



Homes & Communities Agency

East Lancashire Paper Mill, Bury

Extended Phase 1 Habitat Survey

December 2016

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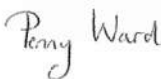
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Executive Summary

Site Description and Scope of Works		
The site is a former paper mill located immediately to the east of the small town of Radcliffe, approximately 4.8km south of Bury, Greater Manchester (National Grid Reference: SD 79296 07445). The site measures approximately 18.9ha and is broadly bounded by Cross Lane to the north, Rectory Lane/Brook Street to the west, the River Irwell to the south and Bury Street to the east. Habitats present on-site include broadleaf semi-natural woodland, broadleaf plantation woodland, scrub, semi-improved grassland, marshy grassland, tall ruderal, standing water, running water, amenity grassland, introduced shrub, buildings, trees and hard standing. The client is proposing to deliver a residential development at the site of up to 450 homes which may potentially include a new secondary school. The purpose of the Extended Phase 1 Habitat Survey is to identify at an early stage any potential ecological constraints that could have implications on future development at the site, to minimise future delays to potential works and provide advice as to how future works on site can avoid breaching any UK or European wildlife legislation.		
Potential Constraints	Yes	No
Great crested newts		
Has the site been assessed for great crested newts?	✓	
Are great crested newts a potential constraint to development of the site?	✓	
Reptiles		
Has the site been assessed for reptiles?	✓	
Are reptiles a potential constraint to development of the site?	✓	
Breeding birds including barn owls		
Has the site been assessed for breeding birds including barn owls?	✓	
Are nesting birds a potential constraint to development of the site?	✓	
Bats		
Has the site been assessed for bats?	✓	
Are roosting bats a potential constraint to development of the site?	✓	
Are foraging / commuting bats a potential constraint to development of the site?	✓	
Badgers		
Has the site been assessed for badgers?	✓	
Are badgers a potential constraint to development of the site?		✓
Other protected species (e.g. otters, water voles, white-clawed crayfish)		
Has the site been assessed for otters, water voles and white-clawed crayfish?	✓	
Are otters, water voles and/or white-clawed crayfish a potential constraint to development of the site?	✓	
Notable species (e.g. hedgehog, common toad)		
Has the site been assessed for hedgehog, common toad and other notable species?	✓	
Are hedgehog, common toad and other notable species a potential constraint to development of the site? <i>Hedgehog, common toad and invertebrates.</i>	✓	
Other features of nature conservation interest		
Does the application site support Habitats of Principal Importance or Local Biodiversity Action Plan (BAP) Priority Habitats?	✓	
If so which?	Ponds – UK NERC Priority Habitat	



	Marshy Grassland – LBAP Priority Habitat	
Recommendations	Yes	No
Are further surveys required to support future development at the site?	✓	
Is mitigation (including avoidance/compensation) and enhancement recommended?	✓	
Further surveys • Flora: A botanical walkover survey is recommended at least once between May/June to check for the presence of rare or notable plant species. • Invertebrates – terrestrial: Four survey visits to be completed spread out between April and September inclusive. • Invertebrates –aquatic: Four survey visits to be completed spread out between April and September inclusive • Great Crested Newt: eDNA surveys are recommended for Ponds 2, 3 and 4 to determine presence or likely absence of GCN. Any pond found to contain GCN will require an additional six surveys between mid-April and June. • Breeding birds: Four survey visits to be completed spread out between March and June inclusive. • Roosting bats - trees: Should tree T1 require felling, it will first require two separate surveys comprising one dusk emergence and one dawn re-entry survey between May and September (with at least one of the surveys between May and August). • Roosting bats – buildings: Should building B1 require demolition, it will first require two separate surveys comprising one dusk emergence and one dawn re-entry survey between May and September (with at least one of the surveys between May and August). Should any of the buildings B2, B3 and or B4 require demolition, they will first require one survey comprising either a dusk emergence or a dawn re-entry survey between May and August. • Bat activity: Activity surveys are required as follows: one survey visit per month in appropriate weather between April and October. Furthermore, static bat detectors should be deployed once per month (April to October) for five consecutive nights at two separate locations in appropriate weather. Mitigation • All fauna: Retention of strips of scrub (at least 3m wide) to maintain connectivity between ecological features across the site. • Invertebrates: Creation of hibernacula features and planting of new areas of soft landscaping with insect-attracting, native species. • GCN/other aquatic fauna: Retention of existing onsite ponds and creation of new ponds (including SUDS ponds) to benefit local wildlife. • GCN: Creation of hibernacula features in retained habitat on site. • Bats: Should trees T2, T3, T4, T5, T6, T7 or T8 require felling, then reasonable avoidance measures should be implemented. • Birds: Vegetation clearance to be carried out outside of the bird nesting season taken to be from March to September inclusive. • Birds: Plantation of native species hedgerow along site boundary to provide nesting, commuting and foraging habitat. • Otters: A pre-construction check (at least 6 months prior to commencement) of the northern bank of the River Irwell along the southwestern site boundary should be carried out to check that no otter holts have become present onsite. • Otters: Retention of a 20m buffer between the construction development and the River Irwell to retain the wildlife corridor and reduce disturbance to this watercourse. • Notable Species: It is recommended that an a suitably experienced ecologist/ECOW delivers a Tool Box Talk regarding best practice to site personnel with regard to ecological issues in advance of any works commencing. • Other species: Any toads and/or hedgehogs found during works should be carefully placed (where capture is possible and humane) in a ventilated box using gloved hands and released into suitable		



nearby vegetation that will be unaffected by the proposed works.

- **Invasive species:** The services of an invasive weed eradication specialist be sought to survey the site and implement a programme of treatment and disposal in order to eliminate the presence of invasive species from the site.
- **Invasive species:** Measures should be implemented to prevent unintentional spread of invasive species on or off the site.
- Design and implement sympathetic lighting scheme which avoids and / or minimises the artificial lighting of existing mature trees and the River Irwell.

Best practice

- **Habitats:** An Ecology Best Practice Plan should be produced as part of the CEMP for any future works proposed at the site.
- **Habitats:** Retain all mature trees onsite.

Enhancements

- Planting of additional native tree species of local provenance.
- Installing bird boxes on both retained mature trees and adjacent buildings.
- Installing bat boxes.
- Clearance of vegetation and planting of herbaceous plant species along the small watercourse in the north of the site to enhance its potential for water voles.



1.0 Introduction

1.1 Background

WYG was commissioned by the Homes & Communities Agency in November 2016 to undertake an extended Phase 1 habitat survey at the former East Lancashire Paper Mill site in Bury, hereafter referred to as 'the site'. This survey is required to accompany a planning application for future development at the site.

This report was prepared by WYG Senior Ecologist, Alexander Baldwin MCIEEM¹.

1.2 Site Location

The site is a former paper mill located immediately in the east of the small town of Radcliffe, approximately 4.8km south of Bury, Greater Manchester (National Grid Reference: SD 79296 07445). The site measures approximately 18.9ha and is broadly bounded by Cross Lane to the north, Rectory Lane/Brook Street to the west, the River Irwell to the south and Bury Street to the east. Habitats present on-site include hardstanding, scrub, standing water, amenity grassland, introduced shrub, mature tree, bare ground, buildings. The red line boundary of the site is displayed in Figure 1.

1.3 Development Proposals

The client is proposing to deliver a residential development at the site of up to 450 homes which may potentially include a new secondary school. At the time of writing no proposed development layout of the site was available. It is anticipated that the proposed development will also incorporate soft landscaping and access roads.

1.4 Survey & Reporting Objectives

The purpose of the survey was to identify any potential ecological constraints to the proposed development at the earliest opportunity, to minimise future delays to potential works and provide advice as to how works on-site will avoid breaching UK or European nature conservation legislation.

This report identifies the sites ecological constraints to the proposed development and recommendations for avoidance, mitigation and enhancements have been made, as appropriate.

¹ Full Member of the Chartered Institute of Ecology and Environmental Management



1.4.1 Extended Phase 1 Habitat Survey

The ecological investigations included the following objectives:

- A desk study to obtain existing information on statutory and non-statutory sites of nature conservation interest and records of protected / notable species within the site and its environs;
- An extended Phase 1 habitat survey involving a walkover of the site to record habitat types and dominant species, including any invasive species, and a reconnaissance survey for evidence of protected fauna or habitats capable of supporting such species;
- An assessment of the potential ecological constraints to the proposed development of the site and recommendations, if required, for further survey, avoidance, mitigation and enhancement where appropriate.

Nature conservation legislation and policy is summarised in Section 2.0 Planning Policy and Legislation. Further details, including schedules of protected and invasive species, are provided in Appendix A.



2.0 Planning Policy & Legislation

2.1 National Planning Policy

The *National Planning Policy Framework* (NPPF, 2012) and *Office of the Deputy Prime Minister (ODPM) Circular 06/2005: Biodiversity and Geological Conservation – Statutory Obligations and their impact within the Planning System* ('the Circular') set out the principles which local planning authorities (LPA's) should adhere to when considering planning applications. These include:

- *If significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
- *Opportunities to incorporate biodiversity in and around developments should be encouraged.*

The Circular also provides the following advice:

- i. *The presence of a protected species is a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm to the species or its habitat. Local authorities should consult Natural England before granting planning permission. They should consider attaching appropriate planning conditions or entering into planning obligations under which the developer would take steps to secure the long-term protection of the species. They should also advise developers that they must comply with any statutory species' protection provisions affecting the site concerned.*
- ii. *It is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision. The need to ensure ecological surveys are carried out should therefore only be left to coverage under planning conditions in exceptional circumstances, with the result that the surveys are carried out after planning permission has been granted. However, bearing in mind the delay and cost that may be involved, developers should not be required to undertake surveys for protected species unless there is a reasonable likelihood of the species being present and affected by the development. Where this is the case, the survey should be completed and any necessary measures to protect the species should be in place, through conditions and/or planning obligations, before the permission is granted.*

Natural England's standing advice to LPA's follows the principles and advice set out in the NPPF and the Circular. Where there is a reasonable likelihood that a protected species is present, sufficient



information (in the form of species surveys and mitigation) should be provided before the planning application is determined.

2.2 Local Planning Policy

The Greater Manchester Biodiversity Action Plan (BAP) lists priority species and habitats for the region and includes objectives and targets for maintaining and enhancing the status of these species and habitats.

At the time of writing, the Bury Local Plan was in development which will form part of Bury's Wider Development Plan. The Bury Unitary Development Plan (UDP) acts as a guide for the future development or protection of land in the Borough and its policies and proposals currently form the basis for the Council's decisions on planning applications.

EN6 of the Bury UDP focuses on conservation of the natural environment and states that

"The Council will retain, protect and enhance the natural environment of the Borough, particularly in relation to areas of ecological, wildlife and geological importance."

2.3 Legislation

The main legislation relating to nature conservation in the UK is listed below:

- The Conservation of Habitats and Species Regulations (Amendment) 2012
- The Wildlife and Countryside Act 1981 (as amended)
- The Natural Environment and Rural Communities (NERC) Act 2006
- The Countryside and Rights of Way (CRoW) Act 2000
- The Protection of Badgers Act 1992
- Wild Mammals (Protection) Act 1996

Details of this nature conservation legislation, including schedules of protected and invasive species, are provided in Appendix A.



2.3.1 UK Post-2010 Biodiversity Framework

The Environment Departments of all four governments in the UK work together through the Four Countries Biodiversity Group. Together they have agreed, and Ministers have signed, a framework of priorities for UK-level work for the Convention on Biological Diversity. Published on 17 July 2012, the 'UK Post-2010 Biodiversity Framework' covers the period from 2011 to 2020.

Although the UK Post-2010 Biodiversity Framework does not confer any statutory legal protection, in practice many of the species listed already receive statutory legal protection under UK and / or European legislation. In addition, the majority of Priority national (English) BAP habitats and species are now those listed as Habitats and Species of Principal Importance in England (listed under Section 41 (S41) of the NERC Act 2006). All public bodies have a legal obligation or 'biodiversity duty' under Section 40 of the NERC Act 2006 to conserve biodiversity by having particular regard to those species and habitats listed under S41. For the purpose of this report, habitats and species listed under S41 of the NERC Act are referred to as having superseded the UK BAP.



3.0 Methodology

3.1 Desk Study

3.1.1 Previous Reports

The Environment Partnership (TEP) issued an 'Ecology Summary' report in October 2016 which reported the findings of an ecological walkover of the site completed in September 2016. TEP's October 2016 report has been reviewed to provide further background information for the site.

3.1.2 Local Records Centre

Data was obtained from Greater Manchester Ecology Unit (GMEU; Local Biodiversity Records Centre for Greater Manchester) to ascertain the presence of statutory and non-statutory nature conservation designations and protected and notable species within 2km of the site boundary.

The data search covers:

- Statutory nature conservation designations, such as National Nature Reserves (NNR) and Sites of Special Scientific Interest (SSSI);
- Non-statutory nature conservation designations, such as Sites of Biological Interest (SBI);
- Protected species, such as GCN, bats and badgers; and
- Notable species, such as those listed under section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 and within the Local Biodiversity Action Plan (LBAP).

The data search does not cover:

- Tree Preservation Orders (TPOs); or
- Conservation areas designated for their special architectural and historic interest.

Nature conservation legislation and national policy, including schedules of protected and invasive species, are provided in Appendix A.

3.1.3 Online Resources

A search was made of Natural England's interactive, web-based MAGIC (Multi-Agency Geographic Information for the Countryside) database regarding the presence of statutory and non-statutory nature conservation designations within 2km of the site boundary. Designated sites more than 2km from the boundary were also considered if there was a direct hydrological pathway (e.g. rivers,



streams, etc.) or a habitat corridor (e.g. woodland belt or hedgerow network) between the designated site and the study site.

3.2 Field Survey

3.2.1 Phase 1 Habitat Survey

An extended Phase 1 habitat survey was undertaken of the site on 14th November 2016. The survey was conducted by WYG Senior Ecologist Alexander Baldwin MCIEEM and WYG Assistant Ecologist Matthew Wiggins. Survey conditions were overcast with persistent drizzle, gentle winds and an approximate air temperature of 7°C.

3.2.2 Great Crested Newt

The site was appraised for its suitability to support great crested newts *Triturus cristatus* (GCN). The assessment was based on guidance outlined in the Joint Nature Conservation Committee *Herpetofauna Workers' Manual* (Joint Nature Conservation Committee, Gent. T. And Gibson, S., 2003) and the *Great Crested Newt Conservation Handbook* (Langton, T.E.S. *et. al.*, 2001).

A Habitat Suitability Index (HSI) assessment was undertaken at each water body on site. HSI provides an objective method for assessing the suitability of a water body as habitat for GCN (Oldham *et al.*, 2000; Herpetological Conservation Trust, 2008). The system provides an index between 0 and 1, with 0 indicating unsuitable habitat and 1 optimal habitat. Ten suitability indices are used to calculate the index score, each representing a factor considered to affect GCN. These factors are listed and briefly explained below:

1. *Location*: i.e. where the pond is located in the British Isles. Lowlands are generally thought to be most suitable; suitability declines with increases in altitude;
2. *Pond area*: i.e., the water surface area of a pond. Suitability peaks at approximately 800m²;
3. *Pond drying*: how often a particular pond dries out. Ponds which dry out more frequently are less suitable;
4. *Water quality*: an indication of water quality based on the invertebrate diversity present. High invertebrate diversity indicates high water quality and suitability;
5. *Shade*: an estimate of the total shaded perimeter of a pond. Shoreline shade below 60% is optimal;



6. *Fowl*: indication of impact by waterfowl. High waterfowl numbers are generally considered detrimental;
7. *Fish*: indication of fish abundance. High fish numbers are generally considered detrimental;
8. *Pond count*: based on the density of ponds occurring within 1km of a particular pond. Suitability is positively correlated with pond density;
9. *Terrestrial habitat*: based on the availability of suitable habitat in the pond vicinity, e.g. rough grassland, scrub and woodland.
10. *Macrophytes*: based on an estimate of the percentage cover by emergent and aquatic vegetation. Suitability peaks at between 70% and 80% cover.

The results are also compared against a categorical scale developed by Lee Brady (unpublished). Results from individual water bodies are categorised as follows:

- <0.5 = poor
- 0.5 – 0.59 = below average
- 0.6 – 0.69 = average
- 0.7 – 0.79 = good
- >0.8 = excellent

3.2.3 Reptiles

The site was appraised for its suitability to support reptiles. The assessment was based on guidance outlined in the Joint Nature Conservation Committees' published *Herpetofauna Workers' Manual* (Joint Nature Conservation Committee, 2003) and Froglife Advice Sheet 10 (Froglife, 1999).

3.2.4 Bats

The habitats within the site boundary were appraised for their suitability to support breeding, resting hibernating, foraging and commuting bats using survey methods based on those outlined in the Bat Conservation Trust's (BCT) *Bat Surveys: Good Practice Guidelines* (Collins, 2016).

A systematic daytime visual examination of all mature trees and structures was carried out from ground level to identify potential roost features that could provide opportunities and signs of evidence

for roosting bats. Features of trees that may be used by bats and signs indicating possible use of trees by bats are shown in Table 1.

Table 1: Potential roosting features of trees and signs indicating possible use by bats (adapted from BCT Guidelines (Collins, 2016)).

Features used by bats	Signs indicating possible use by bats
• Woodpecker holes • Rot holes • Hazard beams • Other vertical or horizontal cracks and splits (e.g. frost cracks) in stems or branches • Partially detached, platey bark • Knot holes arising from naturally shed branches, or previously pruned branches • Man-made holes or cavities created by branches tearing out from parent stems • Cankers in which cavities have developed • Other hollows or cavities, including butt-rots • Double leaders forming compression forks with included bark and potential cavities • Gaps between overlapping stems or branches • Partially detached ivy with stem diameters in excess of 50mm • Bat, bird or dormouse boxes	• Bat droppings in, around or below a potential roost feature • Odour emanating from a potential roost feature • Audible squeaking at dusk or in warm weather • Staining below a potential roosting feature.

Table 2 outlines the system used to categorise roost potential of trees and built structures and to assess potential for commuting and foraging habitats in accordance with the BCT Guidelines (Collins, 2016).

Table 2: Guidelines for assessing potential roosting suitability and commuting and foraging suitability for bats (adapted from Table 4.1, BCT Guidelines (Collins, 2016)).

Suitability	Description of roosting habitats	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by roosting bats.

Suitability	Description of roosting habitats	Commuting and foraging habitats
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically – these sites are not suitable for regular use by large numbers of bats (i.e. unlikely to be suitable for maternity or hibernation). A tree if sufficient size/age to contain potential roost sites but none seen from ground, or, those seen from ground have very limited roosting potential	Habitat that could be used by a small number of commuting bats (e.g. gappy hedgerow, unvegetated stream) but not well connected to surrounding landscape by other habitat. Suitable but isolated habitat that could be used by small numbers of foraging bats such as lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree with one of more potential roost sites that could be used by bats but unlikely to support a roost of high conservation status.	Continuous habitat connected to the wider landscape that could be used by bats for commuting (e.g. lines of trees and scrub or linked back gardens) Habitat connected to wider landscape that could be used for bats for foraging such as trees, scrub grassland or water.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting g bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used by foraging bats such as broadleaved woodland, tree lined watercourses and grazed parkland. Site is close to and connected to known roosts.

3.2.5 Badgers

The site was surveyed for evidence of badger setts or other badger activity such as paths, latrines or signs of foraging. Methodologies used and any setts recorded were classified according to published criteria (Harris, S. *et. al.*, 1989). A 50m buffer zone around the expected zone of influence was surveyed where access allowed as recommended by the Chartered Institute for Ecology and Environmental Management's *Guidelines for Preliminary Ecological Appraisal* (CIEEM, 2013).



3.2.6 Otter

Any water courses on site were assessed for their suitability to support otters *Lutra lutra*. This assessment was based on guidance outlined in Chanin, P. (2003) *Monitoring the otter*.

3.2.7 Water vole

With reference to methods set out in the *Water Vole Mitigation Handbook* (Dean *et al.*, 2016), an assessment of any water bodies and water courses within and adjacent to the site was undertaken to determine their suitability to support water voles *Arvicola amphibius* and a search for evidence of activity was undertaken, including search for droppings, latrines, burrows, footprints and feeding lawns, of any areas considered suitable.

Watercourse Habitat Suitability Index

Watercourses present on site were subjected to a water vole habitat suitability index (WVHSI) assessment. The survey and methodology for WVHSI assessment conducted is adapted from 'A Method for Assessing Water Vole Habitat Suitability' (Harris *et al.* 2009). Ten habitat features favoured by water vole along watercourses are scored for presence/absence. The features are as follows:

SI.1 Vegetation: Well developed (>60%) bankside and aquatic vegetation that provides suitable food & cover (a score of 1 is given if);

- At least one bank is covered with a strip of vegetation that is 2m or more wide (from the water's edge) with very few/no sparsely vegetated or bare areas,
- At least 60% of the bank within 2-5m from the water's edge is covered with a sward of tall grassy vegetation,
- Areas of tall grassy vegetation includes a mixture of grasses & herbaceous plants,
- There is a fringe of aquatic plants growing out of the water at the edge of the banks; and
- Less than 10% of the bankside vegetation is trees and scrub.

SI.2 Food: A good variety of food plants including favoured plants and winter food sources (a score of 1 is given if);

- The grass sward is tall and highly layered, including a mixture of grasses & herbaceous plants,
- Stands of rushes, sedges or reeds are present,



- At least three different native herbaceous plants are present e.g. willowherbs, loosestrifes, meadowsweet, common nettle, hemlock water dropwort,
- At least one of the following is present; elder, bramble, willow, hawthorn or flag iris.

SI.3 Refuge: Suitable refuge areas above extremes in water levels (a score of 1 is given if);

- There are high banks with suitable habitat well above the water level; or
- Presence of backwater ponds, lakes, reservoirs or ditches with suitable habitat that is not subject to flooding.

SI.4 Burrowing: Soft, earth banks suitable for burrowing (30-60° slope) (a score of 1 is given if);

- At least one bank is soft earth or slit that water voles can easily burrow into,
- The bank has an optimal slope (30-60°), neither too steep or too shallow, and is high enough to support a burrow system,
- There are no barriers to water voles accessing the banks from the water,
- The bank is not rocky or reinforced with material, such as metal, concrete, wood or boulders.

SI.5 Drying: Water permanently present (water levels stable and does not dry up) (a score of 1 is given if);

- Water is 1m or more in depth when water levels are normal i.e. deep enough for water voles to dive into and escape from predators,
- Water levels do not fluctuate dramatically and the watercourse or waterbody is not at risk of drying out completely due to drought or seasonal changes.

SI.6 Swimming: Open water available for swimming (a score of 1 is given if);

- There is an area of continuous open water (clear of vegetation) that is at least 15 m² in extent and 0.5m in depth.
- The open water accounts for at least 10% of the water body.

SI.7 Ledge: Ledge or berm present at or close to water level (a score of 1 is given if);

- Just below the water level,
- At water level; or,
- Just above the water level.

SI.8 Erosion: Lack of damage or erosion to the banks (a score of 1 is given if);

- There is no erosion or damage to at least 60% of the bank

SI.9 Flow: Slow flowing current or static water (a score of 1 is given if);

- There is no current; or
- Under normal conditions (i.e. during periods of flooding, immediately after heavy rains or periods of extended drought) the water flow is slow to moderate.

SI.10 Invasive plants: A score of 1 is also given if invasive non-native plant species are absent along the banks or within the water.

The ten habitat feature scores are tallied to obtain an over Habitat Score indicating the suitability of the habitat to support water voles as shown in Table 3.

Table 3: Interpreting WVHSI results

Habitat Score	Habitat Suitability of water voles	Notes
<3	Unsuitable	• Water voles absent
3-6	Sub-optimal	• Occasional field signs of water vole • Particularly in late summer when numbers are higher
7-10	Optimal	• Water voles usually present

3.2.8 Other species

The site was also appraised for its suitability to support other protected or notable fauna including mammals, birds and invertebrates in accordance with the Institute for Ecology and Environmental Management's *Guidelines for Preliminary Ecological Appraisal* (2013). Evidence of any current or historical presence of such species was recorded.

3.2.9 Invasive species

The site was searched for evidence of invasive plant species, such as Japanese knotweed *Fallopia japonica*, Himalayan balsam *Impatiens glandulifera*, giant hogweed *Heracleum mantegazzianum*, New Zealand pygmy weed *Crassula helmsii*, horizontal cotoneaster *Cotoneaster horizontalis*,



rhododendron *Rhododendron ponticum* and floating pennywort *Hydrocotyle ranunculoides* (see Appendix A Table A2 for full list).

3.3 Limitations

This survey was carried out on 14th November 2016, which is during the sub-optimal time of year for an extended Phase 1 survey (optimum months generally considered to be April to September inclusive). Broad habitat types were still identifiable. However, it is possible that rare or notable plants are present but could not be detected since they were not in flower at the time of survey. Therefore the timing of the survey is considered to be a partial constraint to its conclusions.

The survey was carried out outside of the normal bird nesting season (considered to be March to September inclusive), and therefore it was not possible to observe active bird nests on site. However, disused sites (if present) would still be observable and the identification of broad habitat types on site sufficiently allowed for assessment of potential for breeding bird to be present on site.

In accordance with the CIEEM's Guidelines for Preliminary Ecological Appraisal (2013), surveys should include a site buffer (recommended as 50m) to determine the presence of any badger setts within close proximity to the site. It was not possible to survey 50m to the southwest of the site. However, due to the presence of the River Irwell immediately adjacent to the southwest of the site, it is considered extremely unlikely that any badger setts would be present within 50m and therefore this is not considered to be a limitation to the survey.

The section of River Irwell immediately adjacent to the southwest of the site was surveyed for the presence of riparian mammals. The southern bank (offsite) could not be accessed on the day of the survey but this is not considered to be a significant constraint to the works as it was possible to survey from the northern bank using binoculars.

To determine likely presence or absence of protected species usually requires multiple visits at suitable times of the year. As a result, this survey focuses on assessing the *potential* of the site to support species of note, which are considered to be of principal importance for the conservation of biodiversity with reference to the NPPF (2012) especially those given protection under UK or European wildlife legislation.

This report cannot, therefore, be considered a comprehensive assessment of the ecological interest of the site. However, it does provide an assessment of the ecological interest present on the day of the visit and highlights areas where further survey work may be recommended.



The details of this report will remain valid for a period of two years (i.e. until 14th November 2018) provided the management or use of the site does not significantly change. Beyond this period, if works have not yet been undertaken, then the validity of this data should be reviewed to determine whether further updates are necessary.

4.0 Baseline Conditions

4.1 Designated Sites

4.1.1 Statutory designated sites

Sites with statutory designations receive varying degrees of legal protection under UK statute and European Directives. There are a number of statutory designations used for sites of high nature conservation value in the UK which are made depending upon the importance of the site in a local, regional, national or international context.

There are two statutory designated sites within 2km of the site; Chapelfield Local Nature Reserve (LNR) is located approximately 0.6km south of the site and the Hollins Vale LNR is located approximately 2km east of the site. Hollins Vale LNR is indirectly hydrologically connected (~4km via watercourses) to the site via the Hollins Brook which flows from the LNR and discharges into the River Irwell. However, this confluence is upstream of the site. Details of these designated sites are provided in Table 4.

Table 4: Statutory designated sites within 2km

Designation	Site Name	Distance & Direction	Summary of features
Local Nature Reserve (LNR)	Chapelfield	0.6km south	The large triangular shaped reservoir is the central feature of the nature reserve and contains a variety of aquatic plants including the locally rare water violet <i>Hottonia palustris</i>. Water birds like coot <i>Fulica atra</i> and moorhen <i>Gallinula chloropus</i> are permanent residents on the reservoir. In the woodland areas, oak <i>Quercus robur</i>, ash <i>Fraxinus excelsior</i>, sycamore <i>Acer pseudoplatanus</i> and hawthorn <i>Crataegus monogyna</i> can be found with willow <i>Salix</i> spp around the edge of the reservoirs. The woodland is an important refuge for wildlife and many typical bird species including jay <i>Garrulus glandarius</i>, great spotted woodpecker <i>Dendrocopos major</i>, great tit <i>Parus major</i>, wren <i>Troglodytes troglodytes</i>, chaffinch <i>Fringilla coelebs</i> and nuthatch <i>Sitta europaea</i> have been recorded here.

Designation	Site Name	Distance & Direction	Summary of features
Local Nature Reserve (LNR)	Hollins Vale	2km east	Hollins Vale is a farmland reserve with areas of woodland and wetland adding to its wildlife diversity. The woods have abundant bluebells <i>Hyacinthoides non-scripta</i> and lesser celandines <i>Ficaria verna</i> as well as some wood anemone <i>Anemona nemorosa</i> and violets <i>Viola</i> spp. The grassland is grazed by cows and is rich in flowers. One area previously used for growing potatoes has plants such as devil's bit scabious <i>Succisa pratensis</i> , pignut <i>Conopodium majus</i> and harebell <i>Campanula rotundifolia</i> . There are many birds and butterflies.

4.1.2 Non-statutory designated sites

Non-statutory sites are designated by LPAs and are recognized as being of local nature conservation importance. These sites do not have statutory protection but are a 'material consideration' in the determination of planning applications. The titles of these sites can vary between counties; in Greater Manchester they are known as Sites of Biological Importance (SBIs). There are 13 non-statutory designated sites within 2km of the site which are summarised in Table 5.

Table 5: Non-statutory designated sites within 2km

Designation	Site Name	Distance & Direction	Summary of features
Site of Biological Importance (SBI)	Sailor's Brow & Springwater Park	~0.2km south	No information available at the time of writing.
Site of Biological Importance (SBI)	Wetland Near Radcliffe	~0.35m northwest	No information available at the time of writing.
Site of Biological Importance (SBI)	Swan Lodge	~0.45km northeast	No information available at the time of writing.
Site of Biological Importance (SBI)	Manchester, Bolton & Bury Canal (East)	~0.53km northwest	No information available at the time of writing.
Site of Biological Importance (SBI)	Reservoirs at Chapelfield	~0.8km south	The SBI status has been awarded for the aquatic plants that can be found within it, and in particular, the locally rare water violet.
Site of Biological Importance (SBI)	Withins Reservoir	~0.95km northwest	No information available at the time of writing.
Site of Biological Importance (SBI)	Elton Reservoir	~1.27km northwest	No information available at the time of writing.



Designation	Site Name	Distance & Direction	Summary of features
Site of Biological Importance (SBI)	Marl Pits at Black Lane	~1.3km northwest	No information available at the time of writing.
Site of Biological Importance (SBI)	Spen Moor Ponds	~1.4km northwest	The SBI includes a collection of six small field ponds with botanical, aquatic invertebrate, amphibian and bird interest. The ponds support four species of breeding amphibians including common frog <i>Rana temporaria</i> , smooth newt <i>Lissotriton vulgaris</i> , palmate newt <i>L. Helveticus</i> and GCN. These ponds also support high numbers of aquatic invertebrates. The SBI also includes fields which support breeding skylark <i>Alauda arvensis</i> and good numbers of breeding birds such as reed bunting <i>Emberiza schoeniculus</i> , mallard <i>Anas platyrhynchos</i> and coot.
Site of Biological Importance (SBI)	Elton Goyt	~1.5km north	Supports important marshy grassland.
Site of Biological Importance (SBI)	Lower Hinds	~1.65km north	No information available at the time of writing.
Site of Biological Importance (SBI)	Ringley Woods	~1.67km southwest	Supports important native woodland.
Site of Biological Importance (SBI)	Parr Brook	~1.9km east	No information available at the time of writing.
Site of Biological Importance (SBI)	Daisyfield	~1.9km north	No information available at the time of writing.

4.2 Habitats

4.2.1 Desk study

A record search using MAGIC produced records of priority and other notable habitats within 2 km of the site boundary (Table 6).

Where numerous records for a particular habitat type were provided only the closest record to the site boundary has been provided below; this is to provide context for the site and surrounding area potentially affected by activities on site.

Table 6: Notable habitats within 2 km of the site.

Habitat Type	Designation	Approximate Distance from Site (km)	Direction from Site
Lowland fens	UK Priority Habitat	0.50	Northwest
Coastal and floodplain grazing marsh	UK Priority Habitat	0.61	North
Lowland dry acid grassland	UK Priority Habitat	0.65	Southeast
Deciduous woodland	UK Priority Habitat	Onsite (southeast corner)	-
Good quality semi-improved grassland	UK Priority Habitat	0.96	Northwest
Purple moor grass and rush pasture	UK Priority Habitat	0.74	North
Ancient and semi-natural woodland	-	1.7	Southwest

4.2.2 Phase 1 habitat survey

The results of the Phase 1 habitat survey are displayed in Figure 2. The following habitat types were identified during the Phase 1 habitat survey.

Broadleaf semi-natural woodland

A small remnant stand of semi-natural woodland is present on the south eastern boundary of the site. This has been classified on MAGIC as the UK NERC Priority Habitat as deciduous woodland.

Photograph 1: Broadleaf plantation woodland in north of site



An area of semi-natural woodland is located in the north of the site, immediately southeast of residential properties on Cross Lane (Photograph 1). This was dominated by birch with pedunculate oak *Quercus robur* and willow also present. The ground flora comprised areas dominated by mosses

such as hair cap moss *Polytrichum commune* and sphagnum *Sphagnum sp.* interspersed with creeping bent *Agrostis stolonifera* and dandelion. Bramble is locally abundant

There is also a small strip of semi-natural woodland present on the northern bank of the River Irwell in the far west of the site which included silver birch, alder *Alnus glutinosa*, willow and cherry *Prunus sp.*, with scattered elder *Sambucus nigra* and an established understorey which included bramble, willowherb *Epilobium hirsutum*, hemp agrimony *Eupatorium cannabinum* and giant hogweed.

Broadleaf plantation woodland

A small stand of young plantation woodland is present in the east of the site which is dominated by willows with birch also present (Photograph 2). The ground is largely absent of flora, likely as a result of the dense canopy blocking light from reaching the ground. However there were occasional soft-rush and reed canary grass present at ground level.

Photograph 2: Broadleaf plantation woodland adjacent in east of site



Scrub

The large majority of the site is occupied by scrub habitat (Photographs 3-4). This is predominantly in the form of extensive stands of regenerating trees, dominated by willows *Salix spp.* but interspersed with birch *Betula sp.*, gorse *Ulex europaeus*, broom *Cytisus scoparius*, buddleja *Buddleja sp.*, rose *Rosa sp.*, dogwood *Cornus sanguinea* and white poplar *Populus alba*. The ground storey includes a mixture of field horsetail *Equisetum arvense*, ragwort *Senecio jacobaea*, ribwort plantain *Plantago lanceolata*, colt's foot *Tussilago farfara*, dandelion *Taraxacum officinale*, water mint *Mentha aquatica*, red clover *Trifolium pratense*, white clover *T. repens*, mellilot *Mellilotus officinalis*, mugwort *Artemisia vulgaris*, Michaelmas daisy *Aster amellus*, tutsan *Hypericum androsamum* and creeping thistle *Cirsium arvense*.

Photograph 3: Dense willow scrub near centre of site



Photograph 4: Willow scrub adjacent to reservoir in east of site



The interspersal of other habitats such as grassland and woodland throughout the dense scrub on site could potentially be considered as 'open mosaic.' 'Open mosaic on previously developed land' is listed as UK NERC priority habitat and so the site was assessed against criteria for identifying this habitat. 'Open mosaic of previously developed land' must occupy an area of at least 0.25ha in size, have a known history of disturbance or evidence that soil has been removed / severely modified, contain early successional plant communities consisting mainly of stress-tolerant species, contain unvegetated and loose bare substrate and show spatial variation (e.g. mosaic of early successional communities plus bare substrate) to be recognised as a UKBAP priority habitat. There is no loose bare substrate on site and there are only very few patches of bare ground interspersed throughout the willow scrub habitat which occupies the majority of the site. Whilst regenerating willow scrub does represent an early successional plant community, it is not one of those listed in the UKBAP description for 'open mosaic of previously developed land'. Therefore 'open mosaic of previously developed land' as defined by NERC is not considered to be present on site.

Semi-improved grassland

Semi-improved grassland (Photograph 5) is present in both the west and the east of the site. The species included abundant red fescue *Festuca rubra*, common bent, cock's foot *Dactylis glomerata*, Yorkshire fog *Holcus lanatus* and frequent broad leaved dock *Rumex obtusifolius*, mugwort, creeping thistle, melilot, colt's-foot, Michaelmas daisy, ragwort and white clover. There were scattered shrubs, including dog rose *Rosa canina* and broom, as well as saplings of birch, willow and alder.

Photograph 5: Area of semi-improved grassland in east of the site



Marshy grassland

A large expanse of the northern area of the site comprises marshy grassland (Photographs 6-7). Publicly available aerial imagery of the site indicates that this area used to support a reservoir which is no longer present on site. The marshy grassland is dominated by soft rush *Juncus effusus* and is interspersed with small ephemeral pools. Immature willows are scattered throughout this area and there are small stands of reed canary grass *Phalaris arundinacea* and hair cap moss present. This habitat meets the criteria of the 'grasslands' under Greater Manchester's LBAP and therefore is a LBAP priority habitat.

Photograph 6: Marshy grassland in east of the site



Photograph 7: Marshy grassland towards north east of site



Tall ruderal

There are several stands of Japanese knotweed present on site. These are discussed further under the 'invasive species' heading in Section 4.3 of this report.

Standing water

Publicly available aerial imagery of the site indicates that much of the site has been previously occupied by standing water in the form of reservoirs. However, only one reservoir still remains on site, located in the east (Photograph 8, P1 on Figure 2).

Photograph 8: Reservoir (Pond 1) in east of site



Four other expanses of standing water are present on site. These all appeared to be shallow in depth (~0.5m maximum depth) and all appear to change in extent due to varying precipitation levels and possibly flooding from the adjacent River Irwell. All standing water bodies on site are discussed in more detail in Section 4.3 of this report.

The ponds on site qualify as NERC priority habitats since they meet the criterion of 'supporting species of high conservation importance' as indicated by the onsite records of common toad, a UK NERC Priority species as discussed under the 'Other notable species' heading in Section 4.3 of this report.

Running water

A small watercourse is present in the north of the site (Target Note 1, Figure 2 and Photograph 9), and flows roughly from northeast to south west between Bury street to the east of the site to a headwall immediately north of the cricket pitch onsite, from where it appears to be culverted. At the time of survey this watercourse was approximately 1.5 – 2m wide and >0.5m in depth. The watercourse had earth banks and the bed appeared silty. The remnants of Himalayan balsam were evident along the banks.

Photograph 9: Small watercourse towards north of site



A second small watercourse, Bealey's Goit, marks the southern boundary of the site. At the time of surveying this watercourse was only evident as a very small trickle of water that discharges into the adjacent River Irwell. The majority of the Bealey's Goit watercourse was not visible during the survey, possibly as a result of previous earthworks and or overgrown vegetation.

The River Irwell is not on site but is immediately adjacent and marks part of the southern site boundary (Photograph 10). The northern bank of the River Irwell is immediately adjacent to the site and largely comprises a brick retaining wall, although a small section of earth bank is present in the far southwest of the site. At the time of the survey, the river was fast flowing and the water was very murky. There was evidence of fly tipping, with partially submerged vehicles and other man-made items present within the river.

Photograph 10: River Irwell, immediately adjacent to the southwest of the site



Amenity grassland

There is a small area of amenity grassland in the north of the site, immediately southeast of Cross Lane (A6053 carriageway) (Photograph 11). This grassland is used as an amenity feature for the public and is interspersed with hardstanding footpaths and decorative gabion structures as an amenity feature for public use. These areas are regularly mown and support a very short sward. There is also an area of amenity grassland towards the north of the site which serves as a cricket pitch for the *East Lancs Paper Mill Cricket Club* (Photograph 12).

Photograph 11: Amenity grassland area in north of site, immediately south of Cross Lane



Photograph 12: Cricket pitch towards north of site



Introduced shrub

A small area of introduced shrub is present immediately adjacent to the hardstanding area east of Rectory Lane in the west of the site (Photograph 13) which comprises a mixture of buddleja, dogwood *Cornus* sp., rose and sumac *Rhus* sp. Very small stands of introduced shrub mainly comprising firethorn *Pyracantha* sp. were present in the amenity grassland area in the north of the site. There are also occasional patches of dense bramble *Rubus fruticosus* agg. throughout the site.

Photograph 13: Introduced shrub along edge of hardstanding adjacent to Rectory Lane, west of site



Buildings

There are 11 buildings on site as follows:

1. On the north bank of the River Irwell in the west of the site there is a derelict brick building (Building 1).
2. A building which served previously as a public house is present on Church Street East in the west of the site. At the time of writing, this building is understood to be privately own and serves as gymnasium (Building 2).
3. There is a brick building that serves as a pavilion adjacent to the cricket pitch towards the north of the site (Building 3) (two storage containers are present immediately adjacent to the pavilion which serve as buildings).
4. In the far north of the site, on the corner of Cross Lane and Bury Street, there is a building that appears to have served as a workshop or repair centre for vehicles. It was not clear at the time of the survey whether this building is still in regular use (Building 4).
5. The remnants of a small brick building are present immediately northwest of the reservoir which was no longer intact at the time of surveying and comprise the remains of a brick wall.
6. A row of six terraced houses on Baybutt Street.
7. A row of six terraced houses on Cock Clod Street.
8. A row of six terraced houses on Rectory Lane.
9. A row of eight terraced houses on Howard Street.
10. A small brick substation on the north of Cock Clod Street.
11. An industrial brick building in the far east of the site just off Church Street East.

Buildings on site are discussed further in Section 4.3 of this report.

Trees

Aside from trees located within stands of woodland and scrub onsite, there are a number of individual broadleaf trees scattered throughout the site. These include willow, sycamore *Acer pseudoplatanus* and lime *Tilia* sp.

There is also a tree line comprising birch (~8m in height) bordering an area of hardstanding in the north of the site (see Target Note 2, Figure 2.)

Hard standing

There are areas of hard standing in the west of the site (Photograph 14). These include the existing roads of Croft Lane, Rectory Lane, Howard Street, Cock Clod Street and Church Street East which remains in use as a pedestrian footway from west to east across the site. There is a small area of hard standing which appears to serve as vehicle parking immediately east of Rectory Lane. There is also some hardstanding in the southwest of the site, immediately north of the River Irwell which was beginning to become overgrown with vegetation at the time of survey.

Photograph 14: Hard standing in west of site, adjacent to Rectory Lane



Photograph 15: Hard standing in southwest of site, north of the River IrwellOther habitats/notable features

A pile of broken stone/rocks is present in the east of the site (Target Note 3 Figure 2) which may serve as refuge for small animals (e.g. amphibians).

Habitats in the wider area

The site is located on the periphery of the urbanised area of Radcliffe. Buildings and associated hardstanding in the form of carriageways, pavements, forecourts and parking spaces are present immediately north, east and west of the site. There are numerous small areas of grassland (most likely to be predominantly amenity grassland) associated with buildings in the wider area. The south of the site is bordered by the River Irwell and Bealey's Goit watercourses. A recycling plant is located adjacent to the south bank of the River Irwell, opposite to the south of the site. Land to the southeast appears to support similar willow scrub habitat that occupies the majority of the site.

4.1.3 Proximity of nearest waterbodies and watercourses to site

Five ponds and one watercourse are present on site. Freely available maps and aerial imagery reveals the presence of six offsite waterbodies and three offsite watercourses within 500m of the site boundary. Details of waterbodies and watercourses within 500m of the site are provided in Table 7.

Table 7: Waterbodies and watercourses within 500m of the site boundary

Name	Distance from site (m)	Direction from site
Pond 1 (Reservoir)	0	N/A
Pond 2	0	N/A
Pond 3	0	N/A
Pond 4	0	N/A
Pond 5	0	N/A
Offsite pond 1	140	South
Offsite pond 2	215	South

Name	Distance from site (m)	Direction from site
Offsite pond 3	430	Northwest
Offsite Pond 4	450	Northwest
Offsite Pond 5	500	South
Offsite Pond 6	460	East
Hutchinson's Goit	On site	N/A
River Irwell	0 (adjacent to site)	Southwest
Bealey's Goit	0 (adjacent to site)	South
Manchester, Bury & Bolton Canal (disused)	500	Northwest

The onsite and offsite waterbodies are shown in Figure 3.

4.3 Protected & Notable Species

The results of both the desk study and site assessment for protected species are discussed below. It should be noted that absence of a record for a protected species does not confirm absence of that species from site. Desk study data are used in conjunction with professional experience and judgement to determine the likelihood of a protected species being present onsite.

4.3.1 Invertebrates

Desk Study

The GMEU data search returned four invertebrate records within 2km of the site boundary, two of which were for the cinnabar moth *Tyria jacobaeae* and two of which were for the wall butterfly *Lasiommata megera*. The closest cinnabar moth record was located approximately 0.84km north of the site from 2009. The closest wall butterfly record was located approximately 1.92km north of the site from 2011. Both the cinnabar moth and the wall butterfly are NERC priority species.

Field Survey

Brownfield sites typically provide good suitability to a ranger of invertebrates. Furthermore, the variety of habitats on site (scrub, woodland, marshy grassland, introduced shrub, tall ruderal and waterbodies) makes the site suitable for a range of both terrestrial and aquatic invertebrate species.

4.3.2 Great Crested Newts

Desk Study

The GMEU data search returned no records of GCN presence within the site boundary but did return 70 records of GCN presence within 2km of the site boundary. The closest GCN record is approximately 1.16km northwest of the site.

Field Surveys

Aquatic habitat

Five waterbodies on site were subject to HSI assessments to calculate their suitability to support GCN. (Refer to Figure 2 and 3 for pond locations)

Ponds 3 and 4 were assessed as having 'good' suitability for GCN. Pond 2 was assessed as having 'below average' suitability and Ponds 1 (the reservoir) and 5 were assessed as having 'poor' suitability. The HSI assessment is summarised in Table 8. Full HSI Assessments are available in Appendix B.

Table 8: Pond HSI assessment summary for GCN

Onsite Pond reference	HSI score	Water body suitability	Grid reference	Photo
1	0.46	Poor	SD 79437 07435	
2	0.58	Below average	SD 79383 07474	

Onsite Pond reference	HSI score	Water body suitability	Grid reference	Photo
3	0.72	Good	SD 79301 07269	
4	0.72	Good	SD 79404 07539	
5	0.49	Poor	SD 79081 07249	

Terrestrial habitat

The marshy grassland area of the site would provide good quality terrestrial habitat for GCN, providing cover and foraging potential as well as retaining water in some areas. The willow scrub that occupies the large majority of the site, and the woodland stands all offer good quality terrestrial



habitat with good shelter and foraging potential. Furthermore, the roots of the scrub and woodland tree/shrub species will offer suitable hibernation features. Overall, the site supports excellent quality terrestrial habitat for GCN.

Overall the site is poorly connected to potential GCN habitat in the wider area due to the presence of the River Irwell to the south west of the site and urban area (including multiple roads) to the north, northeast and west of the site. However, Bealey's Goit bordering the south of the site is only likely to pose a partial barrier to GCN dispersal. Therefore there is connectivity between the site and land to the south and east of the site.

Six offsite ponds have been identified as present within 500m of the site (See Figure 3). There is no connectivity between Offsite Ponds 1, 2 and 5 due to the presence of the River Irwell which is likely to pose a significant barrier to GCN dispersal. There is also no connectivity between Offsite Ponds 3 and 4 and the site with Spring Lane and Rectory Lane likely to pose significant barriers to GCN dispersal. Whilst there is no obvious habitat corridor connecting Offsite Pond 6 (located ~460m offsite) to the site, the habitat inbetween appears similar in nature and construction to the willow scrub habitat on site which does provide good quality terrestrial habitat for GCN. Therefore it cannot be ruled out that GCN may commute between the site and the Offsite Pond 6.

Overall it is considered that the site has potential to support GCN and therefore further surveys are required as discussed in Section 5.3.

4.3.3 Reptiles

Desk Study

The GMEU data search returned no records of reptile presence within the site boundary but did return one record within 2km of the site boundary. This was a record of common lizard approximately 0.77km southwest of the site from 2015. There is no connectivity between the site and this record as the presence of the River Irwell provides a significant barrier to dispersal.

Field Survey

The willow scrub and woodland habitats on site could provide suitable foraging habitat and shelter for common reptile species. However, the ground in most of the site appears to retain high levels of water throughout the year which would not be favourable to species such as the common lizard and slow worm *Anguis fragilis* which favour drier conditions. The presence of wet ground and ponds on site could provide potential habitat for grass snakes which do favour aquatic features and for adders *Vipera berus* which can be found in damper areas.

The former paper mill buildings are known to have been removed from site at least 10 years before the writing of this report. Therefore the site did not support suitable habitat for reptiles (such as regenerating scrub) as recently as 2006. It is possible that as the regenerating scrub and other habitats have colonised the site, reptiles could have colonised the site. However, there are no obvious habitat corridors into the site that would favour reptile dispersal. The presence of the River Irwell to the south west, and of roads and urbanised area to the north, northeast and west of the site would present significant barriers to reptile dispersal.

The land to the east and to the south of the site is separated only by Bealey's Goit which is a minor watercourse and would not pose a significant barrier to dispersal. Therefore the only potential origin of reptiles populating the site is from land to the east and west of the site, between the River Irwell and the site boundary. There are no records of reptile presence in this adjacent land. Whilst it is possible that reptiles have populated the site from land to the east and or west of site since the paper mill was demolished, this area of land is isolated and is considered unlikely to have supported a remnant reptile population. Therefore reptiles are not considered likely to be present on site although their presence cannot be entirely ruled out.

4.3.4 Birds

Desk study

The GMEU data search includes records of a range of bird species being present on or within 2km of the site as listed in Table 9 (note: where multiple records for one species have been provided, the nearest record to the site has been listed in the table below).

Table 9: Bird species recorded within 2km of the site

Common Name	Scientific Name	Status*	Approximate Distance (km); and Direction from Site Boundary
Barn owl	<i>Tyto alba</i>	Sch. 1 ; BoCC – green	1.78km northwest
Bullfinch	<i>Pyrrhula pyrrhula</i>	NERC; BoCC – amber	0.65km southwest
Common scoter	<i>Melanitta nigra</i>	Sch. 1 ; BoCC – red	1.1km northwest
Curlew	<i>Numenius arquata</i>	NERC; BoCC – red	1.94km northwest
Dunnock	<i>Prunella modularis</i>	NERC; BoCC – amber	1.67km northwest
Grasshopper warbler	<i>Locustella naevia</i>	NERC; BoCC – red	1.98km northwest
Herring gull	<i>Larus argentatus</i>	NERC; BoCC – red	1.6km northwest
House sparrow	<i>Passer domesticus</i>	NERC; BoCC – red	0.68km west
Kingfisher	<i>Alcedo atthis</i>	Sch. 1 ; BoCC – amber	0.42km northwest
Lapwing	<i>Vanellus vanellus</i>	NERC; BoCC – red	0.6km northwest
Lesser redpoll	<i>Carduelis cabaret</i>	NERC; BoCC – red	0.95km north
Linnet	<i>Carduelis cannabina</i>	NERC; BoCC – red	1.46km north
Little ringed plover	<i>Charadrius dubius</i>	Sch. 1 ; BoCC – green	0.4km south
Peregrine falcon	<i>Falco peregrinus</i>	Sch. 1 ; BoCC – green	0.86km north

Reed bunting	<i>Emberiza schoeniclus</i>	NERC; BoCC – amber	0.06km south
Scaup	<i>Aythya marila</i>	Sch. 1 ; NERC; BoCC – red	1.1km northwest
Skylark	<i>Alauda arvensis</i>	NERC; BoCC – red	0.37km south
Song thrush	<i>Turdus philomelos</i>	NERC; BoCC – red	0.5km northwest
Starling	<i>Sturnus vulgaris</i>	NERC; BoCC – red	0.98km south
Yellowhammer	<i>Emberiza citrinella</i>	NERC; BoCC – red	1.85km northwest

***Key**

NERC: Species listed under section 41 of the Natural Environment and Rural Communities Act 2006.

BoCC: British Trust for Ornithology (BTO) Birds of Conservation Concern 4 – Red, Amber, Green

Sch. 1: Species afforded additional protection under Schedule 1 of the Wildlife & Countryside Act 1981 (and amendments)

Six Schedule 1 bird species have been recorded within 2km of the site including the barn owl, common scoter, kingfisher, little ringed plover, peregrine falcon and scaup. However, the only barn owl record provided by GMEU was a historic record of an escaped captive bird in 1995.

15 NERC priority species have been recorded within 2km of the site. 13 species listed on the BoCC red list and four species listed on the BoCC amber list have been recorded within 2km of the site.

Field survey

The Phase 1 habitat survey was completed outside of the nesting season and therefore no active bird nests were observed on site. The large majority of the site, including the habitats such as scrub, woodland and tall ruderal, is suitable both as foraging habitat and for nesting. Furthermore, the presence of a large reservoir and other ponds on site offers potential for waterfowl and other species that favour standing water. The River Irwell adjacent to the site provides habitat for species preferring riparian habitat although the majority of the northern bank of this section of the watercourse comprises a vertical brick wall and therefore there is very little potential for bank burrowing species such as kingfisher. Birds observed on site during the Phase 1 habitat survey are listed in Table 10.

Table 10: Birds observed on site during extended Phase 1 habitat survey

Common Name	Scientific Name	Status*
Blackbird	<i>Turdus merula</i>	BoCC – green
Blue tit	<i>Cyanistes caerulea</i>	BoCC – green
Canada goose	<i>Branta canadensis</i>	BoCC – no status
Carrion crow	<i>Corvus corone</i>	BoCC – green
Cormorant	<i>Phalacrocorax carbo</i>	BoCC – green
Common gull	<i>Larus canus</i>	BoCC – amber
Coot	<i>Fulica atra</i>	BoCC – green
Dunnock	<i>Prunella modularis</i>	NERC; BoCC – amber
Goldfinch	<i>Carduelis carduelis</i>	BoCC – green

Common Name	Scientific Name	Status*
Great tit	<i>Parus major</i>	BoCC – green
Grey heron	<i>Ardea cinerea</i>	BoCC – green
House sparrow	<i>Passer domesticus</i>	NERC; BoCC – red
Jackdaw	<i>Corvus monedula</i>	BoCC – green
Jay	<i>Garrulus glandarius</i>	BoCC – green
Long tailed tit	<i>Aegithalos caudatus</i>	BoCC – green
Magpie	<i>Pica pica</i>	BoCC – green
Mallard	<i>Anas platyrhynchos</i>	BoCC – amber
Mistle thrush	<i>Turdus philomelos</i>	BoCC – red
Moorhen	<i>Gallinula chloropus</i>	BoCC – green
Pied wagtail	<i>Motacilla alba</i>	BoCC – green
Robin	<i>Erithacus rubecula</i>	BoCC – green
Song thrush	<i>Turdus philomelos</i>	NERC; BoCC – red
Starling	<i>Sturnus vulgaris</i>	NERC; BoCC – red
Wood pigeon	<i>Columba palambus</i>	BoCC – green
Wren	<i>Troglodytes troglodytes</i>	BoCC – green

4.3.5 Bats

Desk Study

The GMEU data search returned three records of observation of bat activity within the site boundary itself, and over 160 records of bat presence within 2km of the site boundary, more than 60 of which denote the presence of roosts. Many of the records denote unspecified bat species, or unspecified *Pipistrellus* or *Myotis* species, but at least six bat species have been recorded within 2km of the site, including common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, Nathusius' pipistrelle *Pipistrellus nathusii*, noctule *Nyctalus noctula*, Daubenton's bat *Myotis daubentonii* and Natterer's bat *Myotis nattereri*. The three onsite records denote one noctule observation and two unspecified pipistrelle observations. The nearest roost record is from Tower Street, approximately 30m east of the site where two common pipistrelles were recorded roosting in 2013.

Field Surveys

The trees and structures assessed are shown on the Phase 1 Habitat map (Figure 2).

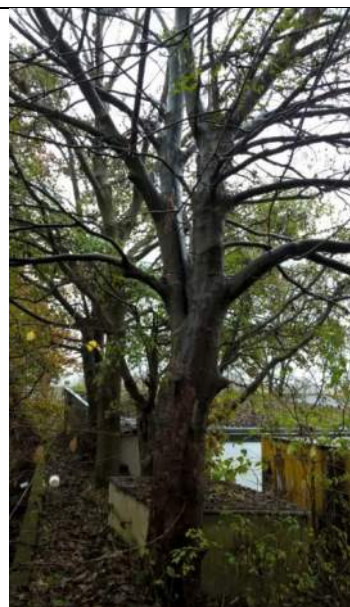
Roosting - trees

The large majority of trees present on site were not old enough or established enough to have developed significant potential roost features (PRFs) such as cracks, hollows, crevices, etc. However, eight trees on site were assessed as having potential to support roosting bats; seven of which had

'low' suitability and one of which has 'moderate' suitability. Details of these seven trees are summarised in Table 11.

Table 11: Trees on site with bat roost potential

Tree Reference	Location	Species	Description	Bat roost potential	Photo
T1	West of site – in amenity area immediately south of Howard Street	Willow <i>Salix</i> sp.	Mature, very twisted trunks, cracks and fissures in the bark in several locations.	Moderate	
T2	West of site – in introduced shrub next to hardstanding, adjacent to Rectory Lane	Lime <i>Tilia</i> sp	Single stem with ivy cladding	Low	

Tree Reference	Location	Species	Description	Bat roost potential	Photo
T3	West of site – in introduced shrub next to hardstanding, adjacent to Rectory Lane	Lime <i>Tilia</i> sp	Single stem with ivy cladding	Low	
T4	North of site, immediately north of cricket ground	Willow <i>Salix</i> sp.	Single stem with minor cracking and bark flaking in places	Low	

Tree Reference	Location	Species	Description	Bat roost potential	Photo
T5	North of site, immediately north of cricket ground	Sycamore <i>Acer pseudoplatanus</i>	Multiple stemmed with minor cracking in places	Low	
T6	South of site, immediately adjacent to where Bealey's Goit discharges into the River Irwell	Willow <i>Salix</i> sp.	Multiple stemmed with minor cracking in places	Low	NO PHOTO AVAILABLE

Tree Reference	Location	Species	Description	Bat roost potential	Photo
T7	West of site in area of trees adjacent to site boundary	Willow <i>Salix</i> sp.	Multiple stemmed with minor cracking in places	Low	
T8	West of site in area of trees adjacent to site boundary	Willow <i>Salix</i> sp.	Multiple stemmed with minor cracking in places	Low	

Roosting – buildings

All the eleven buildings on site (including the four rows of terraced housing in the west of the site) were fully externally inspected for potential to support roosting bats. Details of the eleven buildings assessed were as follows:

B1: is the derelict building on the northern bank of the River Irwell in the west of the site was deemed to have **moderate** potential to support roosting bats.



B2 and B3 and B4 are the cricket pavilion in the north of the site, building in the far north of the site on the corner of Cross lane and Bury Street and the former public house building on Church Street East in the west of the site were all deemed to have **low** potential to support roosting bats.

All the remaining buildings including the four rows of terraced housing (on Baybutt Street, Howard Street, Rectory Lane and Cock Clod Street), the sub-station on the north of Cock Clod Street, the remnant building immediately adjacent to the west of the reservoir in the east of the site and the industrial brick building off Church Street in the east of the site were all deemed to have **negligible** potential to support roosting bats.

Details of the four buildings on site which have bat roost potential are detailed in Table 12. Those buildings deemed not suitable to support roosting bats are not discussed further.

Table 12: Buildings on site with bat roost potential

Building Reference	Location	Description	Bat roost potential	Photo	
B1	West of site, on north bank of River Irwell (UK grid ref: SD 79039 07196)	Brick building in poor state of repair. Large hole on north east corner, cracks in pointing, missing bricks and gaps over doorway.	Moderate		
B2	West of site, on corner of Church Street East and Cock Clod Street (UK grid ref: SD 79090 07378)	Former public house building made from bricks with sloped tiled roof. Brick size gaps beneath guttering on southern aspect only.	Low		

Building Reference	Location	Description	Bat roost potential	Photo
B3	North of site, immediately adjacent to north of cricket pitch (UK grid ref: SD 79321 07603)	Cricket pavilion ~3.5m high made from bricks with pitched felt roof. Eastern elevation has cracks in pointing, an uncovered vent opening, gaps between bricks and between timber beams.	Low	
B4	North of site, on the corner of Cross Lane and Bury Street (UK grid ref: SD 79401 07787)	Comprises two adjoined perpendicular buildings ('northern' and 'eastern' section). The northern section is made from brick with a pitched tile roof with some loose tiles. The eastern section is made from brick and has a flat roof. One of the windows on the southern aspect is unblocked. There were cracks in the window frames and a hole in the roof.	Low	



Foraging/commuting

The large majority of the site comprises willow scrub which will provide suitable foraging habitat for bats. The open expanses of water including the ponds and reservoir (in the east of the site) will also provide suitable foraging habitat, especially for species that typically favour aquatic habitats e.g. Daubenton's bat *Myotis daubentonii*. Other habitats on site such as amenity grassland, tall ruderal and woodland all provide foraging habitat. The River Irwell immediately adjacent to the southwest of the site is also likely to serve as both foraging habitat and as a commuting feature for bats. The small watercourse in the north of the site also has potential as a commuting feature for bats.

Overall, the site is considered to be of '**moderate**' suitability for commuting and foraging bats in accordance with the BCT guidelines.

4.3.6 Badgers

Desk study

The GMEU data search returned no records of badger presence within the site itself, but returned four records of badgers within 2km of the site boundary, two of which comprise setts. The precise locations of setts are confidential and therefore has not been provided in this report, however both sett records are located approximately 0.6km from the site. There is no connectivity and a significant barrier to dispersal between the two known sett locations and the site. Land (offsite) between the east of the site and the River Irwell appears to support an extensive area of woodland habitat which would provide potential for badgers to excavate setts. There is no habitat corridor linking this offsite area of woodland and the site but there are no barriers to dispersal either and it is possible that badgers could disperse onto site from land to both the east and south of the site. Badgers are less likely to frequent the site from the north, north east or west of the site due to the high volume of roads and urbanised area, which pose a partial deterrent to their dispersal.

Field Survey

No evidence of badger activity or setts was observed on site, (or within the 50m buffer of the site which was accessible), throughout the Phase 1 habitat survey. The site lacks any high quality habitat for badgers to dig setts since much of it has previously supported hardstanding which has become overgrown with willow scrub. Furthermore, the ground in most of the site appears to retain high levels of water throughout the year which would make it unsuitable for sett digging. The dense scrub, woodland and areas of amenity grassland would provide suitable foraging habitat for badgers and it is possible that they do frequent the site for this purpose.



4.3.7 Otters

Desk study

The GMEU data search returned no records of otter on site but did return one current and one historic record of otter presence within 2km of the site. The closest and most recent record was of a spraint and footprint beneath a bridge on the River Irwell, located approximately 1km northeast of the site in 2009.

Field Survey

Otters require large territories with terrestrial resting sites and can exploit freshwater and coastal / marine systems (Chanin 2003). The River Irwell provides suitable habitat for otters and they have been confirmed as present within this watercourse although not within the section immediately adjacent to the site. The majority of the northern bank of the adjacent section of the River Irwell comprises a vertical brick wall which does not provide any potential for resting places or lodges.

No evidence of otter presence was observed during the survey and overall the habitats on site are considered likely to be sub-optimal for otter. However otters are likely to commute through the River Irwell immediately adjacent to the southwest of the site and it is possible that they might occasionally frequent the site to forage and seek places of shelter.

4.3.8 Water vole

Desk study

The GMEU data search returned no records of water vole *Arvicola amphibius* on the site. However, there are three records of likely absence and one record of potential presence within 2km of the site. The record of potential presence was from approximately 0.65km southeast of the site in 2009, when a survey was carried out in Springwater Park Lake but findings were inconclusive.

Field Survey

Water voles favour watercourses with a good cover of herbaceous vegetation since this vegetation provides both cover and a source of food. The section of the River Irwell located immediately adjacent to site largely comprises a vertical brick wall which does not provide any suitable habitat for water voles. The Bealey's Goit watercourse supported very low flow of water at the time of survey and there was no distinguished channel. Therefore there were no suitable banks for burrowing or grazing along Bealey's Goit and water voles are not considered likely to be present.

A WVHSI assessment was carried out on the small watercourse in the north of the site (Target Note 2, Figure 2), the results of which are displayed in Table 13.

Table 13: Water vole Habitat Suitability Index assessment for small watercourse in north of site

Water body reference	Northern Watercourse (Target Note 2)
SI.1 Vegetation	0
SI.2 Food	0
SI.3 Refuge	1
SI.4 Burrowing	1
SI.5 Ledge	1
SI.6 Drying	1
SI.7 Swimming	0
SI.8 Erosion	0
SI.9 Flow	0
SI.10 Invasive plants	0
Habitat Score	4 Sub-optimal

The results of the WVHSI assessment for the small watercourse in the north of the site indicate that it has sub-optimal suitability for water voles. A burrow was observed in the northern bank on the day of the survey (Photograph 16) but this is considered likely to have been that of a brown rat *Rattus norvegicus*. Three deceased brown rats were observed in separate locations on site on the day of the survey.

Photograph 16: Rat burrow in northern bank of small watercourse (AA battery shown for scale purposes)



4.3.9 White-clawed crayfish

Desk study

The GMEU data search returned no records of white-clawed crayfish on or within 2km of the site.

Field Survey

White-clawed crayfish favours watercourses with cryptic habitats in which it can hide under rocks and submerged logs, among tree roots and algae (Holdich, 2003). The small watercourse in the north of the site appears to lack features suitable to support white-clawed crayfish, as did the Bealey's Goit watercourse bordering much of the south of the site. The section of the River Irwell immediately adjacent to the southwest of the site possibly contains features suitable for white-clawed crayfish but at the time of the survey the water was very turbid making it not possible to see the features of its bed. However the persistent fast flow of the water along this section of the River Irwell makes it unlikely to support white-clawed crayfish. Only the section of the River Irwell which lies immediately adjacent to the southwest of the site has been surveyed and therefore it is possible that more suitable habitat for white-clawed crayfish is present both upstream and downstream of the site.

4.3.10 Rare or notable plants

Yellow bird's-nest *Monotropa hypopitys* has been recorded approximately 1.6km southwest of the site. Yellow bird's nest is listed as a NERC priority species. Water violet, a locally rare aquatic plant, is



known to occur in the Chapelfield LNR, 0.6km south of the site. The GMEU data search returned no other rare or notable plant records within 2km of the site.

This survey was not completed at the optimum time of year to detect most flowering plant species, and as such no evidence of rare or notable plants was observed.

Brownfield sites can provide excellent habitat for rare plant species, some of which may be annual species which typically flower in spring or summer. Furthermore, the waterbodies on site could potentially support the presence of water violet. Therefore the presence of rare or notable species on site cannot be ruled out.

4.3.11 Other protected and notable species

Common toad

Common toads *Bufo bufo* are not afforded specific protection in the UK but are a NERC priority species.

The GMEU data search returned four records of common toad onsite and over 90 more within 2km of the site. The areas of scrub, marshy grassland and woodland as well as the ponds and reservoir on site all provide suitability for common toads.

Brown hare

Brown hares *Lepus europaeus* are not afforded specific protection in the UK but are a NERC priority species.

The GMEU data search returned 32 records of brown hare within 2km of the site, the closest of which is located approximately 0.48km northwest of the site.

No evidence of brown hare presence on site was observed throughout the survey. Brown hare are considered unlikely to be present on site because the site lacks tall or tussocky grass in which they can shelter and rest. Therefore brown hare are not considered to be a constraint on the site.

Hedgehog

The hedgehog *Erinaceus europaeus* is not afforded specific protection in the UK but is listed as a NERC priority species.



The GMEU data search returned no records of hedgehog on or within 2km of the site. The scrub, woodland and amenity grassland habitats on site could be used as foraging grounds. Therefore the site is considered to have suitability for hedgehogs.

Red squirrel

Red squirrels currently receive protection under the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to deliberately capture, disturb, injure or kill them; or to damage or destroy or obstruct their breeding or resting sites.

The GMEU data search returned no records of red squirrel on or within 2km of the site. No evidence of red squirrel was observed during the survey. The site lacks areas of established, mature woodland and therefore red squirrels are considered extremely unlikely to be present on site.

Red fox

Red fox may not be afforded specific protection like badgers however they are protected under the WMP Act 1996 from cruelty and unnecessary harm.

The GMEU data search returned no records of red fox *Vulpes vulpes* on or within 2km of the site. No evidence of red fox was observed during the survey. Red foxes thrive in urban habitats and the scrub, woodland and grassland on site may be frequented by foxes for hunting and scavenging purposes. Therefore the site is considered to have suitability for red foxes.

4.3.12 Invasive species

Desk Study

The GMEU data search returned no records of invasive species within the site boundary or within 2km of the site boundary.

TEP's October 2016 reports that a large expanse of New Zealand pigmyweed *Crassula helmsii* was observed in the north east of the site (TEP, 2016). This was not observed during WYG's November 2016 survey. Whilst New Zealand pigmyweed is a perennial plant that does not typically suffer winter dieback, it is considered likely that it was not observed onsite during the November 2016 survey as a result of it becoming obscured by increased water levels on site. Therefore this stand of New Zealand pigmyweed is considered likely to still be present onsite.

Field survey

Three different invasive plant species were observed on site during the survey; giant hogweed, Japanese knotweed and Himalayan balsam. The locations of these invasive species are displayed in Figure 4.

There are two stands of Japanese knotweed in the semi-improved grassland area in the southwest of the site, one of which measures approximately 20m x 3m (UK Grid Ref: SD 79028 07307) (Photograph 17), the second of which measures approximately 5m x 3m (UK Grid Ref: SD 79008 07263). There are also extensive areas of Japanese knotweed present in the south of the site, immediately adjacent to where Bealey's Goit discharges into the River Irwell (UK Grid Ref: SD 79008 07263) (Photograph 18).

Photograph 17: Stand of Japanese knotweed in southwest of site



Photograph 18: Part of extensive area of Japanese knotweed in south of site, adjacent to the River Irwell



There is a stand of giant hogweed in the semi-improved grassland area in the southwest of the site. At the time of survey this comprised approximately ten plants across an approximate 5m x 10m area (UK Grid Ref: SD 79077 07264) (Photograph 19). There is another stand of giant hogweed in the woodland area on the northern bank of the River Irwell in the southwest of the site (UK Grid Ref: SD 79069 07202). At the time of survey this comprised between five and ten plants across an approximate 5m x 10m area.

Photograph 19: Stand of giant hogweed in southwest of site



There is a very extensive infestation of giant hogweed in the south of the site where Bealey's Goit discharges into the River Irwell (Photograph 20). This is interspersed with extensive stands of Japanese knotweed as described above.

Photograph 20: Giant hogweed infestation in south of site



A small stand of Himalayan balsam is present approximately 60m west of the reservoir in the east of the site (UK Grid Ref: SD 79327 07463). At the time of surveying only two nearly deceased plants



were identifiable in this stand. A second stand is present along the banks of the watercourse in the north of the site (UK Grid Ref: SD 79328 07651). At the time of survey this comprised between 5 and 10 nearly deceased plants.

Both Japanese knotweed and giant hogweed were observed extensively offsite. Extensive infestations of Japanese knotweed and scattered giant hogweed are present along the southern bank of the River Irwell offsite. Furthermore, the infestation of giant hogweed and Japanese knotweed in the south of the site where Bealey's Goit discharges into the River Irwell, extends beyond the southern site boundary.



5.0 Constraints & Opportunities

5.1 Designated Sites

The two LNRs within 2km are sufficiently distant so as not to be directly affected by the development. Hollins Vale LNR is hydrologically connected (via ~4km of watercourses) to the site via the Hollins Brook which discharges into the River Roch which then discharges into the River Irwell. However the confluence between the River Roch and the River Irwell is upstream of the site. Therefore there is no hydrological path for pollutants to travel between the site and Hollins Vale LNR.

No SBIs within 2km are considered likely to be affected by the development.

5.2 Habitats

No habitats on site require specific survey, however, because of the potential for rare or notable plant species to be present on site, a botanical walkover survey is recommended at least once between May/June.

Habitats recommended for retention

It is recommended that effort is made to retain some of the habitats on site. Those habitats considered to have most ecological value and therefore which are recommended for retention are discussed in more detail below.

Broadleaf semi-natural/plantation woodland

All stands of woodland on site will be of value to local fauna by providing foraging and shelter opportunities for invertebrates, amphibians, birds and mammals. Woodland will provide nesting potential for a range of local bird species. It is recommended that all areas of woodland on site are retained where possible. Where woodland plantation cannot be retained then replacement planting should be included in the final development proposal and or landscape planting schemes.

Semi-improved grassland

The semi-improved grassland in the east of the site will provide foraging potential to local fauna. It is recommended that this area of grassland be retained and enhanced for local wildlife.



Marshy grassland

The marshy grassland area towards the north east of the site is likely to provide excellent breeding and terrestrial habitat to amphibians, and will also be of value as foraging grounds to invertebrates and birds. Furthermore, it provides potential for plant species that favour wetter conditions. Marshy grassland is a Greater Manchester LBAP priority habitat (under the 'Grasslands' Habitat Action Plan) and therefore it is recommended that this habitat be retained on site and **can be managed/enhanced as an ecology mitigation area**. The marshy grassland area would serve as a suitable site for newly created ponds and hibernacula which may be required as part of mandatory mitigation should loss of a confirmed GCN pond from site be required. The site can be further enhanced by sowing a native wetland seed mixture, to encourage the growth of species such as (but not limited to) wild Angelica *Angelica sylvestris*, hedge bedstraw *Galium mollugo*, lesser knapweed *Centaurea nigra*, ragged robin *Lychnis flos-cuculi*, water avens *Geum rivale*, water betony *Scrophularia auricular* and yarrow *Achillea millefolium*.

Standing water

Ponds are NERC priority habitats and LBAP priority habitats. Ponds 1, 2 and 3 on site cover large areas and are likely to provide suitable habitat to a range of aquatic invertebrates, birds and plant species. Furthermore they may serve as a source of water to other fauna groups such as mammals. Ponds 2, 3 and 4 have been highlighted as having potential to support GCN and if any of them are found to support breeding GCN, they cannot be removed without first securing a European Protected Species Licence (EPSL) from Natural England. It is recommended that all ponds are retained on site where possible.

Consideration should be given to creating new ponds within retained wildlife receptor areas on site. Note that should removal of a confirmed GCN breeding pond be required, as part of mandatory mitigation measures it will be necessary to construct new ponds (two new ponds for every one GCN breeding pond lost) as outlined in Section 5.3. Should any Sustainable Urban Drainage System (SUDS) ponds be included as part of the final proposed development, these should also be designed to benefit wildlife. Note that SUDS ponds cannot be constructed in place of any mitigation ponds required under EPSL.

Running water

The small watercourse in the north of the site should be retained. Bealey's Goit along the southern site boundary should also be retained and the following protection measures are recommended:



- A minimum buffer of 5m from the watercourse should be retained to avoid direct habitat loss from its banks.
- The 5m buffer should also include fencing along the boundary to deter and prevent people accessing the watercourse. The fence should be of a specification so that it also functions as a wildlife friendly catch net.

During construction, industry standard best practice relating to construction near watercourses should be implemented. This may include (but is not limited to):

- Creation of an earth bund set back from the 5m buffer zone to reduce direct run-off and sedimentation.
- Any drainage which may be planned to enter the brook during operation will also require a comprehensive system of petrol (and oil) interceptors alongside sediment traps to reduce the impacts which may arise from surface water run-off and potential pollution incidents.

Industry standard best practice relating to construction near watercourses should also be implemented for works within proximity to the River Irwell, adjacent to the southwest of the site. It is recommended that a 20m buffer is retained between the construction development and the River Irwell to retain the wildlife corridor and reduce disturbance to this watercourse

Trees

Individual trees on site will provide nesting and foraging potential for birds as well as foraging potential for invertebrates. Some of the trees on site provide roosting potential for bats (see Section 5.3). In the first instance it is recommended that all mature trees on site are retained. Where retention of Trees T1 – T8 is not possible, reasonable avoidance measures and bat emergence/re-entry surveys (where required) should be followed in accordance with Section 5.3.

Other Habitats

Some of the habitat on site is not considered to be of very significant value for ecology however it is recommended that the final layout retain some in part to negate some of the overall ecological impact of the scheme. These habitats are discussed in more detail below.

Scrub

The large majority of the site is occupied by regenerating willow scrub. This habitat is of some value to local fauna including invertebrates, birds, amphibians and mammals as it provides shelter, foraging opportunities and nesting potential for birds. However this site does not qualify as the NERC priority



habitat 'Open mosaic on previously developed land'. Scrub habitat is common in the wider area and expands offsite to the east and south of the site. Therefore it is not considered that removal of this habitat from the site will be significantly detrimental to local wildlife. However, it is recommended that at least some of the scrub is retained on site to help maintain some potential on site for birds, invertebrates and amphibians. Maintaining scrub along boundaries may also aid connectivity between retained ecological features and or wildlife receptor areas retained on site as part of mitigation. The location of receptor areas and retained scrub corridors on site can be determined at a later stage, once further ecological surveys have been completed.

Amenity grassland

Amenity grassland is typically species-poor, subject to regular mowing/maintenance and offers very little shelter for local fauna. However, it still has some value for local fauna as foraging grounds for invertebrates, amphibians, birds and mammals. Amenity grassland is not a locally rare habitat and it is not considered significantly detrimental to local wildlife if it were to be lost from the site. However, were it to be partially or entirely retained, it is recommended that enhancements are made such as planting a mixture of native wildflower and or sowing a native wildflower seed mix.

The following habitats are of negligible value and are not considered important for retention

Tall ruderal

Tall ruderal habitat is of low importance to local wildlife but does provide shelter and foraging to a variety of fauna. However, the majority of the tall ruderal habitat on site comprises invasive weed species (e.g. Japanese knotweed, giant hogweed, etc.) which require treatment and or removal from site (see Section 5.3.9) and therefore these habitats should not be retained on site.

Hard standing

Hard standing offers no shelter, foraging or nesting potential for local fauna and is of negligible importance for wildlife. Removal of hard standing habitat from the site will be of no detrimental impact to local wildlife.

Best practice

To prevent any adverse impacts on any habitats to be retained within and adjacent to the site, it is recommended that an Ecology Best Practice Plan should be included within the Construction Environmental Management Plan (CEMP) for any future developments on site. The Ecology Best Practice Plan should include at least the following measures (not limited to):



- A safe system for the correct storage of materials/chemicals should be implemented to ensure that materials are stored in a suitable manner as to avoid potential impacts on vegetation.
- A system to ensure waste is removed at the earliest opportunity to avoid contamination of ground and possible disturbance to wildlife and soil quality. Contractors should also avoid leaving construction waste within the site. Catch nets should be utilised on site to prevent debris being blown directly into the River Irwell.
- Avoidance of impacts on water quality through adhering to industry standard best practice relating to working in or near watercourses. Due to the proximity to the River Irwell, the client should consult with the Environment Agency (EA).
- Methods to adequately protect all features of ecological value from damage during site clearance, site preparation and construction activities.
- Site operations and plant should take into account wide and tall loads to prevent them coming into contact with trees on site.
- Trees to be retained on site should be protected from direct impact and from severance or asphyxiation of the roots in accordance with BS5837: 2012 "Trees in Relation to Design, Demolition and Construction – Recommendations" (British Standard, 2012).

5.3 Protected & Notable Species

Only those species which are considered likely to be present on site and or impacted by the development are discussed further in this section of the report.

5.3.1 Invertebrates

A number of invertebrate species are protected by European and UK legislation including those listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), Natural Environment and Rural Communities Act 2006 sections S41 and S42 and the Conservation of Habitats & Species Regulations 2012 (as amended).

As a result, some species are protected from some or all of the following (amongst others):

- Killing, injuring or taking.
- Possession or control.



- Damage to, destruction of or obstruction of access to any places used for shelter or protection.
- Disturbance while using such a structure.

Professional judgement has been used to determine that, due to the variety and composition of habitats on site, it has **good suitability** for a range of invertebrate species and could potentially support protected invertebrate species. Many invertebrates species have aquatic life phases and therefore the presence of waterbodies and terrestrial habitats (e.g. scrub, woodland, grassland) on site allows for a number of life phases to be supported on one site.

Therefore aquatic and terrestrial invertebrate surveys are recommended on the site. Invertebrate surveys should be completed in accordance with Natural England's Research Report NERR005 '*Surveying Terrestrial and freshwater invertebrates for conservation evaluation*' (2007). Eight survey visits (four for terrestrial habitats and four for aquatic habitats) should be carried out between April and September inclusive. All invertebrate samples collected during the surveys should then be identified using identification keys and microscopes where necessary.

Species specific mitigation will be devised following completion of the invertebrate surveys but will likely include the retention of both aquatic habitats (e.g. ponds, watercourse) and terrestrial habitats (e.g. woodland, scrub, marshy grassland), creation of hibernacula and enhancement of retained habitats and creation of new habitat through inclusion of native, nectar-rich species in the planting scheme.

5.3.2 Great crested newt

GCN are fully protected through their inclusion in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and in Schedule 2 of the Conservation of Habitats & Species Regulations 2012 (as amended) as European protected species. Under the legislation, it is an offence to intentionally kill, injure or take GCN as well as intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a GCN or disturb an animal while it is occupying a structure or place which it uses for that purpose.

Ponds 3 and 4 have '**good**' potential for GCN and Pond 2 has '**below average**' potential for GCN. Ponds 1 and 5 have '**poor**' potential for GCN and therefore further surveys of these ponds are not required.

Further survey for GCN presence / likely absence should be carried out on Ponds 2, 3 and 4 between mid-April and June, with at least two survey visits between mid-April and mid-May and a further two



visits between mid-May and early June. Standard survey techniques include bottle trapping, torchlight searches, egg searches and netting and at least three of these four techniques should be applied per visit. However, bottle trapping is not considered to be a suitable technique for ponds on this site since they are typically lined with hardstanding and do not support a sufficient layer of sediment to support deployment of bottle traps. Furthermore, accessibility of the perimeter of Ponds 3 and 4 is limited due to dense stands of vegetation and this would only allow for small percentages of these ponds to be torch surveyed.

Because Ponds 2, 3 and 4 are not deemed suitable for standard survey techniques, it is recommended that a further survey technique called Environmental DNA (eDNA) testing is implemented in the first instance. eDNA testing should be completed in accordance with the survey methodologies defined within Natural England's accepted protocol (*WC1067 Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA*). eDNA testing can be undertaken between mid-April and late June. Test kits must be acquired from a specialist supplier and then water samples are collected from each water body before being sent back to the supplier for DNA analysis.

If GCN are confirmed to be absent from the ponds through eDNA analysis, then no further surveys are required. If GCN presence is confirmed in any pond through eDNA analysis, then that pond will require six survey visits between mid-March and mid-June to determine the estimate of the population size. Alternative survey techniques (e.g. floating bottle traps) will need to be considered to allow implementation of three techniques.

If GCN are present, it is highly likely that an EPSL application will be required once planning permission has been granted, to allow the development to proceed lawfully under the Conservation of Habitats & Species Regulations 2012 (as amended). Mitigation will be required, in the form of new and enhanced habitat. Outline proposals are indicated here, however, these would be considered in more detail once the results of the GCN aquatic surveys are known, and confirmed during consultation with Natural England as part of the licence application process.

Mitigation for the site is likely to include:

- The capture and removal of any GCN from the proposed development area to a suitable receptor area minimise the risk of harm to newts by excluding them from the development site. The amount of time required to successfully complete a GCN translocation is dependent on population size as follows: small population: 30 days, medium population: 60 days, large population: 90 days



- The retention of existing habitats suitable for GCN, particularly water bodies;
- Creation of water bodies to replace those are lost or damaged on a 2 for 1 basis;
- New planting and other landscaping to create and enhance new areas of habitats for GCN (ponds). Precise areas have not been agreed at the time of writing, but it is recommended that the marshy grassland area in the east of the site is retained for this purpose. Furthermore, some areas and strips of scrub (at least 3m wide) should be retained for connectivity, allowing dispersal between ponds and enhancement areas;
- Creation of hibernacula and refuge opportunities;
- Creation and retention of features used for dispersal and connectivity i.e. hedgerows.

The monitoring of the population on an annual basis during an appropriate 'aftercare' period to assess the success of the mitigation measures and ensure the population is maintained at favourable conservation status.

New replacement ponds should be designed to benefit wildlife particularly GCN. The new pond should be of 10 to 20m in diameter to a depth of 1.5m and of a 'pudding bowl' shape, with scalloping of the margins to maximise the pond edges. The size, depth and profile of the pond will influence the fauna it will support. The pond profile is important with the inclusion of deep water, marginal and marshy zones around the edges. These profiles and features will supply a range of microhabitats for pond fauna. Some native and locally occurring aquatic vegetation should be introduced to the ponds to include floating, submerged, emergent, marginal and fringing vegetation. There is no optimum time for pond creation although avoiding the winter period may be preferable as the site will likely become waterlogged. Topsoil from the development site should not be used to form pond slopes or along pond margins. Nutrients draining from the topsoil in to the water may pollute the pond. In addition some topsoil on site is contaminated with invasive plant species. Topsoil is unnecessary for pond creation as many native wetland plants are able to grow perfectly well within sub soils.

5.3.3 Reptiles

All six species of reptiles native to the UK are protected under the Wildlife and Countryside Act 1981 (as amended) and benefit from various levels of protection. This legislation makes it an offence to:

- Intentionally or recklessly kill or injure these animals; and
- Sell, offer for sale, possess or transport for the purpose of sale or publish advertisement to buy or sell individual reptiles.



Reptiles are considered unlikely to be present on site and no further surveys are recommended but there is some suitable habitat on site and therefore their presence cannot be entirely ruled out.

Because of the potential for reptiles to be present on site, any future vegetation clearance works on site should be carried out under reasonable avoidance measures as follows:

- An Ecological Clerk or Works (ECoW) should be appointed to oversee any clearance work;
- Prior to commencement of clearance works, the ECoW should deliver a toolbox talk to operatives outlining the potential presence of reptiles on site. This should include information on legislation relating to reptiles and how to take care to avoid harming them whilst carrying out site clearance activities;
- Destructive searches of any potential refugia/hibernacula (e.g. debris piles) should be carried out prior to their removal. All debris removed during site clearance should be deposited into skips or stacked on pallets to prevent materials being left on the ground and forming potential refugia opportunities;
- Fingertip searches of ground and associated roots for reptiles prior to carrying out vegetation clearance.

5.3.4 Birds

All breeding wild birds, their nests and eggs are protected by the Wildlife and Countryside Act 1981 (as amended) against intentional disturbance, damage and destruction during the nesting season (generally considered to be March to September inclusive although some species are known to breed throughout the year).

Because of the presence of a number of BoCC red listed and amber listed species on site as well as extensive records within 2km of the site, it is recommended that breeding bird surveys are completed on site. Breeding bird surveys should be completed in accordance with the British Trust for Ornithology (BTO) survey methodology which involves walking a transect (or transects) of the site and recording all birds seen and heard. This should be carried out four times spread out between March and June inclusive).

Once the surveys have been completed appropriate mitigation for breeding birds can be prescribed however likely mitigation for the presence of notable birds is likely to comprise habitat retention and protection in habitats which are favoured by a notable species. Where this is not possible measures to compensate off site may be required depending on the species involved and the numbers observed. It may be that the assemblage of ground nesting birds in the marshy grassland area is particularly



notable in which case the appropriate mitigation would be to retain these habitats with a series of buffers and fence lines to prevent future disturbance and habitat degradation. Planting of hedgerows along the site boundaries is recommended as it will provide nesting, commuting and foraging habitats for birds.

Once works commence on site in order to prevent a breach in UK or European wildlife legislation it is recommended that any works that will likely disturb, damage or destroy an active nest be avoided during the bird breeding season (i.e. March to September inclusive). If restricting works to outside the bird nesting season is not possible, it is recommended that an Ecological Clerk of Works (ECoW) conducts a check for the nesting birds within the site in advance of any works commencing. Once complete, a five day window will allow for site works to commence should no active nests be identified. Should works cease for more than five days then an additional check for breeding birds should be repeated.

If a nesting bird is identified, the ECoW will advise on suitable working methods and exclusion zones to restrict works on site. Measures recommended will depend on the nature of the works in that area as well as any bird species identified to be nesting. Note that suitable working methods may result in delay(s) to undertaking site works within specific areas of site until the ECoW has advised that all the chicks have fledged.

The nesting potential of the site can be enhanced through the installation of bird boxes on retained mature trees on site. The type, location and numbers of bird boxes will be determined following completion of breeding bird surveys.

5.3.5 Bats

All species of British bats and their roosts are fully protected under the Wildlife & Countryside Act 1981 (as amended) and the Conservation of Habitats & Species Regulations 2012 (as amended) (see Appendix A). Seven species of bat are listed as NERC priority species.

Roosting bats - trees

In the first instance it is recommended that all mature trees on site are retained. If retention of T1 (see Figure 2) is not possible, the tree will require bat emergence / re-entry surveys prior to felling. T1 is assessed as having **moderate** suitability for roosting bats so, in accordance with the guidance, would require two separate surveys comprising one dusk emergence and a separate dawn re-entry survey between May and September (with at least one of the surveys between May and August).



Should T2 be confirmed to support roosting bats, an EPSL will be required once planning permission has been granted, to allow the development to proceed lawfully under the Conservation of Habitats & Species Regulations 2012 (as amended). Mitigation will be required, in the form of new and enhanced habitat.

Seven other mature trees on site (T2-T8, Figure 2) are assessed as having **low** suitability for roosting bats. These trees should be retained where possible however should it not be possible to retain these trees, then in accordance with the guidance, no further surveys are necessary but reasonable avoidance measures should be followed which include:

- Supervision by a licensed bat ecologist to check potential roost features (PRFs) to be impacted immediately prior to felling/crown works commencing;
- Avoidance of sensitive periods such as maternity and hibernation periods. Works are best carried out March to April or late August to October;
- Avoidance of cross-cutting in proximity to cavities or hollows;
- Soft lowering of felled sections containing cavities. These should then be left on the ground with the openings exposed for 24 hours to allow natural dispersal; and
- Wedging open of split limbs to prevent crush injuries.

It is considered that working to these methods will avoid an offence being committed.

Roosting bats - buildings

One building on site (B1- Figure 2) has **moderate** potential to support roosting bats. If this building is to be demolished to accommodate the new development then bat emergence / re-entry surveys are required prior to demolition. In accordance with the guidance, two separate surveys will be required; one dusk survey and a separate dawn re-entry survey between May and September with at least one of the surveys completed between May and August inclusive.

Three other buildings on site (B2, B3 and B4 – Figure 2) have **low** potential to support bats. If any of these buildings are to be demolished then they will also require survey prior to demolition. In accordance with the guidance, one separate survey (per building) will be required; either one dusk emergence survey or one dawn re-entry survey between May and August inclusive.

Should any building requiring removal be confirmed to support roosting bats a EPSL will be required once planning permission has been granted, to allow the development to proceed lawfully under the



Conservation of Habitats & Species Regulations 2012 (as amended). Mitigation will be required, in the form of new and enhanced habitat, such as installation of bat boxes, planting of 'bat friendly' species and sympathetic lighting design. The precise nature of mitigation (e.g. the type, location and numbers of bat boxes) will be determined following completion of bat surveys

Foraging and commuting bats

The site is considered to have **moderate** suitability for foraging and commuting bats and therefore bat activity surveys should be carried out at the site. In accordance with the guidance, one survey visit per month in appropriate weather conditions is required between April and October. At least one of the surveys should comprise a dusk and pre-dawn visit within one 24 hour period. Furthermore, static bat detectors should be deployed once per month (April to October) for five consecutive nights at two separate locations in appropriate weather conditions.

The aim of the bat activity surveys is to highlight important and significant foraging areas and commuter features for bats on site. This will help inform which features/areas of the site are retained (e.g. the 20m buffer from the River Irwell) in order to best avoid disturbance and to minimise reduction in quality of the site for foraging and commuting bats. The precise nature of mitigation required will be determined following completion of the surveys.

5.3.6 Otters

No further surveys are recommended. However a pre-construction check (at least 6 months prior to commencement) of the northern bank of the River Irwell (the westernmost 120m section of the southwestern site boundary - the section of river bank that does not support a retaining wall), to check that no otter holts have become established onsite.

Retention of a 20m buffer from the River Irwell will help maintain a corridor which otters can utilise when commuting through this section of the watercourse.

5.3.7 Water voles

No further surveys are recommended for water voles on site. However, if the small northern watercourse is to be retained as an unculverted channel and not included as part of drainage proposals for the development, enhancement measures are recommended as follows:

- Thinning/removal of vegetation along the channel followed by planting a mix of native, herbaceous species to provide both foraging material and cover from predators.



- Allowing herbaceous vegetation to establish within a buffer zone and along the bank top, marginal vegetation to establish along the banks and in-channel aquatic vegetation to encourage covering at least 20% of the wetted channel.

5.3.8 White-clawed crayfish

White-clawed crayfish considered unlikely to be present on site or in the section of the River Irwell adjacent to the site. At the time of writing, it is understood that no in-river works are to take place as part of the development and therefore no surveys for white-clawed crayfish are required. However, it is recommended that industry standard best practice relating to working in or near watercourses should be adhered to reduce the risk of adversely affecting the River Irwell. Furthermore, it is recommended that a 20m buffer from the River Irwell is retained onsite to reduce the likelihood of disturbance to any white-clawed crayfish that may be present in this section of the river.

5.3.9 Invasive species

Japanese knotweed, giant hogweed, Himalayan balsam and New Zealand pigmyweed are all listed under Schedule 9 of the Wildlife and Countryside Act 1981, making it an offence to:

- Allow these species to spread onto adjacent land; and
- Encourage or cause spread of these species outside of your property.

The services of an invasive weed eradication specialist should be sought to revisit the site in May/June. This will allow the specialist to accurately map the extent of invasive species on site and then implement a programme of treatment and disposal in order to eliminate the presence of invasive species from the site.

All four of the invasive plant species identified as present on site can be very easily spread through unintentional movement of seeds or fragments of plant material. A hygiene protocol should be implemented to prevent spreading invasive species on or off the site. This should involve the following:

- Clearly marking the extent of invasive species by 'zoning' the infestations with brightly coloured fencing.
- Avoid movement of people, machinery or vehicles through the zoned off areas.
- All staff should thoroughly clean their footwear in a designated area before leaving site.



- The tyres and or treads of any vehicles/machinery used on site should be thoroughly cleaned before leaving site.

5.3.10 Other species

Any toads and/or hedgehogs found during site works should be carefully placed (where capture is possible and humane) in a ventilated box using gloved hands and released into suitable nearby vegetation that will be unaffected by the proposed works. Hedgehogs should not be touched using non-gloved hands and should not be handled for longer than is necessary. Hedgehogs can carry ticks and fleas and toads secrete a toxin through their skin. Wash hands immediately after handling these species.

Note that hedgehogs are most vulnerable to harm during the hibernation period, considered to be November to February inclusive. Site preparation works carried out during this sensitive period (between November – February) should take into account the potential presence of hibernating animals within areas of dense vegetation, particularly within areas of thorny shrubs.

It is recommended that the potential presence of foxes be noted by contractors on site and they are briefed accordingly. Any foxes disturbed by site works should be allowed to disperse on their own accord and should not be touched.

The site can be enhanced for species such as toads and hedgehogs through planting of native-species hedgerows along the site boundaries and between retained wildlife mitigation areas to maintain connectivity across the site.

5.4 Enhancements and mitigation

Opportunities should be sought where possible for nature conservation enhancement of the site in line with current policy guidance (Department for Communities and Local Government, 2012). The landscaping scheme for the new development should aim to incorporate the following:

- Retention and enhancement of the marshy grassland in the east of the site to serve as an 'ecology enhancement area.' This can be enhanced through sowing of native wetland seed mix. This area would serve as a suitable location for creation of mitigation ponds and hibernacula.
- Retention and enhancement of strips (minimum 3m in width) of scrub habitat on the periphery of the site and between retained ecological features to maintain connectivity across the site.



- Retention of a 20m buffer between the construction development and the River Irwell to retain the wildlife corridor and reduce disturbance to this watercourse
- Additional trees should be planted to enhance the capability of the site to intercept airborne pollution. Any trees selected for planting should be native species of local provenance.
- Planting of native-species hedgerows along the site boundaries and between retained wildlife mitigation areas to maintain connectivity across the site
- Install bird boxes on retained mature trees. The type, location and numbers of bird boxes will be determined following completion of breeding bird surveys.
- Install bat boxes on retained mature trees. The type, location and numbers of bat boxes will be determined following completion of bat surveys.
- Planting of new areas of soft landscaping with insect-attracting, native species of local provenance, wherever possible, to enhance the site's ecology. This approach should apply to any tree/scrub species planted, as well as the ground flora/grass mixes sown and will create valuable habitats for invertebrates. Planting woody species that produce fruit and berries and nectar-producing herbaceous plants that flower at different times of the year would have the greatest benefits for local wildlife.
- Design and implement sympathetic lighting scheme which avoids and / or minimises the artificial lighting of mature tree on site and the River Irwell adjacent to the south western site boundary. This can be achieved through the use of hooded lamps or low pressure sodium lamps or high pressure sodium instead of mercury or metal halide lamps.

5.5 Best Practice during Construction

It is recommended that once construction commences contractors are briefed accordingly as to the potential presence of notable/protected species. This can be achieved by the provision of an ECoW at the start of clearance activities on site to provide a Tool Box Talk to site operatives. It is recommended that the toolbox talk includes advice on best practice with regard to all ecological issues in advance of any works commencing and should include the following recommendations to reduce the risk of harming or disturbing them during the works phase:

- Emergency procedure: In the unlikely event that a protected/notable species, evidence of these or its resting place is located during site clearance then works in that area must cease until further advice has been sought from the ECoW;



- If any excavations must remain open overnight, it is recommended that access ramps are installed each night near to crossing points to allow any animals that accidentally fall into the excavation a means of climbing out. Animals that may enter the site to forage at night include badger, fox and hedgehog. These can again be roughened planks of wood, or even a ramp of earth;
- Avoid-works at night where possible to minimise disturbance and the impact of noise and light pollution to wildlife foraging / commuting nearby to the site. When works after dark cannot be avoided, any lighting should only be used where necessary and be designed to be sympathetic by minimising light spill on to the River Irwell and habitats adjacent to the works areas;
- Avoidance of impacts on water quality through adhering to industry standard best practice relating to working in or near watercourses. Due to the proximity to the River Irwell, the client should consult with the Environment Agency (EA).
- Daily checks of any excavations should be made by contractors prior to commencing work to ensure that no badgers, foxes, hedgehogs or other animals have become trapped in the excavations. Should a trapped protected/notable species be found within the works, WYG should be immediately contacted for advice;
- Any pipes stored, or installed on site, with a diameter of greater than 200mm should be covered or capped at night to reduce the risk of animals such as badgers becoming trapped inside;
- Consideration should be given to the placement of any gravel storage, or piles of materials that may create mounds suitable for digging (e.g. burrow creation). We would advise that any such piles are checked on a daily basis by contractor staff to ensure that no digging/burrowing activity has taken place. If the mounds are to be in place overnight, the safest approach may be to temporarily fence them to ensure that animals cannot access the fresh soil; and
- If injured or sickly animals are found then the animal should be admitted to a wildlife hospital or centre for relocation by an ECoW.



6.0 Conclusions

6.1.1 Habitats

No further specific habitat surveys are necessary but a **botanical walkover survey** is recommended at least once between May/June to check for the presence of rare or notable plant species.

It is recommended that the following habitats are retained on site:

- Woodland (semi-natural and plantation)
- Semi-improved grassland
- Marshy grassland – recommended to serve as a wildlife mitigation area with creation of new ponds and hibernacula.
- Ponds
- Running water
- Trees

It is recommended that the following habitats are partially retained:

- Scrub - areas and strips (at least 3m wide) should be retained to retain habitat connectivity on site.
- Amenity grassland – could be retained on site and enhanced through addition of native wildflower species (through planting and or a wildflower seed mix).

It is recommended that a 20m buffer is retained between the construction development and the River Irwell to retain the wildlife corridor and reduce disturbance to this watercourse.

6.1.2 Protected Species

The following protected species surveys are recommended on site:

- **Invertebrates – terrestrial:** Four survey visits to be completed spread out between April and September inclusive.



- **Invertebrates –aquatic:** Four survey visits to be completed spread out between April and September inclusive.
- **GCN:** eDNA surveys are recommended for Ponds 2, 3 and 4 to determine presence or likely absence of GCN. Any pond found to contain GCN will require an additional six surveys using techniques including bottle trapping, torch light searching, egg searches and or netting.
- **Breeding birds:** Four survey visits to be completed spread out between March and June inclusive.
- **Roosting bats - trees:** Should tree T2 require felling, it will first require two separate surveys comprising one dusk emergence and one dawn re-entry survey between May and September (with at least one of the surveys between May and August).
- **Roosting bats – buildings:** Should building B1 require demolition, it will first require two separate surveys comprising one dusk emergence and one dawn re-entry survey between May and September (with at least one of the surveys between May and August).

Should any of the buildings B2, B3 and or B4 require demolition, they will first require one survey comprising either a dusk emergence or a dawn re-entry survey between May and August.

- **Bat activity:** Activity surveys are required as follows: one survey visit per month in appropriate weather conditions is required between April and October. At least one of the surveys should comprise a dusk and pre-dawn visit within one 24 hour period. Furthermore, static bat detectors should be deployed once per month (April to October) for five consecutive nights at two separate locations in appropriate weather conditions.

6.2 Further recommendations

6.2.1 Mitigation

- **All fauna:** Retention of strips of scrub (at least 3m wide) to maintain connectivity between ecological features across the site.
- **Invertebrates:** Creation of hibernacula features and planting of new areas of soft landscaping with insect-attracting, native species.
- **GCN/other aquatic fauna:** Retention of existing onsite ponds and creation of new ponds (including SUDS ponds) to benefit local wildlife.



- **GCN:** Creation of hibernacula features in retained habitat on site.
- **Bats:** Should trees T2, T3, T4, T5, T6, T7 or T8 require felling, then reasonable avoidance measures should be implemented.
- **Birds:** Vegetation clearance to be carried out outside of the bird nesting season taken to be from March to September inclusive.
- **Birds:** Plantation of native species hedgerow along site boundary to provide nesting, commuting and foraging habitat.
- **Otters:** A pre-construction check (at least 6 months prior to commencement) of the northern bank of the River Irwell along the southwestern site boundary should be carried out to check that no otter holts have become present onsite.
- **Otters:** Retention of a 20m buffer between the construction development and the River Irwell to retain the wildlife corridor and reduce disturbance to this watercourse.
- **Notable Species:** It is recommended that an a suitably experienced ecologist/ECOW delivers a Tool Box Talk regarding best practice to site personnel with regard to ecological issues in advance of any works commencing.
- **Other species:** Any toads and/or hedgehogs found during works should be carefully placed (where capture is possible and humane) in a ventilated box using gloved hands and released into suitable nearby vegetation that will be unaffected by the proposed works.
- **Invasive species:** The services of an invasive weed eradication specialist be sought to survey the site and implement a programme of treatment and disposal in order to eliminate the presence of invasive species from the site.
- **Invasive species:** Measures should be implemented to prevent unintentional spread of invasive species on or off the site.
- Design and implement sympathetic lighting scheme which avoids and / or minimises the artificial lighting of existing mature trees and the River Irwell.



6.2.2 Best practice

The following best practice measures should be implemented:

- **Habitats:** An Ecology Best Practice Plan should be produced as part of the CEMP for any future works proposed at the site.
- **Habitats:** Retain all mature trees onsite.

6.2.3 Enhancements

Potential enhancement measures include:

- Planting of additional native tree species of local provenance.
- Installing bird boxes.
- Installing bat boxes.
- Clearance of vegetation and planting of herbaceous plant species along the small watercourse in the north of the site to enhance its potential for water voles.



7.0 References

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FIGURES

Figure 1 – Site Red Line Boundary

Figure 1: Site Red Line Boundary

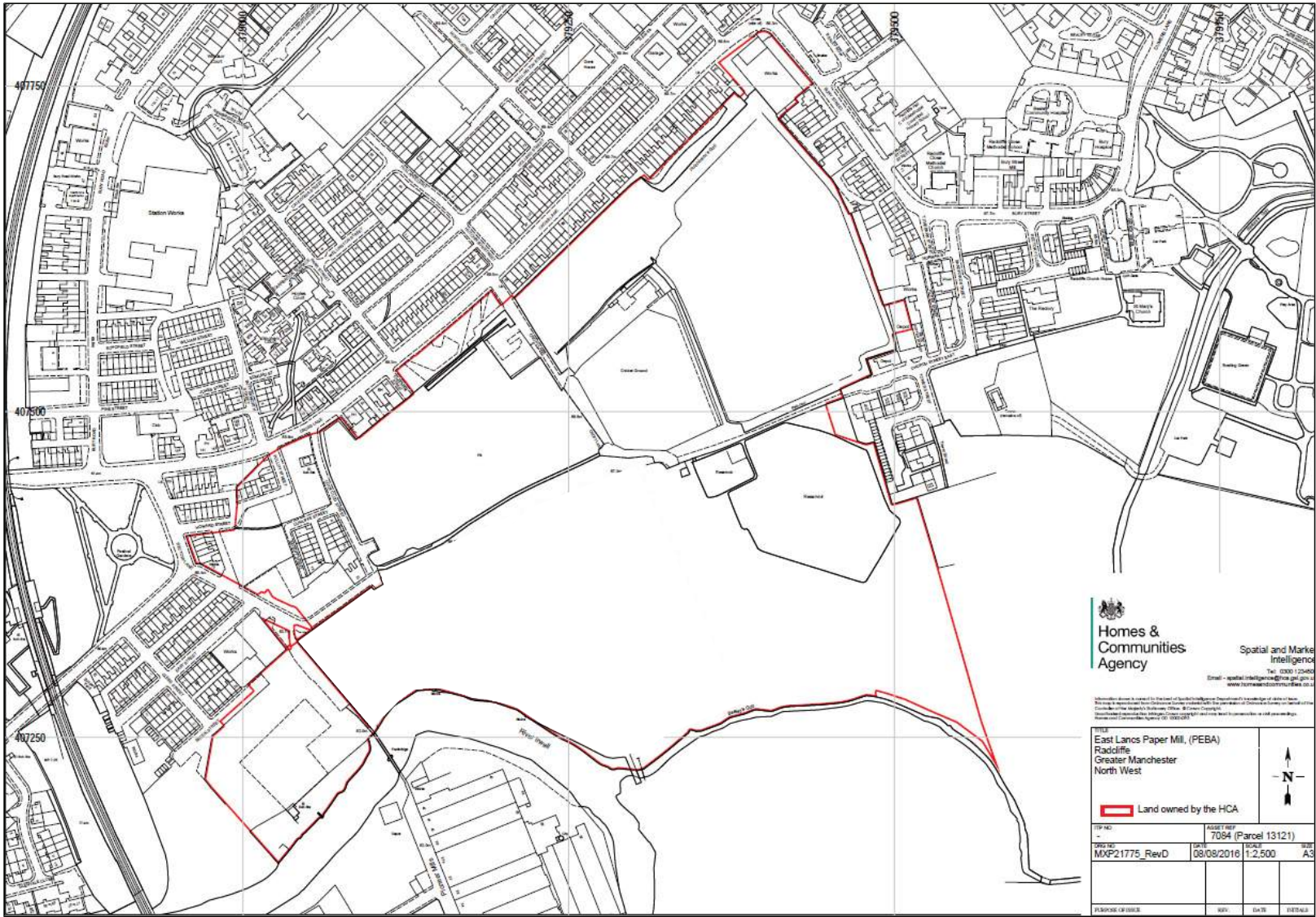
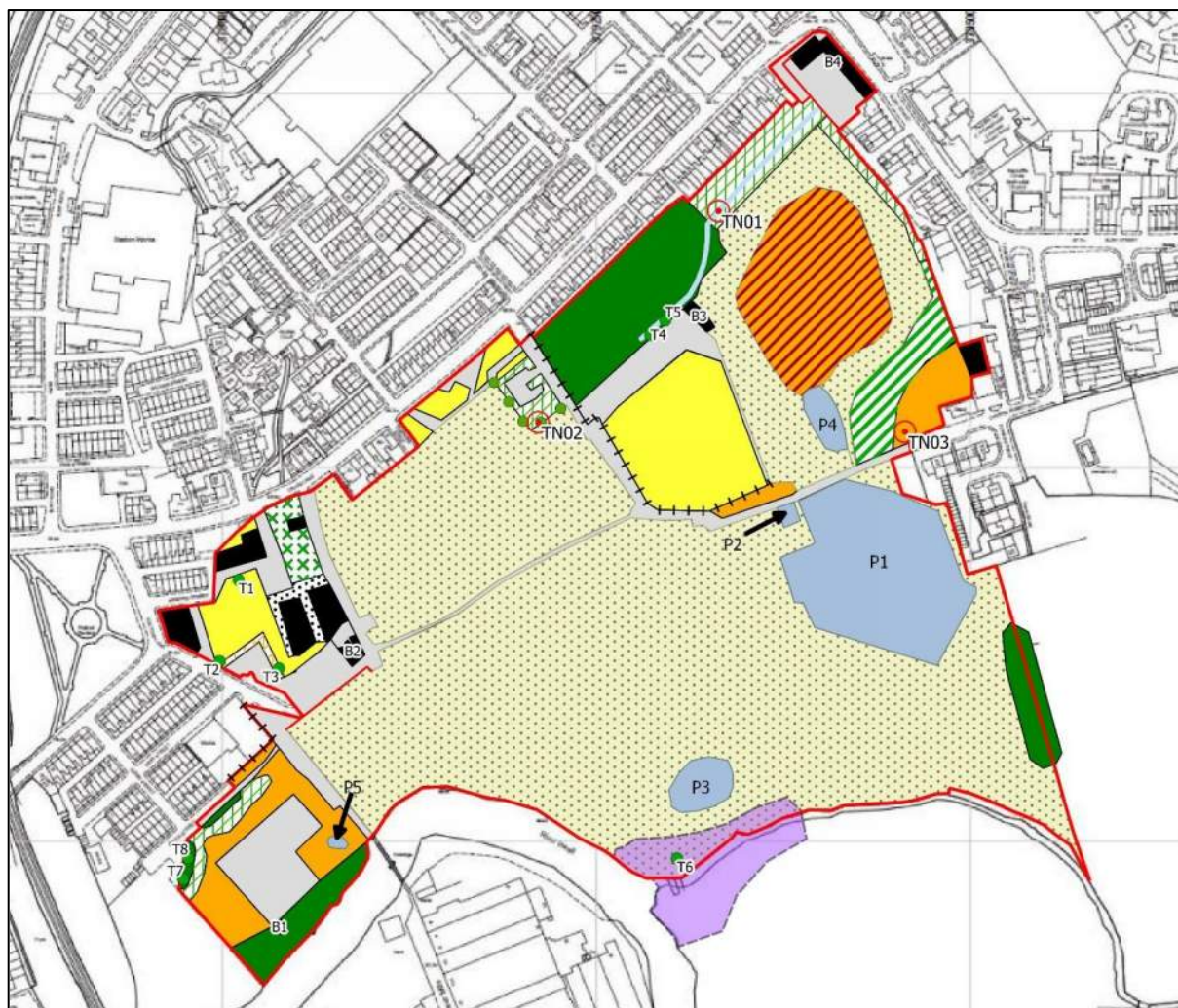




Figure 2 – Extended Phase 1 Habitat Map



Legend

- Site boundary
- Target Note
- Tree
- Tree line
- Running water
- Fence
- Wall
- Broadleaved woodland - semi natural
- Broadleaved woodland - plantation
- Scrub - dense/continuous
- Scrub - scattered
- Neutral grassland - semi-improved
- Marsh/marshy grassland
- Standing water
- Introduced shrub
- Building
- Bare ground
- Hardstanding
- Regenerating willow scrub
- Extensive Giant Hogweed & Japanese knotweed

B – Building reference

P – Pond reference

T – Tree

TN – Target note reference

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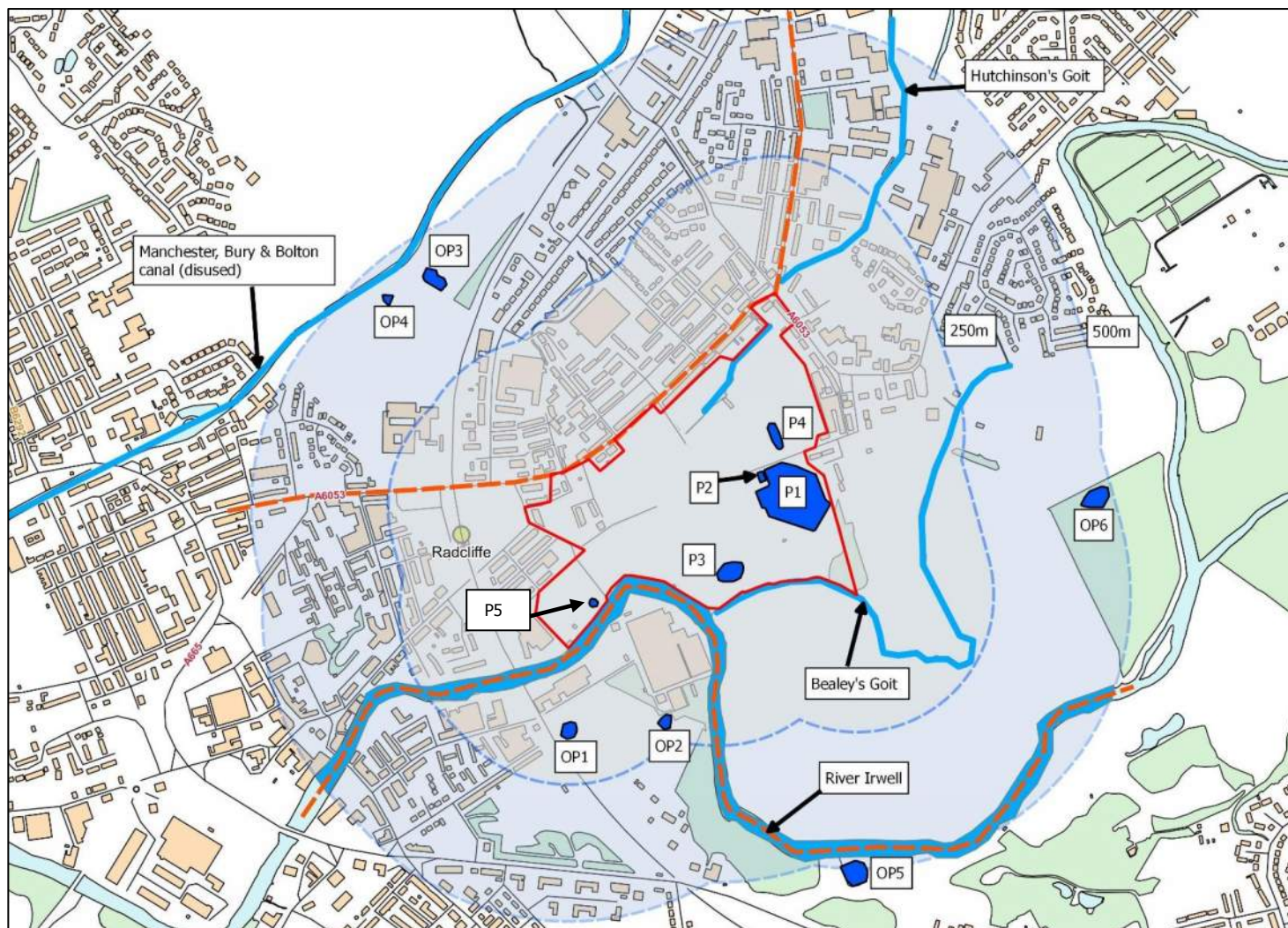
Project: East Lancs. Paper Mill
Client: Homes & Communities Agency

Extended Phase 1 Habitat Map

Drawn by:	Date:	Checked by:	Date:	Approved by:	Date:
MW	06/12/16	AB	12/12/16	RK	14/12/16
Project No:	Office	Type	Drawing no:	Revision	
A090070-193	45	94	2	V1	



Figure 3 – Waterbodies and watercourses within 500m of site boundary



Legend

- Site Boundary
- - - 250m buffer
- ... 500m buffer
- Waterbody
- Watercourse
- - - Significant barrier to newt dispersal
- Woodland
- Building

Abbreviations

- P - Onsite pond
- OP - Offsite pond

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Environment

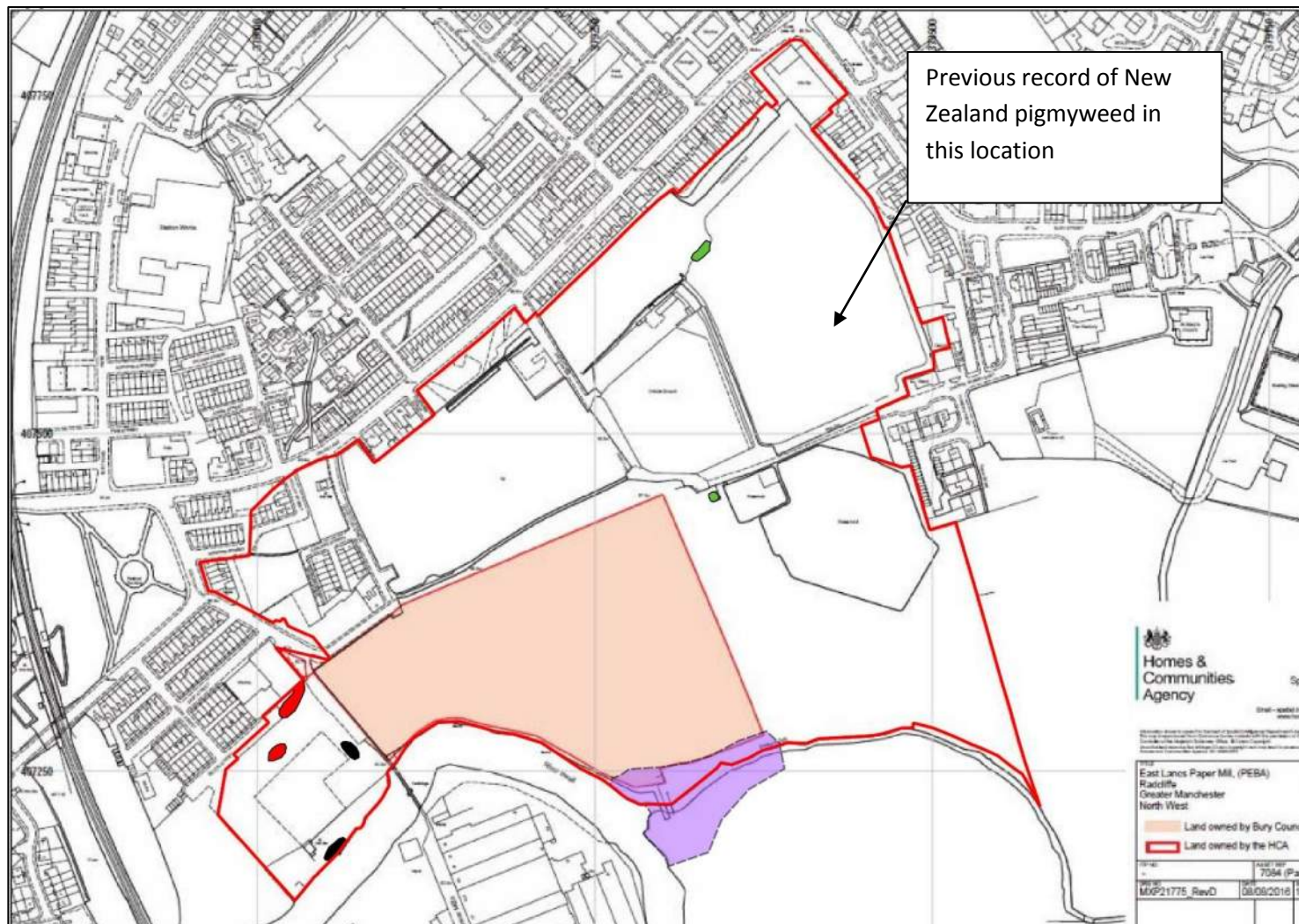
Project: **East Lancs Paper Mill**
Client: **Homes & Communities Agency**

Waterbodies and watercourses within 500m of site boundary

Drawn by:	Date:	Checked by:	Date:	Approved by:	Date:
MW	14/12/16	AB	14/12/16	RK	14/12/16
Project No:	Office	Type	Drawing no:	Revision	
A090070-193	45	94	3	V1	



Figure 4 – Invasive Species Map



Legend

- Site boundary
- Extensive Giant Hogweed & Japanese knotweed
- Giant hogweed
- Japanese knotweed
- Himalayan balsam

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Environment

Project: East Lancs Papermill
Client: Homes & Communities Agency

Invasive species plan

Drawn by:	Date:	Checked by:	Date:	Approved by:	Date:
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APPENDIX A – Biodiversity and environmental legislation, conventions & threatened lists



Introduction

The UK has ratified a number of Conventions and implemented legislation pertaining to the protection of biodiversity and habitats, either independently or as member state of the European Union. These are defined and summarised below.

Lists of threatened, endangered and extinct species are also provided, together with a summary explanation of each.

Bern Convention (1982)

The *Convention on the Conservation of European Wildlife and Natural Habitats* (the *Bern Convention*) was adopted in Bern, Switzerland in 1979, and was ratified in 1982. Its aims are to protect wild plants and animals and their habitats listed in Appendices 1 and 2 of the Convention, and regulate the exploitation of species listed in Appendix 3. The regulation imposes legal obligations on participating countries to protect over 500 plant species and more than 1000 animals.

To meet its obligations imposed by the Convention, the European Community adopted the *EC Birds Directive* (1979) and the *EC Habitats Directive* (1992 – see below). Since the Lisbon Treaty, in force since 1st December 2009, European legislation has been adopted by the European Union.

Local Biodiversity Action Plan (LBAP)

Local Biodiversity Action Plans (LBAP) identify habitat and species conservation priorities at a local level (typically at the County level), and are usually drawn up by a consortium of local Government organisations and conservation charities.

Birds Directive (BD)

The *EC Directive on the Conservation of Wild Birds* (79/409/EEC) or '*Birds Directive*' was introduced to achieve favourable conservation status of all wild bird species across their distribution range. In this context, the most important provision is the identification and classification of Special Protection Areas (SPAs) for rare or vulnerable species listed in Annex 1 of the Directive, as well as for all regularly occurring migratory species, paying particular attention to the protection of wetlands of international importance.



Birds of Conservation Concern (BoCC)

This is a review of the status of all birds occurring regularly in the United Kingdom. It is regularly updated and is prepared by leading bird conservation organisations, including the British Trust for Ornithology (BTO), Joint Nature Conservation Committee (JNCC) and The Royal Society for the Protection of Birds (RSPB, 2002).

The latest report, 'Birds of Conservation Concern 4', was produced in 2015 (Eaton et al, 2015) and identified 67 red list species, 96 amber species, and 81 green species. The criteria are complex, but generally:

- Red list species are those that have shown a decline of the breeding population, non-breeding population or breeding range of more than 50% in the last 25 years.
- Amber list species are those that have shown a decline of the breeding population, non-breeding population or breeding range of between 25% and 50% in the last 25 years. Species that have a UK breeding population of less than 300 or a non-breeding population of less than 900 individuals are also included, together with those whose 50% of the population is localised in 10 sites or fewer and those whose 20% of the European population is found in the UK.
- Green list species are all regularly occurring species that do not qualify under any of the red or amber criteria are green listed

Bonn Convention

The Convention on the Conservation of Migratory Species of Wild Animals or '*Bonn Convention*' was adopted in Bonn, Germany in 1979 and came into force in 1985. Participating states agree to work together to preserve migratory species and their habitats by providing strict protection to species listed in Appendix I of the Convention. It also establishes agreements for the conservation and management of migratory species listed in Appendix II.

In the UK, the requirements of the convention are implemented via the *Wildlife & Countryside Act 1981* (as amended), *Wildlife (Northern Ireland) Order 1985* (as amended), *Nature Conservation and Amenity Lands (Northern Ireland) Order 1985* and the *Countryside and Rights of Way Act 2000* (CRoW).



Global IUCN Red List

The International Union for Conservation of Nature (IUCN) Threatened Species was devised to provide a list of those species that are most at risk of becoming extinct globally. It provides taxonomic, conservation status and distribution information about threatened taxa around the globe.

The system catalogues threatened species into groups of varying levels of threat, which are: Extinct (EX), Extinct in the Wild (EW), Critically Endangered (CE), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Least Concern (LC), Data Deficient (DD), Not Evaluated (NE). Criteria for designation into each of the categories is complex, and consider several principles.

Habitats Directive

The *Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora*, or the '*Habitats Directive*', is a European Union directive adopted in 1992 in response to the Bern Convention. Its aims are to protect approximately 220 habitats and 1,000 species listed in its several Annexes.

In the UK, the *Habitats Directive* is transposed into national law via the *Conservation of Habitats and Species Regulations 2012 (as amended)* in England and Wales, and via the *Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended)* in Northern Ireland.

Protection of Badgers Act 1992 (PBA 1992)

The main legislation protecting badgers in England and Wales is the *Protection of Badgers Act 1992* (the 1992 Act). Under the 1992 Act it is an offence to: wilfully kill, injure, take or attempt to kill, injure or take a badger; dig for a badger; interfere with a badger sett by, damaging a sett or any part thereof, destroying a sett, obstructing access to a sett, causing a dog to enter a sett or disturbing a badger while occupying a sett.

The 1992 Act defines a badger sett as: "any structure or place which displays signs indicating current use by a badger"

National Planning Policy Framework (2012)

Following the publication of the National Planning Policy Framework (NPPF) in March 2012, *Planning Policy Statement 9 (PPS9): Biodiversity and Geological Conservation* (2005) has been withdrawn. However, *ODPM 06/2005: Biodiversity and Geological Conservation – Statutory Obligations and their impact within the Planning System* (the guidance document that accompanied PPS9) has not been



withdrawn and, where more detailed guidance is required than is given within the NPPF, local planning authorities will continue to rely on ODPM 06/2005.

This guidance requires local planning authorities to take account of the conservation of protected species when determining planning applications and makes the presence of a protected species a material consideration when assessing a development proposal that, if carried out, would be likely to result in harm to the species or its habitat.

In the case of European Protected Species such as bats, planning policy emphasises that strict statutory provisions apply (including the *Conservation of Habitats and Species Regulations 2012 (as amended)*), to which a planning authority must have due regard.

Where developments requiring planning permission are likely to impact upon protected species it is necessary that protected species surveys are undertaken and submitted to meet the requirements of paragraph 98 of ODPM Circular 06/2005 which states that:

'The presence of a protected species is a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm to the species or its habitat.'

General guidance within the body of the NPPF which are also potentially relevant to the possible presence of bats at the site includes the following statements:

"The planning system should contribute to and enhance the natural and local environment by:

- protecting and enhancing valued landscapes, geological conservation interests and soils;*
- recognising the wider benefits of ecosystem services;*
- minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures"*

"Local planning authorities should set criteria based policies against which proposals for any development on or affecting protected wildlife or geodiversity sites or landscape areas will be judged."



"When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles:

- if significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;"*

Species of Principal Importance in England

Section 41 (S41) of this Act requires the Secretary of State to publish a list (in consultation with Natural England) of habitats and species which are of principal importance for the conservation of biodiversity in England. The S41 list is used to guide decision-makers such as public bodies including local and regional authorities, in implementing their duty under Section 40 of the *Natural Environment and rural Communities (NERC) Act 2006*, to have regard to the conservation of biodiversity in England, when carrying out their normal (e.g. planning) functions. The S41 list includes 65 habitats of principal importance and 1,150 species of principal importance.

The Conservation of Habitats & Species (Amendment) Regulations 2012

The *Conservation of Habitats and Species (Amendment) Regulations 2012* came into force on 16th August 2012 and amended the *Conservation of Habitats and Species Regulations 2010* to ensure the various provisions of Directive 92/43/EC ('the Habitats Directive') are transposed in a clear manner.

Regulations place a duty on the Secretary of State to propose a list of sites which are important for either habitats or species (listed in Annexes I or II of the Habitats Directive respectively) to the European Commission. These sites, if ratified by the European Commission, are then designated as Special Protection Areas (SPAs) within six years. The 2012 amendments include that public bodies help preserve, maintain and re-establish habitats for wild birds.

The Regulations also make it an offence to deliberately capture, kill, disturb or trade in the animals listed in Schedule 2, or pick, uproot, destroy, or trade in the plants listed in Schedule 5 (see Table A1).

Table A1 Schedules of the *Conservation of Habitats & Species Regulations 2012 (as amended)*

Schedule 2 – European Protected Species of Animals		Schedule 5 – European Protected Species of Plant	
Common name	Scientific name	Common name	Scientific name



Schedule 2 – European Protected Species of Animals		Schedule 5 – European Protected Species of Plant	
Common name	Scientific name	Common name	Scientific name
Horseshoe bats	Rhinolophidae - all species	Shore dock	<i>Rumex rupestris</i>
Common bats	Vespertilionidae - all species	Killarney fern	<i>Trichomanes speciosum</i>
Wild cat	<i>Felis silvestris</i>	Early gentian	<i>Gentianella anglica</i>
Dolphins, porpoises and whales	Cetacea – all species	Lady's-slipper	<i>Cypripedium calceolus</i>
Dormouse	<i>Muscardinus avellanarius</i>	Creeping marshwort	<i>Apium repens</i>
Pool frog	<i>Rana lessonae</i>	Slender naiad	<i>Najas flexilis</i>
Sand lizard	<i>Lacerta agilis</i>	Fen orchid	<i>Liparis loeselii</i>
Fisher's estuarine moth	<i>Gortyna borelii lunata</i>	Floating-leaved water plantain	<i>Luronium natans</i>
Great crested newt	<i>Triturus cristatus</i>	Yellow marsh saxifrage	<i>Saxifraga hirculus</i>
Otter	<i>Lutra lutra</i>		
Lesser whirlpool ram's-horn snail	<i>Anisus vorticulus</i>		
Smooth snake	<i>Coronella austriaca</i>		
Sturgeon	<i>Acipenser sturio</i>		
Natterjack toad	<i>Epidalea calamita</i>		
Marine turtles	<i>Caretta caretta</i> , <i>Chelonia mydas</i> , <i>Lepidochelys kempii</i> , <i>Eretmochelys imbricata</i> , <i>Dermochelys coriacea</i>		

The Hedgerow Regulations 1997

The *Hedgerow Regulations 1997* were made under Section 97 of the *Environment Act 1995* and came into force in 1997. They introduced new arrangements for local planning authorities in England and Wales to protect important hedgerows in the countryside, by controlling their removal through a



system of notification. Important hedgerows are defined by complex assessment criteria, which draw on biodiversity features, historical context and the landscape value of the hedgerow.

Wildlife and Countryside Act 1981 (as amended)

This is the principal mechanism for the legislative protection of wildlife in the UK. This legislation is the chief means by which the '*Bern Convention*' and the *Birds Directive* are implemented in the UK. Since it was first introduced, the Act has been amended several times.

The Act makes it an offence to (with exception to species listed in Schedule 2) intentionally:

- kill, injure, or take any wild bird,
- take, damage or destroy the nest of any wild bird while that nest is in use, or
- take or destroy an egg of any wild bird.

In addition, the Act makes it an offence (subject to exceptions) to:

- intentionally or recklessly kill, injure or take any wild animal listed on Schedule 5,
- interfere with places used for shelter or protection, or intentionally disturbing animals occupying such places.
- The Act also prohibits certain methods of killing, injuring, or taking wild animals

Finally, the Act also makes it an offence (subject to exceptions) to:

- intentionally pick, uproot or destroy any wild plant listed in Schedule 8, or any seed or spore attached to any such wild plant,
- unless an authorised person, intentionally uproot any wild plant not included in Schedule 8,
- sell, offer or expose for sale, or possess (for the purposes of trade), any live or dead wild plant included in Schedule 8, or any part of, or anything derived from, such a plant.

Following all amendments to the Act, Schedule 5 'Animals which are Protected' contains a total of 154 species of animal, including several mammals, reptiles, amphibians, fish and invertebrates. Schedule 8 'Plants which are Protected' of the Act, contains 185 species, including higher plants, bryophytes

and fungi and lichens. A comprehensive and up-to-date list of these species can be obtained from the JNCC website.

Part 14 of the Act makes unlawful to plant or otherwise cause to grow in the wild any plant which is listed in Part II of Schedule 9.

Table A2 provides a comprehensive list of plant species listed in this schedule. It is recommended that plant material of these species is disposed of as bio-hazardous waste, and these plants should not be used in planting schemes.

Table A2 Invasive plant species listed in Schedule 9 of the *Wildlife & Countryside Act 1981* (as amended)

Common name	Scientific name
Perfoliate alexanders	<i>Smyrniolum perfoliatum</i>
Red algae	<i>Grateloupia luxurians</i>
Variegated yellow archangel	<i>Lamiastrum galeobdolon</i> subsp. <i>argentatum</i>
Yellow azalea	<i>Rhododendron luteum</i>
Indian (Himalayan) balsam	<i>Impatiens glandulifera</i>
Wall cotoneaster	<i>Cotoneaster horizontalis</i>
Entire-leaved cotoneaster	<i>Cotoneaster integrifolius</i>
Himalayan cotoneaster	<i>Cotoneaster simonsii</i>
Hollyberry cotoneaster	<i>Cotoneaster bullatus</i>
Small-leaved cotoneaster	<i>Cotoneaster microphyllus</i>
False Virginia creeper	<i>Parthenocissus inserta</i>
Virginia creeper	<i>Parthenocissus quinquefolia</i>
Purple dewplant	<i>Disphyma crassifolium</i>
Fanwort or Carolina water-shield	<i>Cabomba caroliniana</i>
Water fern	<i>Azolla filiculoides</i>
Hottentot fig	<i>Carpobrotus edulis</i>
Three-cornered garlic	<i>Allium triquetrum</i>
Giant hogweed	<i>Heracleum mantegazzianum</i>
Water hyacinth	<i>Eichhornia crassipes</i>
Giant kelp	<i>Macrocystis</i> spp.
Giant knotweed	<i>Fallopia sachalinensis</i>
Hybrid knotweed	<i>Fallopia japonica</i> × <i>Fallopia sachalinensis</i>
Japanese knotweed	<i>Fallopia japonica</i>
Few-flowered garlic	<i>Allium paradoxum</i>
Water lettuce	<i>Pistia stratiotes</i>



Common name	Scientific name
Parrot's-feather	<i>Myriophyllum aquaticum</i>
Floating pennywort	<i>Hydrocotyle ranunculoides</i>
Duck potato	<i>Sagittaria latifolia</i>
Floating water primrose	<i>Ludwigia peploides</i>
Water primrose	<i>Ludwigia grandiflora</i>
Water primrose	<i>Ludwigia uruguayensis</i>
Pontic rhododendron	<i>Rhododendron ponticum</i>
Rhododendron	<i>Rhododendron ponticum</i> × <i>Rhododendron maximum</i>
Giant rhubarb	<i>Gunnera tinctoria</i>
Japanese rose	<i>Rosa rugosa</i>
Giant salvinia	<i>Salvinia molesta</i>
Green seafingers	<i>Codium fragile</i>
Californian red seaweed	<i>Pilayella littoralis</i>
Hooked asparagus seaweed	<i>Asparagopsis armata</i>
Japanese seaweed	<i>Sargassum muticum</i>
Laver seaweeds (except native species)	<i>Porphyra</i> spp
Australian swamp stonecrop or New Zealand pygmyweed	<i>Crassula helmsii</i>
Wakame	<i>Undaria pinnatifida</i>
Curly waterweed	<i>Lagarosiphon major</i>
Waterweeds	<i>Elodea</i> spp.



APPENDIX B – Habitat Suitability Index Assessments

Pond 1 (Reservoir)			
Description	Results	HSI Score	Photograph
Geographic location	A	1	
Pond surface area	~10560m ²	0	
Pond drying out	Never dries	0.9	
Water quality	Moderate	0.67	
Shading	75%	0.7	
No. of waterfowl	Mallard and coot present	0.67	
Fish	Possible	0.67	
No. of ponds within 1km	4	0.70	
Terrestrial habitat	Good	1	
Macrophyte cover	5%	0.35	
Average	Total:	0.46	Poor

Pond 2			
Description	Results	HSI Score	Photograph
Geographic location	A	1	
Pond surface area	~225m ²	0.4	
Pond drying out	Rarely dries	1	
Water quality	Low	0.33	
Shading	90%	0.4	
No. of waterfowl	Likely present	0.67	
Fish	Possible	0.67	
No. of ponds within 1km	4	0.70	
Terrestrial habitat	Good	1	
Macrophyte cover	0%	0.3	
Average	Total:	0.58	Below average

Pond 3			
Description	Results	HSI Score	Photograph
Geographic location	A	1	
Pond surface area	~2800m ²	0.77	
Pond drying out	Rarely dries	1	
Water quality	Moderate	0.67	
Shading	5%	1	
No. of waterfowl	Likely present	0.67	
Fish	Possible	0.67	
No. of ponds within 1km	4	0.70	
Terrestrial habitat	Good	1	
Macrophyte cover	20%	0.5	
Average	Total:	0.72	Good

Pond 4			
Description	Results	HSI Score	Photograph
Geographic location	A	1	
Pond surface area	~1500m ²	0.88	
Pond drying out	Never dries	0.9	
Water quality	Moderate	0.67	
Shading	80%	0.6	
No. of waterfowl	Likely present	0.67	
Fish	Possible	0.67	
No. of ponds within 1km	4	0.70	
Terrestrial habitat	Good	1	
Macrophyte cover	10%	0.4	
Average	Total:	0.72	Good

Pond 5			
Description	Results	HSI Score	Photograph
Geographic location	A	1	
Pond surface area	~50m ²	0.1	
Pond drying out	Dries annually	0.1	
Water quality	Poor	0.33	
Shading	0%	0.6	
No. of waterfowl	Absent	1	
Fish	Absent	1	
No. of ponds within 1km	4	0.70	
Terrestrial habitat	Good	1	
Macrophyte cover	10%	0.4	
Average	Total:	0.49	Poor



APPENDIX C – Report Conditions



WYG

Report Conditions

Homes & Communities Agency – East Lancashire Paper Mill, Bury

This report is produced solely for the benefit of the Homes & Communities Agency and no liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing otherwise.

This report is prepared for the proposed uses stated in the report and should not be used in a different context without reference to WYG. In time improved practices, fresh information or amended legislation may necessitate a re-assessment. Opinions and information provided in this report are on the basis of WYG using due skill and care in the preparation of the report.

This report refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections. Environmental conditions can vary and no warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times.

This report is limited to those aspects reported on, within the scope and limits agreed with the client under our appointment. It is necessarily restricted and no liability is accepted for any other aspect. It is based on the information sources indicated in the report. Some of the opinions are based on unconfirmed data and information and are presented as the best obtained within the scope for this report.

Reliance has been placed on the documents and information supplied to WYG by others but no independent verification of these has been made and no warranty is given on them. No liability is accepted or warranty given in relation to the performance, reliability, standing etc of any products, services, organisations or companies referred to in this report.

Whilst skill and care have been used, no investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information. Any monitoring or survey work undertaken as part of the commission will have been subject to limitations, including for example timescale, seasonal and weather related conditions.

Although care is taken to select monitoring and survey periods that are typical of the environmental conditions being measured, within the overall reporting programme constraints, measured conditions may not be fully representative of the actual conditions. Any predictive or modelling work, undertaken as part of the commission will be subject to limitations including the representativeness of data used by the model and the assumptions inherent within the approach used. Actual environmental conditions are typically more complex and variable than the investigative, predictive and modelling approaches indicate in practice, and the output of such approaches cannot be relied upon as a comprehensive or accurate indicator of future conditions.

The potential influence of our assessment and report on other aspects of any development or future planning requires evaluation by other involved parties.

The performance of environmental protection measures and of buildings and other structures in relation to acoustics, vibration, noise mitigation and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. WYG accept no liability for issues with performance arising from such factors.

December 2016

WYG Environment Planning Transport Ltd.