact resulting from its loss is not considered to be ecologically significant.

Overall site

- 9.6.21 The scrub, tall herb, neutral grassland and bramble in the application site are individually considered to be of relatively low ecological value, but when considered as an interconnected habitat mosaic with the immediately adjoining land, they form a mosaic of greater value than the individual parts.

- 9.6.22 The immediate surroundings of the site, in particular the railway embankments to the north

and east provide connectivity between the site and green spaces within the wider area. Thus the application site and immediate surroundings are considered to function as a potential wildlife corridor, enabling mobile species such as small mammals, reptiles and invertebrates to disperse between areas of green space within the local urban area.

9.6.23 It is considered that the development will not significantly impact on this function as a wildlife corridor with the important components of dense scrub habitat and grassland (off-site) along the railway embankments to the north and east being retained.

9.6.24 The clearance of habitats in the application site may decrease the ecological value of these off-site habitats for some species of fauna, but the extent of habitat that will be retained should be sufficient for the ecological functioning of the surrounding off-site habitats to remain largely unaffected. Therefore, the impact of the habitat loss across the site as a whole is considered to be of significance in the context of the local area (Minor significance).

Species

Bats

9.6.25 There are no buildings on site, and no potential roost features were identified in the semi-mature trees. Therefore it is concluded that the development will not impact on any bat roost sites.

9.6.26 Linear wildlife corridors connecting bat roosts with foraging habitat can be important in protecting the local conservation status of species. Bat flight paths tend to be associated with linear features along which bats can more easily navigate. Severance of flight routes can change the ways in which bats are able to use a landscape and in extreme cases will prevent bats reaching favoured feeding areas.

9.6.27 The loss of scrub on the eastern and southern boundaries may reduce the suitability of part of the perimeter of the application site to be used as a flight path by bats. The line of semi-mature trees will also be lost as a potential foraging resource for bats.

9.6.28 The scrub on the railway embankment outside the northern boundary of the application site will continue to be the feature with highest potential value as a foraging resource for bats. If there is existing movement of bats along the railway lines then this should remain unaffected during construction. In this way the site and its immediate surrounds could continue to function as a navigational feature for bats in the local area.

9.6.29 It is anticipated that construction will begin in March 2010 and be carried out between 7:00am and 7:00pm. Artificial lighting may be used in the mornings and evenings as and when

required according to the prevailing conditions. Artificial lighting in the spring and autumn could illuminate the southern side of the embankment around sunrise and sunset, and consequently could deter bats from foraging along the southern side of the embankment, however, the lighting will not be present throughout the night. The dense scrub on the railway embankment will also act as a partial screen to light pollution on the northern side of the site. Given that the site is currently undisturbed and unlit, the site's value as a foraging and commuting resource may be reduced. This impact, when considered in the context of the ambient lighting associated with the surrounding urban and industrial land, is predicted to be significant at no more than the site and immediate surrounds (Minor).

Badger

- 9.6.30 There is no anticipated presence of badger within the application site and consequently no anticipated impact on this species from development.
- 9.6.31 However, badgers are a mobile species using some setts only on an occasional basis. In the event that one of the larger mammal holes within the application area becomes occupied by badger prior to development then there would be an unavoidable loss of a single hole sett that is likely to be no more than infrequently used.

Other Mammals

- 9.6.32 The development will result in the loss of habitats on site and will change the context of the habitats immediately adjoining the development.
- 9.6.33 Fox will be impacted by the development as the site forms part of a wider territory and two mammal holes used by foxes are located in the scrub in the centre of the application site and on the north-eastern boundary. The loss of an actively used hole and reduction in the size of the fox territory could result in foxes being displaced from the site into the local area. The loss of a single fox territory is not considered to be a significant ecological impact.
- 9.6.34 The loss of grassland, bramble and the line of trees will impact on common small mammals such as field vole. Animals present in the grass land habitats will be lost / displaced from the site.
- 9.6.35 Although some grassland habitat will be retained outside the site, the development will result in a reduction in the number of potential burrow sites and a reduction in food availability for these species. Some small mammal species, such as field vole, would be unlikely to occur in the surrounding gardens and heavily managed amenity green space. If present on site, alternative habitat may not be present in the vicinity of the development.

9.6.36 Given the nature and location of the site it is anticipated that any small mammal species present will be not be of particular conservation concern and therefore it is considered that an impact during the construction phase has the potential to be significant only in the context of the site and immediate surrounds.

Breeding Birds

9.6.37 The proposed development will result in the permanent loss of habitats that are predicted to be used by a relatively small assemblage of nesting bird species, particularly the scrub habitats and, to a lesser extent, the line of trees. Individual pairs of birds may be displaced from the site by the development. Construction during the breeding season could result in direct loss of nests and eggs or the injury / killing of fledglings.

9.6.38 In comparison with the wider surrounding area including many residential gardens there is considered to be relatively limited opportunities within the application site itself and that the features that will be lost represent only a very small proportion of the available suitable habitat within the local area.

9.6.39 There is likely to be some noise disturbance of the immediately adjacent habitats as a result of construction activity on-site. The off-site nesting habitat is located within an urban area (industrial and residential) including the boundaries of the operational railway lines. The habitats immediately adjoining the application site are therefore already subject to existing levels of disturbance. The site is not known to be of importance for species that would be particularly sensitive to disturbance and resident species will be habituated to background noise levels.

9.6.40 Although the site is considered to have some value as nesting and foraging habitat for bird species, suitable habitat will be available for the majority of these species in the wider local area.

9.6.41 Individual pairs of species that do not use urban residential gardens could be displaced from nesting habitat in dense scrub on the perimeter of the proposals site during the construction phase. Alternative habitat may exist in the wider area in locations such as golf courses and informal public open spaces, but suitable territories may already be occupied by breeding pairs.

9.6.42 Additional artificial lighting, particularly during the night-time can make birds more susceptible to predation. Although the site lies within an urban landscape, the majority of the scrub and bramble will remain unlit at night. Artificial flood lighting in the morning and evening would

result in increased light pollution of at least the edge of the railway embankment scrub.

9.6.43 Overall it is predicted that the construction phase of the development will result in the loss of a small area of nesting and foraging habitat for birds within and on the perimeter of the application site. There could also be a reduction in the use of retained scrub habitat immediately adjoining the application site. These impacts would be unlikely to have an adverse effect on the local conservation status of common species associated with gardens. However, the development would reduce available habitat for species that are less common in urban areas such as willow warbler, song thrush and bullfinch (if breeding at the site) and the displacement could have a greater impact depending on the status of the populations in the surrounding area. Therefore it is considered that there would be an adverse impact, significant at the local level (Minor).

Reptiles

9.6.44 The site clearance during construction will result in the permanent loss of the majority of the habitat within the application site. Without mitigation measures, in the unlikely event that individual reptiles are present they could be killed or injured during site clearance. In addition, temporary noise and vibration caused by construction operations close to the application site boundary which could disturb reptiles if present in habitats directly adjoining the site.

9.6.45 Although the habitat mosaic has some potential value for slow-worm, the extent of dense cover is limited. There is also a lack of dense ground flora on the railway embankment immediately to the north of the site and across the area as a whole, the lack of suitable areas of dense cover means that in general, reptiles at the site would be susceptible to predation.

9.6.46 In light of nature of the site and given the relative scarcity of all reptile species within the local area it has been concluded that there is low potential for any reptile species to present in the application area. Consequently no impact on reptile is predicted during the construction phase of the development. Therefore, there is an anticipated negligible impact on reptiles. (Not significant).

Amphibians

9.6.47 There is potential for common amphibian species (principally common frog) to be displaced from the application site during site clearance operations. The presence of common toad and smooth newt is considered unlikely given the absence of known water bodies in the vicinity of the site. Without mitigation individual frogs could be injured or killed during vegetation removal at the outset of the construction activities. There is no known strong breeding population nearby and it is predicted than any impact on common amphibians would not be ecological significant in terms of their local population status. (Not significant)

Invertebrates

- 9.6.48 The loss of tall ruderal vegetation, neutral grassland, scrub and semi-mature trees will have an impact on the assemblage of invertebrate species using the site, however the significance of this loss will be dependent on the range of species present and their abundance in the local area. Given the species-poor nature of the habitats within the application site and lack of features that appear long-established, it is considered that the majority of species that would be affected would also be present in green spaces, gardens and urban fringe habitats.
- 9.6.49 The habitats immediately surrounding the site will continue to provide a limited amount of similar invertebrate habitat on the wider site, however, the site is an extensive green space in the urban context and its loss will reduce the available habitat for invertebrate species in the local area. Notwithstanding it is considered unlikely that any species of notable conservation value will be impacted by the development.
- 9.6.50 It is predicted that due to the absence of habitats of intrinsic high value for invertebrates, and the availability of other invertebrate habitat within the local area, there will be an adverse impact on invertebrates during construction will only be of significance at the level of the site (Minor).

Invasive Weeds

- 9.6.51 Construction of buildings and hard-standing will necessitate the eradication of the numerous established stands of Japanese knotweed that are present throughout the site.
- 9.6.52 Some treatment of Japanese knotweed had already been undertaken at the time of the site visit in January 2009, and the extent of remaining live material could not be determined from the recent site visit. Japanese knotweed is a pernicious invasive plant and any remaining live material on site has the potential to be spread during development activities.
- 9.6.53 Japanese Knotweed is easily spread through the transportation of plant fragments including rhizomes within soil. Live plant material would be able to readily thrive in any soils within the construction site and could potentially be transported across the construction site. Additionally, buried plant material can grow up through hard-standing and concrete and undermine the stability of buildings.
- 9.6.54 Plant material could also inadvertently be moved from site, for example in soils on the wheels of vehicles, providing opportunity for it to be spread to further locations. Action that result in the spread of the plant within the site or to locations outside the site is an offence under the

Wildlife and Countryside Act 1981 (as amended).

- 9.6.55 Prior to construction, a survey will be undertaken to determine the extent of live rhizomes on site. The results of the survey will inform the requirement for further action including excavation as required to eradicate Japanese knot weed from the site.
- 9.6.56 Any excavated material will be retained on site for use in landscaping, and where necessary, the eradication programme will continue throughout the construction phase.
- 9.6.57 Provided that good practice is followed in the eradication programme, and that all precautions are taken to prevent the spread of contaminated material from the site, it is anticipated that there will be a positive impact of local significance (Minor).
- 9.6.58 In the absence of such mitigation, the spread of Japanese knotweed outside the site could result in an ecological impact of local or district level significance depending on the circumstances.

Operational Phase

Designated Sites

- 9.6.59 The potential for changes in air quality to impact on SSSIs within 10km of the application sites was scoped out through consultation with Natural England due to their distance from the site and generally limited sensitivity of habitats within designated sites to potential changes to the existing background levels of nitrates, sulphur dioxide, ammonia, and nitrogen deposition and acid deposition. No other potential impact pathways have been identified for the operational phase of the development in relation to international or national designated sites within 10km.
- 9.6.60 Melbourne Junction LWS is located outside of the zone of influence for direct adverse impacts during the operational phase but indirect impacts are considered below. The size of the chimney stack will limit the changes in air quality at ground level in the proximity of the site.
- 9.6.61 The levels of airborne dust produced as a result of the operation of the new Waste Transfer Facility are anticipated to be very low. There is likely to be some noise and light disturbance of habitats adjoining the site resulting from the operation of the processing plant and lorry traffic on-site.
- 9.6.62 The grassland habitat, for which the LWS is designated, is primarily of botanical value. The grassland areas of the LWS will be separated from the operational site by existing scrub, trees and tall ruderal vegetation, together with new tree and scrub planting. There will also be a security fence around the perimeter of the WTF which will also serve to prevent litter spill into

the LWS.

9.6.63 Given the location of the LWS adjoining a junction between two operational railway lines, the area will currently be subject to periodic noise disturbance and although during operation the increase in artificial lighting will be significantly above the existing background levels at night. The scrub and tall ruderal habitats between the LWS and application site will function partly as a buffer to reduce light disturbance additional and noise levels.

9.6.64 Although there is the potential for indirect impacts on fauna using the site resulting from the 24-hour operation of the new WTF, the features for which the site has been designated would remain unaffected by noise and artificial lighting and consequently no impact on the integrity of the designated site is predicted.

9.6.65 Therefore it is concluded that there will be a negligible adverse impact on the designated site from the operation of the site (Not significant).

Habitats

9.6.66 Once construction has been completed, there will be no additional habitat loss resulting from the operation of the new WTF. Grassland, areas of native shrub and tree planting and mixed species hedgerows will be establishing around the perimeter of the development footprint. These are described in the mitigation section.

9.6.67 There will be an increase in ambient noise levels associated with the 24-hour operation of the facility and new artificial lighting around all the built areas of the site. This will result in some level of disturbance to faunal species. The new habitats on the boundaries of the application site will also be subject to light and noise disturbance and this will reduce the use of these habitats by some faunal species.

9.6.68 The operation of the site has the potential to impact on adjoining habitats which are likely to provide suitable habitat for a range of common faunal species.

9.6.69 The dense scrub on the railway embankment to the north of the site provides a substantial area of habitat, the majority of which will be screened by the new shrub and tree planting as it matures thus reducing the potential impact on this off-site habitat in the mid term. However, there will be a permanent increase in background light levels on a central section of the railway embankment. In comparison, the isolated patch of dense scrub on the southwest boundary is very small and the change in context is unlikely to have an ecological significant effect.

9.6.70 The site lies within an industrial area with a current 24 hour noise disturbance from the Rolls

Royce plant situated beyond the northern railway line. High level ambient noise is also associated with trains using the adjoining railway lines and the busy road on the western site boundary.

- 9.6.71 Overall the operational new WTF is anticipated that these indirect impacts will have a significant impact on the potential ecological habitats at the level of the site and its immediate surroundings (Minor).

Species

Bats

- 9.6.72 The dense scrub on the railway embankment adjoining the northern site boundary is likely to function as a foraging and commuting route for bats. The increase in background levels of noise and light disturbance resulting from the operation of the new WTF has the potential to impact upon this function. Lights can interfere with navigation during commuting flights (Rich & Longcore, 2006) with some species rely on dark corridors to move through the landscape. Artificial lighting can also deter light sensitive bat species from foraging. However, the site lies within a wider urban area with industrial and street lighting and is considered unlikely that the site forms part of an existing dark corridor.
- 9.6.73 The artificial lighting to be installed in the development will be 100W and 150W clear/high output sodium lamps. One section of the railway embankment will be subject to elevated levels of artificial light at night, but even in this area the scrub edge adjoining the railway line, will be largely screened by the existing dense scrub.
- 9.6.74 The existing site will be subject to infrequent high noise levels from trains. The development will result in a continuous low level background noise. The low frequency sound should not have any interference with the high frequency bat echolocation.
- 9.6.75 Given the urban context of the site, the bat species most likely to be utilising this features are the two native species of pipistrelle *Pipistrellus* spp. Pipistrelle species are not particularly susceptible to light disturbance and will feed on moths attracted to street lighting. Therefore these species are unlikely to be deterred from using the site for foraging or as a commuting route.
- 9.6.76 The new tree planting along the southern site boundary could potentially provide a foraging resource for bat species that are not sensitive to light disturbance. The trees will become more established over time, although it is likely to take several years and even decades for them to reach a stage of maturity where they will habitat of value equivalent to the trees that have been lost.

9.6.77 Overall it is predicted that the potential function of the site as a foraging and commuting route for pipistrelle bat once the site is operational will remain largely unchanged, but the potential for the site to be used by light sensitive species will be significantly reduced. The impact on bat foraging during operation has the potential to be adverse and significant in the context of the site and immediate surroundings (Minor).

Badgers

9.6.78 There is no predicted impact on badgers in addition to those identified as a potential in the construction phase.

Other Mammals

9.6.79 Once construction is complete the value of the newly created on-site habitats for mammals is likely to be very low. Although rabbit would graze on amenity grassland, and fox would prey on rabbits or forage food scraps in refuse, the perimeter fence is likely to limit access for these species.

9.6.80 Given the use of urban areas by foxes, it is likely that animals using the site will be habituated to artificial areas and human activity. The proximity of operational lighting columns to the den location on the railway embankment means that it is predicted that the den will be vacated once the site becomes operational. Following the loss / displacement of small mammals from the site during construction, it is unlikely that the remaining on-site and adjacent habitats would support a population of such species.

9.6.81 The displacement of a single fox family and a small mammal population will be of no more significance than at the level of the site (Minor).

Breeding birds

9.6.82 Following completion of the proposed development all existing nesting habitat on site will have been lost. New native tree and shrub planting that will help offset the loss during construction is described in the mitigation section.

9.6.83 There is the potential for indirect impacts on nesting birds resulting from the 24-hour operation of the new WTF. The existing site will be subject to infrequent high noise levels from trains and the surrounding industry during working hours. The new WTF development will result in a continuous low level background noise. This will result in the retained habitats adjoining the site and created on-site habitats being subject to ongoing background noise levels throughout the operational life.

- 9.6.84 Species that are sensitive to noise disturbance may not breed in the site or adjacent habitats. Birds are likely to habituate to continuous low level noise levels in the mid term, so that a short term adverse impact on off-site habitat as a result of noise would be lessened over time as birds become accustomed to the different site conditions.
- 9.6.85 The noise chapter (12) of the ES identifies that the background noise will be a low frequency monotone. There will be no significant change in the existing ambient noise levels at the residential property on the western site boundary, but the additional ambient noise could affect the audibility of song display around the building and reduce the value of potential territories for breeding birds.
- 9.6.86 The site is not currently illuminated, and the increase in artificial lighting will locally increase the night time predation risk for nesting birds in areas where there is light spill into off-site habitat. All the areas of new planting will also be exposed to artificial lighting, but the majority of the railway embankment will remain unaffected by the on-site 24 hour lighting.
- 9.6.87 The reduction in habitat quality for nesting birds during the operational life of the new WTF is predicted to be significant at the level of the site and its immediate surroundings.

Reptiles and amphibians

- 9.6.88 There are no anticipated adverse impacts on either reptiles or amphibians in addition to those identified in the construction phase.

Invertebrates

- 9.6.89 The site is not currently illuminated, and the increase in artificial lighting will result in light spill into localised areas of off-site habitat and onto all new habitats being established on the boundaries of the application site. The 24 hour lighting would potentially increase the risk of predation for invertebrates during the night, particularly in areas around the lighting columns.
- 9.6.90 This operational impact on invertebrates is considered to be significant at the level of the site and immediate surrounds.

Invasive weeds

- 9.6.91 If necessary, the eradication of Japanese knotweed will continue into the operational phase of the development. Following the completion of construction, a continued programme of eradication may need to be undertaken. Any live plant material that has been excavated and retained on site will be placed in a specific area for further herbicide treatments.

9.6.92 The site management will ensure the eradication of Japanese Knotweed from the site through the treatment of any remaining original rhizomes or any future outbreak that might occur.

9.6.92 The beneficial impact of local significance identified in the construction phase for the eradication of Japanese knotweed from the development area and the railway embankment may remain relevant for the first few years of the operational phase.

9.7 Mitigation

9.7.1 This section describes measures that are required to avoid and reduce significant adverse impacts in addition to the measures incorporated into the design of the site. Where possible given the nature and location of the site, measures to compensate, mitigate and enhance biodiversity have been proposed to offset the impacts that will result from the construction and operational phases of the development.

9.7.2 Mitigation and compensation measures that are an incorporated part of the site design, (including landscape proposals), are included in the mitigation section as they are measures that specifically address ecological impacts identified in the assessment.

Designated Site

Mitigation

9.7.3 During ground works Melbourne Junction LWS will be protected from potential impacts from on-site activities. A solid fence will be erected on the development boundary and will remain in place throughout the construction phase. Good working practices will prevent surface water run off from working areas down slope of the designated site during the earthworks. Soil movement will also be carefully controlled through good working practice and a solid fence will prevent accidental slippage into off-site habitat.

9.7.4 A surface water interceptor will be constructed on the boundary of the working area to protect off-site habitats. This would take the form of a temporary low-level bund or cut-off ditch to ensure that all surface water is channelled within the site as part of a temporary surface water management system during construction.

Habitats

Mitigation

9.7.5 A fence will be erected on the boundary with the railway embankment to protect shrubs and trees adjoining the application site. Tree protection areas will be established and appropriate protection measures implemented for prior to construction. Specifications for erecting protective fencing will comply with the guidelines contained within BS 5837:2005 Trees in

Relation to Construction. Good working practices and specifications will be developed and implemented to limit potential damage to retained trees during the construction period including fencing to avoid disturbance of habitats outside the application boundary. These measures will create a narrow buffer zone between the top of the railway embankment and the working areas for development and landscaping.

Compensation

- 9.7.6 The proposal maximises the developable space within the application site and the ground remodelling required to facilitate the development will require habitat loss outside of the footprint of the buildings and hardstanding. Consequently almost all the existing habitats within the application site will be lost. In this context, there will be an unavoidable net loss of grassland and tall ruderal habitat.
- 9.7.7 Retention of existing habitat within the application site is possible in only small areas within the constraints of the development footprint. However, the landscape proposals will create new linear habitats around the boundary of the development footprint to help compensate for this loss. In particular, native tree and shrub planting around the site boundaries will replace existing patches of scrub and the row of trees with a new small woodland block being established on the western boundary adjoining the railway embankment. Oak and silver birch will form the main components of structure planting and these will be complimented by other native species that occur in semi-natural woodlands on neutral soils including holly, hazel and hawthorn.
- 9.7.8 A shrub dominated edge will be created on the boundary of the retained scrub habitat on the adjoining railway embankment and this will extend around the edge of the new woodland block on the western boundary.
- 9.7.9 As such there will be a long-term net increase in the area of tree and scrub habitat following development. Impacts from the loss of established tree and shrub resource will be compensated over time with the development of the new structural planting which should provide a larger resource than currently exists within this site with the potential for it to develop greater value for biodiversity and provide a long-term net gain.
- 9.7.10 Native shrub planting on the site boundary with the railway embankment (and extending along the base of the new bund) will increase the woody species diversity and over time create a mature scrub habitat which will complement the existing habitat on the railway embankment. The shrub species selected include silver birch, hazel, crab apple, blackthorn, grey willow and rowan, which once matured, will provide food for a range of wildlife throughout the year. Sheltered south-facing sections of maturing scrub should provide micro-climates that would

be favourable to invertebrates and foraging bats.

- 9.7.11 A linear area of wildflower rich neutral grassland will be established between the scrub and the development. A native species mix for neutral soils will be used to introduce a range of herb and grass species that would be sown at a grass to herb ratio of 80:20. The grass species will create an open sward structure through which the sown herbs will germinate and other species will colonise. This will be maintained over the lifetime of the project through active management to promote its biodiversity value and over time the new grassland should develop a significantly higher botanical diversity than the relatively species-poor grassland currently present in the application site.
- 9.7.12 New native hedgerows will be established on the margins of the application site adjoining the top of eastern boundary railway embankment and along the southern boundary. The eastern boundary hedgerow will be double planted to create a wider hedgerow feature, while the southern hedgerow will adjoin structural tree planting.
- 9.7.13 The hedgerows will be managed on an annual basis to create and maintain a dense structure and maximise their value for biodiversity. A wide range of native woody hedgerow species will be planted, again to establish a feature with the potential to mature into a diverse habitat of notable benefit to local biodiversity through natural colonisation of ground flora species and its use by fauna.
- 9.7.14 Landscaping around the site entrance and education centre will be formal but some of the non-native species included in the planting mixes produce berries and flowers which are likely to be used as resource by wildlife resident in the surrounding area.
- 9.7.15 Planting on the northern site boundary will include structural tree and shrub species to provide cover for wildlife, as well as providing a buffer between the development and off-site habitats on the margin of the railway line.

Fauna

General – Mitigation

- 9.7.20 Site clearance will result in the displacement of species from the development area. In line with best practice, the clearance of vegetation should be undertaken in a systematic manner from south to north to allow the movement of displaced animals onto the railway embankment where there is cover from cover from predators and connectivity to green areas in the wider landscape. This systematic approach method will prevent fauna becoming trapped in the development site and will encourage the dispersal of mobile animals to off-site habitat at the outset of construction. This type of operation would be seasonally constrained

by the presence of nesting birds.

General – compensation

- 9.7.21 The tree planting and grassland will provide a resource for bird species in terms of shelter, food and potentially nesting. Although some of the dense bramble cover will be lost, this is a ubiquitous species that should readily re-establish in the scrub edge habitat. The landscape planting is considered to partly compensate for site level impacts on nesting birds, invertebrates and foraging bats if they utilise the site. The change in context once the site is operational may result in changes in the overall assemblage with some species potentially not returning, but the use of a wider range of plant species and structural planting is likely to provide opportunities for other species to utilise the new habitats as they mature. This broad level compensation for a range of species likely to use the site has not been described separately for each species group.

Bats

Enhancement

- 9.7.22 Long lasting woodcrete bat boxes will be erected on large mature shrubs or semi-mature trees and shrubs on the northern embankment (away from artificial light spill) to provide a resource for roosting bats which is not currently present in the existing site due absence of trees with obvious internal cavities.

Breeding Birds

Mitigation

- 9.7.23 The removal/clearance of scrub/ tall herb vegetation should be undertaken outside of the breeding bird season which runs from the end of February until the end of August, to avoid damage to nest sites and injury to birds in the nest.
- 9.7.24 Where this is not possible, clearance of areas of vegetation may be permissible during the nesting season in accordance with the Wildlife and Countryside Act 1981 if no active nests are present in the proposed area of works. A comprehensive survey for nests and nesting behaviour would have to be undertaken shortly in advance of works to determine presence /absence. Where active nest sites are found then all clearance within 5m of the nest would need to be postponed, until after the final brood of the season has fledged.

Enhancement

- 9.7.25 Several different types of nest boxes will be erected on large mature shrubs or semi-mature trees and shrubs on the northern embankment (away from artificial light spill) to provide a resource for breeding birds which is not currently present in the existing site due absence of

trees with obvious internal cavities.

Invertebrates

- 9.7.26 Artificial invertebrate habitat should be created off-site on the railway embankment on in south-facing sheltered areas on the edges of the new planting. Selected material created during site clearance will be used to create log and brash piles. A range of specific structures capable of being used by a range of insects such as bumble bees will be created on the boundary between the planting and new grassland as a further resource to promote invertebrate diversity within the developed site.
- 9.7.27 Insects will use man-made structures in which to lay eggs, or to hibernate in through the winter as an adult or larvae. These range from woodpiles, bundles of hollow canes or holes in soil banks or brickwork. Structures can be hung from scrub and placed in warm locations for different species. Dead stems are good for over wintering adults or larvae and hollow stems of herbaceous plants, or dead shrubs should be retained onsite for use as invertebrate habitat.

Table 9.2: Summary of Recommended Mitigation Measures

<i>Phase</i>	<i>Recommended Mitigation</i>
Construction	Implementation of temporary surface water intercept system and erection of temporary fencing to protect the Local Wildlife Site and the railway embankment during ground remodelling and the construction phase.
Construction	Systematic clearance of vegetation at the outset of construction from south to north to prevent fauna becoming trapped in the centre of the site during site clearance.
Construction	Time constraint on vegetation clearance outside the bird breeding season, (end of February to end of August) where possible, or inspection of trees/scrub to be cleared, in advance of clearance, to ensure no disturbance to active nests during site clearance.
Operation	Native tree and shrub planting to compensate for the loss of woody scrub and bramble and provide alternative habitat for wildlife in the operational development
Operation	Creation of native mixed species hedgerow as additional habitat to those affected by the development
Operation	Provision of bat boxes to provide roosting opportunities for bat in a site

	where there are no large semi-mature trees with natural cavities or other features of value for bats.
Operation	Provision of nest boxes for birds to provide additional nesting habitat compared with available resources at the existing site
Operation	Creation of a range of habitats that will have value for invertebrate species and encourage a broader assemblage of species to utilise the site.
Operation	Inclusion of fruiting and flowering species in formal planting areas around the education centre to provide a food source for invertebrates and birds.

9.8 Residual Impacts

Designated Sites

- 9.8.1 There is no residual ecological impact on the designated Local Wildlife Site during the construction phase.

Habitats

- 9.8.2 The use of space within the application site and surrounding urban context limits the extent to which habitat creation can be used to offset habitat loss. Consequently, in terms of area there will be a net loss of grassland, bramble and tall ruderal habitat. The adverse residual impact on bramble and tall herb vegetation will remain as significant at the level of the site.
- 9.8.3 New grassland will be established and managed to promote its biodiversity value. Although smaller in extent, the created habitat will be more diverse in terms of plant species and will therefore have the potential to attract a wide range of invertebrate species. Therefore, the new habitats once established will develop their own value reducing the residual impact. Additional plant species are likely to colonise the site over the short to mid term as the created habitats establish and mature.
- 9.8.4 For the new areas of grassland, scrub and tree structure planting, the species diversity will be higher than in the existing habitat at the site. The even structure and limited species-diversity of the existing habitats suggests that the site is capable of supporting many individuals of relatively few species. The landscape proposals will enhance a significantly smaller area but the species assemblage in these areas should become more diverse. Site management will help encourage diversity and the development of habitat quality over the lifetime of the development.
- 9.8.5 The residual impact on grassland will remain as adverse at the level of the site in the short - medium term. The new grassland community will be different but the residual impact should

become neutral depending on the assemblage of self-sustaining populations that develop.

- 9.8.6 The new areas of tree and shrub planting in combination with the establishment of a species diverse grassland will over time offset the initial loss of existing trees, shrubs, bramble and grassland and provide a resource for fauna.
- 9.8.7 In the short – medium term the impact on the shrub and tree resource will remain adverse at the level of the site as the new planting matures, but in the longer term the residual impact should become neutral and once the planted species mature should develop greater value than the shrub and tree resource that will be lost.

Fauna

Bats

- 9.8.8 The change in the context of the site (lighting) and loss of boundary scrub and the grassland habitats at the outset of the construction phase will reduce the potential value of the site as foraging habitat for bats. The new tree and shrub planting will help offset this loss of habitat but the artificial lighting associated with the 24 hour operation will result in at least a low level of permanent light spill on the new habitats created at the site, with highest levels around the lights to be located on the boundaries of the hardstanding around the main buildings. Therefore the lighting of the site there may be a residual impact that remains significant at the level of the Site (Minor Significance).

Badger

- 9.8.9 There are no identified residual impacts on badger (Not significant).

Breeding Birds

- 9.8.10 The loss of localised areas of nesting habitat at the outset of construction and indirect disturbance of the scrub on the railway embankment will have a residual adverse effect predicted to be significant at the level of the Local area (Minor Significance).
- 9.8.11 The tree and shrub planting should provide compensation habitat with a structure capable of being used by nesting birds. Although this replaces existing scrub, the value of the created habitats for nesting birds may be limited by artificial lighting but on balance following the maturation of the new habitats the long term residual impact has the potential to be neutral (Not Significant).

Reptiles and Amphibians

- 9.8.12 Given the likely absence of reptiles and low abundance of common amphibian species within the application site, it is assumed that there is unlikely to be a significant impact on either

group of species. Once the site construction works are completed there will be no anticipated additional impact during the operational stage (Not significant).

Invertebrates

9.8.13 Due to the localised habitat loss there will be an impact during construction on terrestrial invertebrates of significance at the level of the Site. Once operational the newly created on-site habitats will provide additional habitat for invertebrates as they mature. In addition, specific features created to provide new habitat for invertebrates should also contribute to invertebrate diversity on the margins of the operational site. Although the extent of habitat will be smaller, species and structural diversity in created habitats coupled with the retention of mature scrub means that the long term residual impact for construction and operation combined is predicted to be neutral (Not significant).

Table 9.3: Summary of Residual Impacts

9.8.14 The magnitude and significance of operational impacts given in the report are additional to those identified in the construction phase. The ecological value and ecological significance are given at a geographic scale.

<i>Impacted receptor</i>	<i>Phase</i>	<i>Impact Type</i>	<i>Impact Magnitude</i>	<i>Ecological Significance</i>
Melbourne Junction LWS	Construction	Neutral	Negligible	Not significant
	Operation	Neutral	Negligible	Not significant
Scrub and semi-mature trees	Construction and Operation	Adverse during construction becoming neutral and beneficial	Minor negative becoming neutral and minor positive	Both adverse and positive impacts are at a Site level
Neutral grassland	Construction and Operation	Adverse during construction. Neutral, potentially beneficial in long term	Minor negative, becoming neutral with a potential long term positive	The adverse impact is at a local level and the positive impact also has the potential to be at the local level.
Tall ruderal and bramble	Construction	Adverse	Minor negative	Site level
	Operation	No additional impact		
Ephemeral	Construction	Neutral	Negligible	Not significant

vegetation	Operation	No additional impact		
Off-site habitats (scrub)	Construction and Operation	Adverse	Minor negative	Site level
Bats (foraging)	Construction and operation	Adverse	Minor negative	Site / Local during construction. Site level / Not significant following maturation of new habitats
Breeding birds	Construction and operation	Adverse during construction becoming neutral in mid term	Minor negative becoming negligible	Local level becoming Not Significant
Invertebrates	Construction and operation	Adverse during construction, becoming neutral in mid term	Minor negative becoming negligible	Site level becoming Not Significant
Invasive weeds (Japanese knotweed)	Construction and Operation	Beneficial	Minor positive	Site - Local level

9.9 Conclusions

9.9.1 Overall the habitats characterising the site, include the neutral grassland with bramble, tall herbs (principally common nettle) and scattered dense scrub and a row of semi-mature trees. The individual habitats are considered to be of nature conservation value either at the level of the Site or in the residential and industrial context of the Local area.

9.9.2 The application site is not located within any nature conservation designations but a non-statutory designated site, Melbourne Junction LWS, lies within the potential zone of influence of the development.

9.9.3 None of the habitats within the application site qualify as UK or local BAP priority habitats or are the priority habitats listed under the Derby City Greenprint.

9.9.4 The mosaic of grassland and bramble bounded by scrub will have value for nesting birds and

invertebrates and the potential to be used by as part of a foraging territory for bats roosting in the local area. No badger activity has been recorded in the application site or on the embankments adjoining the site. There are no records of reptiles in the area around the site and the habitats within the application area are primarily sub-optimal. From the information available it is considered that reptile populations are unlikely to be present. There are no ponds within 250m of the site and great crested newt and terrestrial habitats on the site are not considered to be used by these species, although other amphibian species, such as common frog could be present.

- 9.9.5 In summary, the developable space requirements of the Waste Treatment Facility will result in an unavoidable loss of the majority of existing habitats within the application site with only small areas of boundary scrub able to be retained. The significance of identified impacts on individual habitats is generally at site level, but the loss of the habitats in combination is considered to be significant in a local context (Minor significance).
- 9.9.6 Off-site there is an extensive area of dense scrub habitat on the railway embankment beyond the northern site boundary which will be retained and protected during construction with only a localised loss of a few edge shrubs that encroach into the application site. Impacts on species and species groups during the construction phase (primarily relating to habitat loss) have been predicted to be of significance at the level of the site only (Minor significance).
- 9.9.7 The Local Wildlife Site will be protected during construction phase through the implementation of a temporary surface water intercept system and good working practices including fencing to avoid disturbance of habitats outside the application boundary. Other mitigation measures include the protection of retained habitat and avoidance of clearance works at sensitive times of year (bird nesting season). Systematic vegetation clearance will be undertaken to allow the dispersal of mobile species at the outset of construction.
- 9.9.8 Compensation for the unavoidable habitat loss will be achieved through new structural tree and shrub planting on the northern and southern boundaries of the application site and through the creation of wildflower rich grassland. The new habitats will comprise native tree species by a range of shrub species that are appropriate for the soil type and location which will significantly increase the diversity of woody species.
- 9.9.9 In terms of enhancement hedgerows will be created on the southern and eastern site boundaries to provide an additional resource and provide connectivity around the perimeter of the site which will continue to be able to function as a corridor for the movement of wildlife.
- 9.9.10 The site has been subject to an infestation of Japanese knotweed, a highly invasive non-

native plant species. A programme of herbicide treatment will be completed with the short term objective of eradication of the plant from the site and the immediate surroundings.

- 9.9.11 Artificial boxes will be provided for nesting birds, roosting bats and invertebrates will be provided in and adjoining the application site to help bring about biodiversity benefits as a result of the development.
- 9.9.12 The protection of the railway embankment scrub will maintain an existing wildlife corridor alongside the development and reduce potential impacts on species that move through the existing site and surrounds.