Wormslade Farm
Anaerobic Digester Development

Ecological Appraisal

Commissioned for:

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Summary

- Chris Seabridge & Associates Ltd was commissioned to carry out an ecological appraisal of a development site at Wormslade Farm.

- An Extended Phase 1 Habitat Survey was conducted on 15th October 2015 to assess the likely impact of a proposed anaerobic digester facility on habitats and species.

- The survey included an assessment of the roadside hedgerows in accordance with the Wildlife and landscape criteria of the Hedgerow Regulations 1997. In addition the presence of other protected species and species of conservation concern was evaluated.

- Of the main habitats identified, the proposed development would result in the loss of approximately 335m of roadside hedgerow to allow improved highway visibility requirements. The two sections of hedgerow are deemed to be 'not important' under the Hedgerow Regulations 1997 Criteria.

- The loss of the roadside hedgerow includes two mature ash trees. A preliminary bat roost assessment revealed the trees to be of low suitability with only limited roosting potential.

- No setts or signs of badger were found during the survey, although signs were found on the northern and western edges of the development site in the form of latrines and tracks.

- Evidence of roosting barn owl was found in two derelict brick agricultural buildings adjacent to the development site. The buildings are considered unsuitable as nesting habitat for this species.

- It was concluded that the development would be unlikely to impact badgers as there are no setts on or adjacent to the site. It is recommended that a pre-check immediately prior to commencement of works is made to ensure that no new setts are present.

- It is proposed to translocate the northern roadside hedgerow to a new position so as to improve visibility at the site entrance. In addition 400m of new native hedgerow will be established around the development site.

- To minimise disturbance to nesting birds, it is recommended that hedgerow translocation takes place outside the main bird breeding season (March-August inclusive). A pre-check of the site for ground nesting birds should be made immediately prior to commencement of works.
• There is potential to enhance both nesting and foraging habitat for barn owl through provision of a nest box and the creation and management of rough tussocky grassland on the development site.

• As a precaution, it is recommended that the two mature ash trees in the roadside hedgerow are soft-felled. It is recommended roosting habitat for bats is enhanced through the provision of bat boxes on retained mature hedgerow trees.
1 Introduction

The Ecological Assessment forms part of a planning application for an anaerobic digester plant at Wormslade Farm, Clipston Road, Kelmarsh, Northamptonshire LE18 9RX.

Raw Biogas Ltd. instructed Chris Seabridge & Associates Ltd. to undertake an ecological assessment of the proposed development site to determine the likely impact on habitats and species.

The methodology involved conducting an Extended Phase 1 Habitat Survey of the development site and its surroundings to identify habitats and the presence or potential presence of protected species and species of conservation concern.

Plate 1: Aerial photograph of Wormslade Farm showing location of proposed anaerobic digester plant (Application boundary shown in red).
2 Methodology

2.1 Desk Study

Northamptonshire Biological Records Office was consulted for archive data on protected species and species of conservation concern within 2km of the development. A search was also made of any designated sites and local sites of nature conservation within 1km of the development site.

The Northants Bat Group was also consulted for past records of bats within 2km of the development site.

The following websites were accessed to search for statutory designated sites and all protected species within 2km of the development site:

- Multi-Agency Geographic Information for the Countryside. www.magic.gov.uk
- Nature on the map. www.natureonthemap.org.uk
- National Biodiversity Network Gateway. www.data.nbn.org.uk

2.2 Field Survey

2.2.1 Habitats

An ‘extended’ Phase 1 Habitat Survey was carried out on 15th October 2015 following the procedure described in the Handbook for Phase 1 Habitat Survey (JNCC, 2010). Weather conditions during the survey were dry and mild. The survey followed the same general approach as conventional Phase 1 methodology, but with greater emphasis placed on recording evidence of protected species and species of conservation concern (including Local Biodiversity Action Plan species), as well as identification of features and habitats capable of supporting such species.

Results of the Phase 1 Habitat Survey are presented as a colour coded map (see Appendix I - Extended Phase 1 Habitat Map of Wormslade Farm), with ‘Target Note’ (TN) locations marked with numbers. Targets Notes comprising of more detailed information on selected features of ecological interest and the potential value to protected species are contained in Appendix II - Targets Notes Table. Associated photographic records are included in the assessment which cross references with the target notes and are shown in Appendix III – Photographic Record.

2.2.2 Hedgerow Survey

The roadside hedgerows were assessed in accordance with the Wildlife and Landscape criteria of the hedgerow Regulations 1997 (HMSO 1997).

Hedgerows that are assessed as important under the Wildlife and Landscape criteria of the Hedgerow Regulations 1997 require permission from the local planning authority before they can be removed. To be considered important, a hedgerow has to have been in existence for 30 years or more.
and satisfy at least one of the eight criteria listed in part II of Schedule 1 of the Hedgerow Regulations 1997.

The hedgerow length and dimensions were measured, noting any hedgerow trees and gaps in the hedge line. The number of connections with other hedgerows, ponds or woodland was also noted.

Woody species were identified and counted in the central stretch of 30m within each half of the hedgerows (as listed in Schedule 3 of the Hedgerow Regulations 1997). The aggregate number of species was divided by 2 to give the average number of woody species per 30m.

Any associated features such as hedge banks and ditches were also noted. Woodland species present in the hedge bottom were identified (as listed in Schedule 2 of the Hedgerow Regulations 1997).

2.2.3 Badgers

A survey was carried out on October 15th 2015 following guidance in Harris et al (1989). During the field surveys, the proposed development site was subjected to examination for signs of use by badgers, including:

- Latrines
- Setts
- Hairs
- Badger paths, including exit/entry points to the proposed development site
- Footprints
- Snuffle holes
- Scratching posts

2.2.4 Bats

Buildings
A day time inspection of the farm buildings was undertaken on the 15th October 2015. The survey involved an external and internal search of all sections of the buildings. During the external survey, particular attention was paid to cracks and holes in the brickwork, gaps in ridge and roof tiles, gaps between the eaves and outside walls, broken windows and gaps in wooden shutters and doors. The internal survey involved an inspection of roof timbers for free hanging bats and a search for droppings was made around potential access points. A search for other bat signs such as scratch marks and staining from fur oil was also carried out.

Trees
A preliminary roost assessment was conducted of the two mature ash trees lying within the northern boundary hedgerow which are proposed to be felled. The trees are numbered T4 and T6 in the Arboricultural survey. The trees were inspected using close focussing binoculars to identify any potential Roost Features (PRF). A high powered torch was used to aid inspection in shaded parts of the canopy. PRFs include:
- Holes (e.g. woodpecker holes)
- Cracks and splits (in trunks and limbs)
- Cavities (e.g. formed by occluded stems or limbs)
- Peeling bark
- Crevices formed by epicormic growth
- Deadwood
- Ivy cover

A search was also conducted of each tree for any evidence of bats such as scratch marks, oil stains and droppings.

The trees were categorised for their potential suitability as roosting habitat in accordance with Table 4.1 taken from Bat Conservation Trust (BCT) Bat Survey for Professional Ecologists: Good Practice Guidelines (Collins 2016) as shown below.

**Table 1:** Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape.

<table>
<thead>
<tr>
<th>Suitability</th>
<th>Description Roosting habitats</th>
<th>Commuting and foraging habitats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negligible</td>
<td>Negligible habitat features on site likely to be used by roosting bats</td>
<td>Negligible habitat features on site likely to be used by commuting or foraging bats</td>
</tr>
<tr>
<td>Low</td>
<td>A structure or tree with one or more potential roost sites that could be used by individual bats, opportunistically. However these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation)</td>
<td>Habitat that could be used by small numbers of commuting bats such as gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat</td>
</tr>
<tr>
<td></td>
<td>A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential</td>
<td>Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub</td>
</tr>
<tr>
<td>Moderate</td>
<td>A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to</td>
<td>Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back</td>
</tr>
</tbody>
</table>
support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence confirmed). gardens.

<table>
<thead>
<tr>
<th>High</th>
<th>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</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge</td>
</tr>
<tr>
<td>High-quality habitat that is well connected to the wider landscape used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland.</td>
</tr>
<tr>
<td>Site is close to and connected to known roosts.</td>
</tr>
</tbody>
</table>

### 2.2.5 Barn owl

During the bat survey of the buildings, a check was also made for any of the following visible signs of barn owls;

- **Nest sites** - The minimum entrance hole size required for barn owls to gain access into a building is considered to be 7cm x 7cm. Barn owls generally prefer to roost or breed in buildings over 3 metres high with the nest located in the uppermost part on a ledge or in a cavity. A level area is required on which to lay their eggs, normally over 3 metres (and very rarely less than 2 metres) above ground level. Typical nest places within buildings are on the top of wall, wall cavity, nest box, or loft or attic floor.

- **Splashes of white faeces** - barn owl droppings can remain for many months appearing as large white splashes on or around roosting places such as beams.

- **Pellets and food remains** - barn owls generally swallow their prey whole and regurgitate the indigestible parts in the form of a pellet. These often accumulate in places where the bird regularly roosts and can be a reliable source of information on site occupancy.
• **Discarded feathers** – The largest and most noticeable feathers (wing feathers) are normally shed during the months of May to October for females and July to November for males. Barn owl feathers are very distinctive and provide reliable evidence on site occupancy.

2.2.6 Great crested newts

To ascertain the potential presence of great crested newts, a Habitat Suitability Score was calculated for the pond that lies to the south of the development site (TN 4). A Habitat Suitability Index (HSI) is a numerical index, between 0 and 1 (Oldham et al. 2000). A system has been devised for using HSI scores to define pond suitability for great crested newts on a categorical scale as shown in Table 2 below:

<table>
<thead>
<tr>
<th>HSI Score</th>
<th>Suitability</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;0.5</td>
<td>Poor</td>
</tr>
<tr>
<td>0.5 – 0.59</td>
<td>Below average</td>
</tr>
<tr>
<td>0.6 – 0.69</td>
<td>Average</td>
</tr>
<tr>
<td>0.7 – 0.79</td>
<td>Good</td>
</tr>
<tr>
<td>&gt;0.8</td>
<td>Excellent</td>
</tr>
</tbody>
</table>

2.3 Limitations

2.3.1 Desk Study

The biological records from the Northamptonshire Biological Records Office is not a comprehensive list of species data and therefore it is possible that protected species not identified in the search may be present within the vicinity of the development site.

2.3.2 Field Survey

The walkover survey was conducted outside the main bird nesting season (March – August) and therefore the presence of breeding birds, particularly ground nesting species which might be impacted are unlikely to have been detected during the survey.
3 Results

3.1 Desk based study

3.1.1 Statutory sites

There are no statutory sites within 2km of Wormslade Farm

3.1.2 Non statutory sites

There are 9 Local Wildlife Sites within 2km of Wormslade Farm which are shown in Table 3 below.

Table 3: Local wildlife sites within 1km of Wormslade Farm

<table>
<thead>
<tr>
<th>Site I.D.</th>
<th>Grid reference</th>
<th>Site name</th>
<th>Area (ha)</th>
<th>Habitats</th>
</tr>
</thead>
<tbody>
<tr>
<td>D453</td>
<td>SP739813</td>
<td>Brampton Triangular Meadow</td>
<td>0.45</td>
<td>Species-rich wet meadow</td>
</tr>
<tr>
<td>D1083</td>
<td>SP741840</td>
<td>Great Oxendon Car Park</td>
<td></td>
<td>Species-rich grassland, woodland &amp; wetland</td>
</tr>
<tr>
<td>D324</td>
<td>SP740811</td>
<td>Kelmarsh Car park</td>
<td></td>
<td>Species-rich grassland</td>
</tr>
<tr>
<td>D/24 &amp;</td>
<td>SP735795</td>
<td>Kelmarsh Hall Park</td>
<td></td>
<td>Grazed parkland/ woodland</td>
</tr>
<tr>
<td>25.5.94</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D483</td>
<td>SP748800</td>
<td>Kelmarsh Tunnels</td>
<td></td>
<td>Species-rich grassland</td>
</tr>
<tr>
<td>D482</td>
<td>SP736807</td>
<td>Lodge Ground Spinney</td>
<td></td>
<td>Plantation woodland</td>
</tr>
<tr>
<td>D268</td>
<td>SP747798</td>
<td>New Covert (Kelmarsh)</td>
<td></td>
<td>Replanted woodland</td>
</tr>
<tr>
<td>D309</td>
<td>SP739819</td>
<td>Old Clay Pits</td>
<td>1.10</td>
<td>Flooded cay pit, swamp and rush pasture</td>
</tr>
<tr>
<td>D444</td>
<td>SP728799</td>
<td>Shipley Wood</td>
<td></td>
<td>Oak woodland</td>
</tr>
</tbody>
</table>

3.1.3 Protected species and other species of note

The data search from Northamptonshire Biological Records Office and Northants Bat Group showed that several protected species and other species of note have been recorded within 2km of Wormslade Farm.
### Table 4: Protected species and other species of note within 2km of Wormslade Farm

<table>
<thead>
<tr>
<th>Species</th>
<th>Latin name</th>
<th>Status</th>
<th>Distance from site (m)</th>
<th>Most recent record</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bats</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pipistrelle</td>
<td>Pipistrelle spp.</td>
<td>EPS, UK</td>
<td>2000</td>
<td>2007*</td>
</tr>
<tr>
<td>Brown long-eared bat</td>
<td>Plecotus auritus</td>
<td>EPS, UK</td>
<td>1600</td>
<td>2008**</td>
</tr>
<tr>
<td>Daubenton’s bat</td>
<td>Myotis daubentoni</td>
<td>EPS, UK</td>
<td>1600</td>
<td>2015*</td>
</tr>
<tr>
<td>Natterer’s bat</td>
<td>Myotis nattereri</td>
<td>EPS, UK</td>
<td>1600</td>
<td>2015*</td>
</tr>
<tr>
<td>Whiskered bat</td>
<td>Myotis mystacinus</td>
<td>EPS, UK</td>
<td>1600</td>
<td>2015*</td>
</tr>
<tr>
<td><strong>Other mammals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Badger</td>
<td>Meles meles</td>
<td>UK</td>
<td>2200</td>
<td>2010</td>
</tr>
<tr>
<td><strong>Birds</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green woodpecker</td>
<td>Picus viridus</td>
<td>PC</td>
<td>200</td>
<td>2015</td>
</tr>
<tr>
<td><strong>Plants</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bluebell</td>
<td>Hyacinthoides non-</td>
<td>UK</td>
<td>1800</td>
<td>2008</td>
</tr>
</tbody>
</table>

EPS: European Protected species  UK: UK Protection.  PC: Species of principle concern
Highlighted species indicate those recorded during survey of site.
* bat roost,  + Hibernating (Great Oxendon disused railway tunnel)

### 3.2 Field Survey

#### 3.2.1 Habitats

The location and extent of habitats are shown in Appendix I - Extended Phase 1 Habitat Map of Wormslade Farm.

**Ponds**

A pond occupies a steep sided pit within an arable field and lies approximately 200m to the south of the development site (TN4). It has a water area of 240m² and is cropped close to the top of the surrounding banks. The surrounding mature white willow Salix alba trees shade approximately 60% of the water surface. Other bankside vegetation includes stands of nettle Urtica dioica, bramble Rubus fruticosus and great willowherb Epilobium hirsutum. The only aquatic species noted was common pondweed Potamogeton natans.

**Hedgerows**

There are several native hedgerows surrounding the development area. The hedges are generally intact and have been allowed to grow to a height of 3 - 5 meters.

The roadside hedgerow east of the main entrance (TN6) is classed as native intact species-rich with trees. Hedgerow trees include several mature ash
Fraxinus excelsior and occasional pole-staged oak Quercus robur. The hedge extends to a length of 318m and is intact with no gaps. It connects to two other hedgerows (TN1 and TN5). A dry ditch runs along part of the northern side of the hedge. A total of eight woody species were recorded with an average of 5.33 species per 30m stretch is shown in Table 5 below;

**Table 5:** Woody Shrub composition of roadside hedgerow to east of entrance (TN6)

<table>
<thead>
<tr>
<th>30m Section</th>
<th>Woody Species – common name</th>
<th>Latin name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 1 (TN6)</td>
<td>Common hawthorn, Blackthorn, Pedunculate oak, Field maple, Dogwood</td>
<td>Cataegus monogyna, Prunus spinosa, Quercus robur, Acer campestre, Cornus sanguinea</td>
</tr>
<tr>
<td>Section 2 (TN6)</td>
<td>Common hawthorn, Blackthorn, Dog rose, Elder, Ash, Field maple</td>
<td>Cataegus monogyna, Prunus spinosa, Rosa canina, Sambucus nigra, Fraxinus excelsior, Acer campestre</td>
</tr>
<tr>
<td>Section 3 (TN6)</td>
<td>Common hawthorn, Blackthorn, Ash, Field maple, Dogwood</td>
<td>Cataegus monogyna, Prunus spinosa, Fraxinus excelsior, Acer campestre, Cornus sanguinea</td>
</tr>
</tbody>
</table>

Ground flora species comprised frequent common nettle Urtica dioica, barren brome Bromus sterilis, hogweed Heracleum sphondylium and cow parsley Anthriscus sylvestris. One woodland species from Schedule 2 of the Hedgerow Regulations was noted, namely wood avens Geum urbanum.

The roadside hedgerow west of the main entrance (TN7) is classed as native intact species-poor. The hedge extends to a length of 315m and is intact with no gaps. It connects to two other hedgerows. A ditch runs along the northern side of the hedge next to the road. Approximately 110m of hedge next to the main entrance has recently been laid. A total of seven woody species were recorded with an average of 4.33 species per 30m stretch is shown in Table 6 below;
Table 6: Woody Shrub composition of roadside hedgerow to west of entrance (TN7)

<table>
<thead>
<tr>
<th>30m Section</th>
<th>Woody Species – common name</th>
<th>Latin name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 1 (TN7)</td>
<td>Common hawthorn Blackthorn Dogwood Crab apple</td>
<td>Cataegus monogyna Prunus spinosa Cornus sanguinea Malus sylvestris</td>
</tr>
<tr>
<td>Section 2 (TN7)</td>
<td>Common hawthorn Blackthorn Field maple Hazel Pedunculate oak</td>
<td>Cataegus monogyna Prunus spinosa Acer campestre Corylus avellana Quercus robur</td>
</tr>
<tr>
<td>Section 3 (TN7)</td>
<td>Common hawthorn Blackthorn Dogwood Hazel</td>
<td>Cataegus monogyna Prunus spinosa Cornus sanguinea Corylus avellana</td>
</tr>
</tbody>
</table>

Ground flora species comprised frequent common nettle *Urtica dioica*, barren brome *Bromus sterilis*, false oat-grass *Arrhenatherum elatius*, cleavers *Galium aparine*, hogweed *Heracleum sphondylium* and cow parsley *Anthriscus sylvestris*. No woodland species from Schedule 2 of the Hedgerow Regulations was noted.

The remaining hedgerows (TN1, 3 & 5) are classed as species poor with hawthorn and blackthorn dominating together with occasional, elder, field maple dog rose and crab apple.

**Buildings**

A group of modern steel and traditional brick-built buildings lie adjacent to the south western corner of the development site (TN2). There are three small single storied brick buildings surrounding a central yard which were once used for housing cattle. The buildings are currently derelict and ivy has grown up the walls and covering the roof in parts. The walls are generally intact with no gaps or crevices offering potential roost sites for bats. The roofs on two of the buildings comprise corrugated concrete fibre sheets. There is a slate roof on the other building which is in a poor state of repair near the eastern gable.

The modern buildings comprise a fully sealed steel constructed grain store and an associated derelict grain chute.
3.2.2 Protected species and other species of note

**Great crested newts**

There are no historical records of this species within 500m of the site. The nearest pond lies approximately 200m to the south of the development site, within an arable field.

**Table 7: Great Crested Newt Habitat Suitability Index for pond south of Wormslade Farm**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>SI1 - Location</td>
<td>1</td>
</tr>
<tr>
<td>SI2 - Pond area</td>
<td>0.4</td>
</tr>
<tr>
<td>SI3 - Pond drying</td>
<td>0.9</td>
</tr>
<tr>
<td>SI4 - Water quality</td>
<td>0.33</td>
</tr>
<tr>
<td>SI5 - Shade</td>
<td>0.9</td>
</tr>
<tr>
<td>SI6 - Fowl</td>
<td>0.67</td>
</tr>
<tr>
<td>SI7 - Fish</td>
<td>0.67</td>
</tr>
<tr>
<td>SI8 - Ponds</td>
<td>0.8</td>
</tr>
<tr>
<td>SI9 – Terrestrial habitat</td>
<td>0.33</td>
</tr>
<tr>
<td>SI10 - Macrophytes</td>
<td>0.4</td>
</tr>
<tr>
<td><strong>HSI</strong></td>
<td><strong>0.59</strong></td>
</tr>
</tbody>
</table>

The HSI score of 0.59 for the pond indicates that it is of below average suitability for great crested newts. The main limiting factor is the poor water quality and lack of suitable nearby terrestrial habitat due to the pond’s position in an arable field. There are no buffering grassy margins around the pond.

**Badgers**

Although no badger setts were found on the site, signs of this species were found in the form of latrines and tracks on the northern and western edges of the development site. A track through the roadside hedge continues northwards across the adjacent pasture field after passing beneath a sheep netting fence (see Plates 13 -15, Appendix III).

The position of these features is shown in Figure 1 below.
There has been recent occupation of two of the derelict brick farm buildings by barn owl. Evidence found during the survey included several feathers, white splashing on the wooden roof beam and several pellets of various ages. Plates 5 and 6 (Appendix III) shows the location of these features within the buildings.

**Bats**

**Buildings**

No signs of bats were found within the derelict brick farm buildings. Although the interior of all three buildings are accessible through open door ways and window apertures, there is very limited potential for roost sites due to the intact nature of the brick walls, small size of roofing timbers and corrugated roof sheets on two of the buildings which do have any suitable cracks or gaps for roosting bats.

**Trees**

Results of the inspection of the two mature ash trees proposed to be felled along the northern hedgerow boundary are shown in Table 8 below.
**Table 8:** Assessment of bat roost value in mature trees alongside northern boundary of the development site.

<table>
<thead>
<tr>
<th>Tree Ref. no.</th>
<th>Tree Species</th>
<th>Diameter at breast height (cm)</th>
<th>Bat roost potential</th>
<th>Features providing roost potential</th>
<th>Photograph Plate number (Appendix III)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T4</td>
<td>Ash</td>
<td>63</td>
<td>Low</td>
<td>Deadwood formed at base of broken limb at 4m height on southern side of tree. Small cracks developing which may provide future roosting potential</td>
<td>20-23</td>
</tr>
<tr>
<td>T6</td>
<td>Ash</td>
<td>84</td>
<td>Low</td>
<td>Some ivy on stem but not of density or stem size (&lt;50mm diameter) to support roosting bats.</td>
<td>17-19</td>
</tr>
</tbody>
</table>

**Commuting and foraging habitat**

The development site lies within an open agricultural landscape that predominantly comprises medium to large sized arable fields with a sheep grazed pasture field immediately to the north of the site.

Hedgerows surrounding the development site are generally intact and tall providing sheltered conditions for foraging and also possible routes for bats to commute along. The hedgerows link to habitats further afield including the Brampton Valley Way (disused rail track) to the east which in turn leads to several blocks of deciduous woodland approximately 2km to the south east. To the north east of the site a tree-lined watercourse provides potential foraging and commuting habitat for bats.

Overall commuting and foraging habitat suitability for bats is considered to be moderate based on the guidelines in Table 1.
4 Discussion and Conclusions

4.1 Statutory and non-statutory sites

There are no statutory or non-statutory sites within or adjacent to the development site that will be impacted either directly or indirectly by the proposed development.

4.2 Habitats

4.2.1 Hedgerows

Hedgerows are a UK Biodiversity Action Plan (BAP) Priority Habitat and as such should where possible be retained within the development layout. Two sections of hedgerows are proposed to be removed either side of the main entrance (TN 6 & 7) to improve highway visibility requirements.

Approximately 160m of the hedge to the east of the entrance is proposed to be removed (TN6). The hedgerow is considered ‘not important’ under the Hedgerow Regulations 1997 as although it contains an average of 5.33 woody species it only has three associated features; less than 10% gaps, contains standard hedgerow trees and has a ditch along part of its length.

To the west of the entrance site, it is proposed to remove approximately 175m of hedgerow (TN7). The hedgerow is considered ‘not important’ under the Hedgerow Regulations 1997 as it contains an average of 4.33 woody species and only has two associated features; less than 10% gaps, and has a ditch along part of its length. In addition, the hedge does not run alongside a bridleway, footpath, road used as a public path, or a byway open to all traffic.

It is proposed that the hedgerows will be translocated to a position set further back from the road to improve visibility. The specification for hedgerow translocation is described in the recommendations section (See Section 5.1).

4.3 Species

4.3.1 Great crested newts

Since there are no historical records of great crested newts in the locality and the nearest pond has a Habitat Suitability Index score that is below average, the proposed development is considered unlikely to have a negative impact on great crested newt populations.

4.3.2 Badgers

There are signs that badgers are using the northern edge of the site, but no setts were found within or adjacent to the site and therefore it is considered that the development should not have a negative impact on this species. Indeed recommended habitat improvements around the margins of the development may enhance foraging habitat for this species.
4.3.3 Birds

Barn owl
The presence of pellets of various ages indicates that the brick buildings are a regular roost for barn owls. No evidence of nesting barn owls was found within the building and there is little opportunity for nests due to the lack of suitable platforms at an optimum height (>3m). There is potential to enhance both nesting and foraging habitat for barn owls and this is described further in the Recommendations section (5.1).

Other nesting birds
There are no historical records of ground nesting species such as lapwing and skylark breeding in the vicinity. Since the survey was conducted outside the main bird nesting season, it would be advisable to carry out a pre-check for ground nesting birds such as skylark or lapwing if construction works are to commence during March to August.

4.3.4 Bats

The assessment of the two mature ash trees along the northern boundary of the site showed their suitability as roosting habitat to be low. Further survey work is therefore not necessary.

As a precaution all tree works should be undertaken by an arboriculturalist familiar with the protection afforded to roosting bats. The following other precautions should be adopted in the felling of the two ash trees:

- Avoid felling in the summer (breeding season) and winter (hibernation) months. Felling works should be carried out from September to October when young bats are mobile and on the wing, female bats are unlikely to be pregnant and the hibernation season has yet begun. March to April is also suitable but care would need to be taken to avoid nesting birds which are protected by law.

- The trees should be soft-felled (i.e cutting the trees in sections and gently lowering the sections to the ground). If cavities are evident in upper limbs these should be brought down intact (rather than sawn through).

- Once felled the tree should be left on the ground for 24 hours to allow anything inside an opportunity to escape.

In the unlikely event that bats are found roosting during any works all work must stop immediately and a suitably qualified and licensed ecologist consulted on advice on how to proceed. Where necessary Natural England may be consulted for advice. Works will only be allowed to proceed once
agreed by the ecologist. A European Protected Species Licence will be required in the unlikely event that bats are found to be roosting in the trees.

5 Recommendations

5.1 Habitats

5.1.1 Hedgerow translocation

It is recommended that the northern roadside hedgerows (TN6 & TN7) are translocated to a new position that will improve visibility of Clipston Road from the site entrance. As well as achieving faster regrowth and screening properties than simply planting replacement hedges, translocating the existing hedges will help conserve the local genetic integrity of the shrubs and trees. Soil transported with the roots will also contain associated hedgerow flora and fauna.

The translocation procedure is described in Section 13 of the Landscape and Visual Impact Appraisal.

5.1.2 Planting of new native hedgerow

To provide further wildlife habitat and screening of the development site, it is recommended that approximately 400m of new native hedgerow is established along the northern and eastern boundaries.

The hedges should be planted in two staggered rows 0.5m apart and with plants 30 cm apart in the rows (approximately 6 plants per metre). Hedgerow trees (oak) will be planted at random spacing with four trees per 100 metres of hedge.

Shrubs should be protected from rabbit and small mammal browsing with the use of canes and spiral guards. Weed control should be carried out for the first three years after establishment so as to maintain a 1.5m wide weed free strip with the hedge in the centre.

The species mixture for the hedgerows is shown in the Table 7 below.
Table 7: Planting mixture for new hedgerows

<table>
<thead>
<tr>
<th>Species</th>
<th>%</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hawthorn - Crataegus monogyna</td>
<td>50</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Hazel - Corylus avellana</td>
<td>20</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Holly - Ilex aquifolium</td>
<td>5</td>
<td>2 litre pot</td>
</tr>
<tr>
<td>Field maple - Acer campestre</td>
<td>10</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Dogwood - Cornus sanguinea</td>
<td>2.5</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Crab apple – Malus sylvestris</td>
<td>2.5</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Blackthorn - Prunus spinosa</td>
<td>10</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Pedunculate oak - Quercus robur*</td>
<td>250cm feathered whips</td>
<td></td>
</tr>
</tbody>
</table>

*To be established at 4 trees per 100m of hedge

5.1.3 Pollen and nectar mixture
It is recommended that a pollen and nectar mixture is established following the re-instatement of the roadside verge alongside Clipston Road. This will provide a pollen and nectar source for pollinators and other insects, which in turn will provide a summer food source for farmland bird species.

Establishment
The seed mixture shown in Table 8 should be established in either the spring or autumn.

Table 8: Recommended seed mixture

<table>
<thead>
<tr>
<th>Grass Species</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common bent</td>
<td>2%</td>
</tr>
<tr>
<td>Crested Dog’s-tail</td>
<td>15%</td>
</tr>
<tr>
<td>Sheep’s fescue</td>
<td>15%</td>
</tr>
<tr>
<td>Red fescue</td>
<td>20%</td>
</tr>
<tr>
<td>Smaller Cats tail</td>
<td>12%</td>
</tr>
<tr>
<td>Smooth meadow grass</td>
<td>25%</td>
</tr>
<tr>
<td>Black knapweed</td>
<td>1%</td>
</tr>
<tr>
<td>Selfheal</td>
<td>1%</td>
</tr>
<tr>
<td>Yarrow</td>
<td>1%</td>
</tr>
<tr>
<td>Ox-eye daisy</td>
<td>2%</td>
</tr>
<tr>
<td>Lady’s bedstraw</td>
<td>1%</td>
</tr>
<tr>
<td>Bird’s-foot trefoil</td>
<td>1%</td>
</tr>
<tr>
<td>Wild carrot</td>
<td>2%</td>
</tr>
<tr>
<td>Sainfoin</td>
<td>2%</td>
</tr>
</tbody>
</table>

Sow at 20kg/ha (8 kg/acre)
5.2 Species

5.2.1 Barn owl

The derelict farm buildings do not form part of the development site and no works are proposed. There is potential to enhance nesting and foraging habitat within the development site for barn owls.

Nesting habitat

The building is a regular roost site for a barn owl but is considered unsuitable for nesting birds, because there are no suitable platforms at a suitable height (>3m) available within the single storied brick buildings. It is therefore recommended that a nest box is erected on either a nearby mature tree or one of the taller modern agricultural buildings.

A nest box should be erected on the south east side of a tree or building at a height of at least 3 metres.

Constructed of 9mm tantalised softwood plywood the design of the nest box should follow Barn Owl Trust recommendations as shown below in Figure 2.

Figure 2: Tree box design (Ramsden, D. and Twiggs, M. (2009)).

Foraging habitat
Food supply in the form of small rodents is essential for barn owls. They tend to concentrate on hunting over patches of rough tussocky grassland. The development site offers potential for suitable habitat creation and management. A mixture of tussock forming grass species is shown in Table 9 below.

**Table 9: Species mixture to create a tussocky grass sward**

<table>
<thead>
<tr>
<th>Grass Species</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common bent</td>
<td>5%</td>
</tr>
<tr>
<td>Timothy</td>
<td>20%</td>
</tr>
<tr>
<td>Meadow fescue</td>
<td>20%</td>
</tr>
<tr>
<td>Red fescue</td>
<td>25%</td>
</tr>
<tr>
<td>Cock’s-foot</td>
<td>10%</td>
</tr>
<tr>
<td>Smooth meadow grass</td>
<td>20%</td>
</tr>
</tbody>
</table>

Sow at 25kg/ha (10 kg/acre)

Once established the grassland should be managed in the following manner:

- Top the grass to a height of no less than c.15cm every other year to allow a good litter layer to develop.
- Do apply any fertilisers
- Do not apply any herbicides except to control injurious weeds and then only by spot treatment or by weed wiping.
- Do not use the area for regular vehicular access, turning or storage.

### 5.2.2 Other Nesting Birds

The translocation of the two sections of the hedgerow should take place outside the main bird nesting season (March-August) to ensure no nesting birds are disturbed.

It is recommended that a pre-check for any ground nesting birds such as skylark and lapwing is made immediately prior to commencement of works.

### 5.2.3 Badgers

Since badgers will move between sites and create new setts, it is recommended that a pre-check is made immediately prior to the removal of the hedgerows to ensure there are no new setts in the vicinity that may be disturbed.
5.2.4 Bats

To enhance roosting opportunities for bats it is recommended that ten woodcrete bat boxes such as the Schwegler 2F and 1FD are installed on two mature trees in the southern boundary hedgerow.

6 References


Appendix I: Extended Phase 1 Habitat Map of Wormslade Farm
### Appendix II: Target Notes Table

<table>
<thead>
<tr>
<th>Target note</th>
<th>Habitat</th>
<th>Description</th>
<th>Protected species potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Intact native species poor hedge</td>
<td>Untrimmed blackthorn hedge (4m tall) with occasional hawthorn and elder and dog rose. Single crab apple tree at northern end.</td>
<td>Potential nesting habitat for birds.</td>
</tr>
<tr>
<td>3</td>
<td>Intact native species poor hedge with trees</td>
<td>Untrimmed hedge (3-4m tall) hedge with hawthorn, blackthorn, field maple and dog rose. Several pole staged field maple, oak and goat willow hedgerow trees</td>
<td>Potential nesting habitat for birds.</td>
</tr>
<tr>
<td>4</td>
<td>Pond</td>
<td>Steep banked pond lying within an arable field. With a water surface area of approximately 240m², the pond is partially shaded by willow trees. Aquatic vegetation comprises frequent common pondweed. Bank vegetation includes patches of nettle, great willowherb and bramble.</td>
<td>Below average HSI score for great crested newts</td>
</tr>
<tr>
<td>Target note</td>
<td>Habitat</td>
<td>Description</td>
<td>Protected species potential</td>
</tr>
<tr>
<td>-------------</td>
<td>---------</td>
<td>-------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>5</td>
<td>Intact native species poor hedge</td>
<td>Hawthorn dominated field maple and blackthorn with occasional crab apple, dog rose, hawthorn and dogwood</td>
<td>Potential nesting habitat for birds.</td>
</tr>
<tr>
<td>6</td>
<td>Intact native species rich hedge with trees</td>
<td>Mixed tall hedge (4-5m tall) containing hawthorn, blackthorn, elder, dog rose, dogwood, field maple with occasional mature ash trees and pole staged oak. Western end of hedge very wide due to suckering of blackthorn</td>
<td>Potential nesting habitat for birds.</td>
</tr>
<tr>
<td>7</td>
<td>Intact native species poor hedge</td>
<td>Mixed hedge, partly layed. Remainder untrimmed (4m tall). Contains hawthorn, blackthorn, hazel, dogwood, field maple and crab apple. Single pole staged oak tree.</td>
<td>Potential nesting habitat for birds.</td>
</tr>
</tbody>
</table>
### Appendix III: Photographic Record

<table>
<thead>
<tr>
<th>Plate 1: Looking southwards from entrance with hedgerow on right hand side (TN1)</th>
<th>Plate 2: Interior of brick building (TN2). Walls intact with no gaps or fissures to provide potential bat roosting habitat.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate 3: Open fronted former cattle shed. Evidence of occupation by barn owl near gable (left hand side)</td>
<td>Plate 4: Brick and slate roofed cattle shed</td>
</tr>
<tr>
<td>Plate 5: Interior of cattle shed (Plate 3) looking at gable end where pellets and feathers of barn owl were found (denoted by red arrow)</td>
<td>Plate 6: Interior of brick and tile building (Plate 4). Several barn owl pellets found beneath beam in the foreground</td>
</tr>
<tr>
<td>Plate 7:</td>
<td>Grain store and associated modern steel constructed buildings including a derelict grain chute</td>
</tr>
<tr>
<td>----------</td>
<td>------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Plate 8:</td>
<td>Pond lying about 200m to the south of the development site (TN4).</td>
</tr>
<tr>
<td>Plate 9:</td>
<td>Intact species-poor native hedgerow (TN2) – Looking along north side.</td>
</tr>
<tr>
<td>Plate 10:</td>
<td>Intact species-poor native hedgerow (TN2) – Looking along south side with grassy 6m arable field margin.</td>
</tr>
<tr>
<td>Plate 11:</td>
<td>Intact native species-poor hedgerow (TN5)</td>
</tr>
<tr>
<td>Plate 12:</td>
<td>Intact native species-rich hedgerow with trees (TN6)</td>
</tr>
<tr>
<td>Plate 13: Badger latrine on northern edge of development site</td>
<td>Plate 14: Badger trackway through hedgerow (TN6)</td>
</tr>
<tr>
<td>-------------------------------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Plate 15: Badger track crosses Clipston Road and through sheep netting into neighbouring pasture field</td>
<td>Plate 16: Intact native species-poor hedgerow (TN7), section recently laid.</td>
</tr>
<tr>
<td>Plate 17: Looking at north east side of ash tree (T6) from roadside</td>
<td>Plate 18: Looking at north western side of ash tree (T6) from roadside</td>
</tr>
</tbody>
</table>
Plate 19: Looking at south eastern side of ash tree (T6) from field side

Plate 20: Looking at north eastern side of ash tree (T4) from roadside

Plate 21: Looking at north western side of ash tree (T4) from roadside

Plate 22: Looking at south western side of ash tree (T4) from field side
Plate 23: Deadwood at base of limb on southern side of ash tree (T4) at approximately 4m height
Appendix IV: Legislation

Legal information given below is a summary, and intended only for general guidance. The original legal documents should be consulted for definitive information.

Habitat Regulations
The conservation (Natural Habitats & c.) Regulations 1994, as amended by the Conservation (Natural Habitats & c.) (Amendment) Regulation 2007 and 2009 respectively, transpose Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna (Habitats Directive) into English law, making it an offence to deliberately capture, kill or disturb any wild animal protected under the Habitat Regulations. It is also an offence to damage or destroy a breeding site or resting place of such an animal (even if the animal is not present at the time).

Wildlife & Countryside Act

- Intentionally kill, injure or take any wild bird or their eggs or nests (with certain exceptions) and disturb any bird species listed under Schedule 1 to the Act, or its dependent young while it is nesting.
- Intentionally kill, injure or take any wild animal listed under Schedule 5 to the Act; intentionally damage, destroy or obstruct any place used for shelter or protection by any wild animal listed under Schedule 5 to the Act; disturb certain Schedule 5 animal species while they occupy a place used for shelter or protection.
- Pick or uproot any wild plant listed under Schedule 8 of the Act.

Protection of Badgers Act
The Protection of Badgers Act 1992 makes it illegal to kill, injure or take a badger or to intentionally or recklessly interfere with a badger sett. Sett interference includes disturbing badgers whilst they are occupying a sett or obstructing access to it.
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9.1 Definition
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13.0 LANDSCAPE MITIGATION AND ENHANCEMENT
13.1 Recommendations

REFERENCES

APPENDICES

A Proposed Layout (Not to Scale)
B Location Plan
C Aerial Photographs (May 2009)
D Photographs 1 to 12
E Public Rights of Way
F Visual Receptor Plan
G Descriptions of National Character Area 89: Northamptonshire Vales and National Character Area 95: Northamptonshire Uplands
H Extracts from Northamptonshire Current Landscape Character Assessment Strategy and Guidelines
I Extracts from Northamptonshire Historic Landscape Character Assessment Strategy and Guidelines
J Extracts from Northamptonshire Biodiversity Character Assessment Strategy and Guidelines
1.0 INTRODUCTION

1.1 Scope of Report

1.1.1 Green Bee Planning Ltd is proposing to develop an anaerobic digester plant on land at Wormslade Farm, Kelmarsh, Northamptonshire. Allan Moss Associates Ltd has been appointed as the landscape consultant to this project.

1.1.2 This Landscape & Visual Impact Appraisal provides an evidence base to inform the decision making process from a landscape character and visual amenity perspective. In particular the report covers the following matters:

- Description of the proposed development and identification of the range of potential landscape and visual effects;
- Description of the site and the surrounding locality and the identification of potential visual receptor locations relevant to the proposed development;
- Identification of relevant landscape character classifications;
- Assessment of landscape value and landscape susceptibility against appropriate criteria;
- Assessment of the magnitude of the landscape effects of the proposed development against appropriate criteria;
- Assessment of the overall level of landscape effects against appropriate criteria;
- Assessment of visual amenity value and visual receptor susceptibility against appropriate criteria;
- Assessment of the magnitude of the visual effects of the proposed development against appropriate criteria;
- Assessment of the overall level of visual effects against appropriate criteria;
- Making recommendations for appropriate landscape mitigation and enhancement measures.

1.1.3 The report has been prepared by Allan Moss who is a chartered landscape architect and town planner with over 35 years' experience in both private and public sectors. He was involved in preparing the Landscape Institute/IEMA’s Guidelines on best practice for landscape and visual impact assessment (GLVIA), published in April 2002.(1)

1.1.4 The site and the surrounding landscape was visited in October/November 2015 for the purpose of preparing this appraisal.

1.1.5 A list of references is given at the end of this report and the various plans and photographs referred to are included as appendices. All the photographs, apart from aerial views, have been taken with a Canon EOS 5D MkIII DSLR camera (full frame sensor) fitted with a fixed 50mm lens. Photograph locations are indicated on the plan at Appendix F.
1.2 Methodology

1.2.1 The methodology used in this appraisal takes account of the 'Guidelines for Landscape and Visual Impact Assessment: Third Edition 2013' (GLVIA3) (2). The guidelines are not intended as a prescriptive set of rules. They indicate that landscape and visual impact studies can be undertaken at differing levels of detail depending on the scale and nature of the project. The approach adopted should be proportional to the scale of the project that is being assessed and the nature of its likely effects. The guidelines also advise that assessments should focus on the identification of the main effects. There is no requirement to assess all effects.

1.2.2 For non-EIA projects the guidelines specifically state that an assessment of the significance of effects should not be undertaken.

1.2.3 This is a non-EIA project and the level of detail provided in this landscape appraisal is considered to be sufficient to inform the decision making process for a development of this nature from a landscape character and visual amenity perspective.

1.3 Limitations

1.3.1 The effects of the proposed development on the surrounding locality are considered on the basis of views from publicly accessible locations only. No attempt is made to negotiate blocked or hazardous routes that may be unsafe to the assessor. Views from private property are generally considered on the basis of inter-visibility with the application site rather than visits to individual properties.

1.3.2 The assessment is based on fieldwork carried out during the autumn period when the trees were still partially in leaf. It is possible that parts of the site may be more visible in winter when there are no leaves on the trees.

1.3.3 Any heritage assets referred to in the assessment are assessed in accordance with the GLVIA3 guidelines (ie. as effects on people or the landscape resource at those locations). The assessment is not intended to be an assessment on heritage assets or their settings, as different guidance and methodology has to be used for assessing such potential heritage impacts.

1.4 Study Area

1.4.1 The study area is indicated on the plan at Appendix F, which identifies the main locations from where the proposed development might potentially be seen. This has been established by way of desk study and detailed observations in the field.
2.0  NATURE OF PROPOSED DEVELOPMENT

2.1  Summary of Proposed Development

2.1.1 The proposal is for the erection of an anaerobic digester facility with associated infrastructure, landscaping and ancillary structures to produce bio-methane for injection into the nearby national Gas Grid. Details of the proposed layout are indicated on the plan at Appendix A. The main features of this development are summarised below:

- 2 digester tanks each 31.31m diameter by 8.00m high with gas domes extending 4.94m high above. The floor level of these digester tanks will be set approximately 3.0m below the reduced ground level which is equal to approximately 4.6-6.7m below the original field ground levels. Taking account of the difference in ground levels the top of the gas domes will be approximately 2.1m lower than the ridge of the existing farm storage building and about 3.8m lower than the ridge of the open barn.
- 4 silage clamps each 119.00m x 20.00m x 5.50m high with a safety barrier 1.50m high on top of the walls.
- 3 bagged digestate stores set into earth banked lagoons (each 50.00m x 25.00m).
- A black water bagged system set into earth banked lagoons, and a white water attenuation pond.
- A technical building to house the feeders and CHP Unit 37.20m x 14.28m x 5.44m high.
- Various items of ancillary plant and equipment including a gas flare stack (6.25m high), intake tank, biogas upgrading and control systems, a separation container, network entry facility, propane tanks and a weighbridge.
- An office/welfare building (8.00m x 8.00m x 4.07m high to ridge).
- A new farm entrance area with alterations to the entrance and visibility splays.
- A graded 1:10 bund to the south and east with extensive landscape planting.
- Existing roadside hedge translocation at the site entrance to accommodate works to improve the highway visibility splays.

2.1.2 The digester tank walls would be finished in a dark green colour (Juniper Green) with dark grey gas domes. The Technical building would also be clad in Juniper green steel profiled sheets with fibre-cement roofing. The office/welfare building would be timber clad (Dark Oak) with Slate Grey profiled steel roofing. The silage clamps walls would have a natural concrete finish.

2.2  Construction Phase

2.2.1 It is anticipated that the construction period would last for approximately 9 months. During that period construction vehicles and machinery would be active on the site including excavators, dump trucks and haulage lorries.
2.2.2 Landscaping would be completed during the first planting season following occupation of the proposed buildings.

2.3 Range of Potential Landscape & Visual Effects

2.3.1 The range of potential landscape and visual effects that may arise from a development such as this are summarised below:

Direct effects on landscape elements, such as:
- agricultural land loss
- tree/hedgerow loss
- tree/hedgerow gain
- loss or gain of other characteristic landscape features

Effects on landscape character, such as:
- introduction of new buildings, structures, hardstandings, earthworks etc
- introduction of new landscaping

Effects on visual amenity, such as:
- public views from roads, footpaths & bridleways etc
- private views from residential properties
3.0 LANDSCAPE & VISUAL BASELINE

3.1 Description of Site and Surrounding Locality

3.1.1 The application site lies approximately 1.5km south of Great Oxendon, to the west of Harborough Road (A508), as indicated on the location plan at Appendix B.

3.1.2 The site is contained within a single field, currently in arable use, bounded by mature hedgerows, which are generally in good condition. The land falls gently across the site from south to north, between the 115-120m contours, as illustrated on the location plan. There is a group of existing agricultural buildings in the south-western corner of the site and some overhead cables running along the western site boundary. All the surrounding land is in agricultural use.

3.1.3 Existing features on the site and in the wider landscape are illustrated on the aerial photographs at Appendix C, which date from May 2009. Views towards the site from the surrounding locality are illustrated in the photographs at Appendix D.

3.1.4 Access to the site is from the north via an existing field entrance onto the unnamed road to Clipston, which runs along the northern site boundary. Harborough Road (A508) runs along the eastern boundary of the application site field. There is a disused railway line which runs partially on embankment and partially in cutting to the east of the A508. This has been transformed into a linear walk called the Brampton Valley Way. It is also used as part of other promoted routes including the MacMillan Way and the Midshires Way.

3.1.5 There are no public rights directly affecting the application site although there are a number of public rights of way in the local area with potential views of the site. A map is provided at Appendix E which identifies all public rights of way in the vicinity of the application site.

3.1.6 The site occupies the lower part of a minor valley through which flows Sidom’s Ford, a tributary to the River Ise. The valley sides rise immediately to the south of the site and to the north of Sidom’s Ford towards Great Oxendon. The valley supports a mix of arable and livestock farming. There is a mix of small, medium and large scale fields, regular to sub-regular in shape, bounded by hedgerows. There is good tree cover along the watercourse; in the hedgerows along the valley bottom; and along the dis-used railway. The valley sides tend to be more open.

3.2 General Visibility

3.2.1 Views of the application site are well contained to the south by rising ground; to the east by tree cover along the disused railway; and to the west by tree cover in the hedgerows and along the watercourse. There are longer distance views
towards the site from the north as the land rises towards Great Oxendon. However from this direction the site is seen against the backdrop of rising ground, with wooded slopes and a wind farm in the distance.

3.2.2 The general extent of visibility is represented by the visual envelope on the Visual Receptor Plan at Appendix F, which has been established by way of desk study and detailed observations in the field. The visual envelope is well defined to the north and south by local ridgelines and to the east by the tree-lined disused railway. To the west it is less well defined. It potentially extends to the high ground around Clipston although there is considerable intervening vegetation in between.

3.2.3 The main public views are from the north along the road to Clipston, the A508, and the settlement of Great Oxendon.

3.3 Visual Receptors

3.3.1 The main visual receptor locations with potential views of the site, based on detailed observations in the field, are listed in Table 1 below. Each location is numbered and can be cross referenced to the Visual Receptor Plan at Appendix F.

<table>
<thead>
<tr>
<th>Ref</th>
<th>Receptor Location</th>
<th>Distance from Site</th>
<th>Elevation (AOD)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Public locations with views of site:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Road to Clipston</td>
<td>Adjacent</td>
<td>115-116m</td>
<td>Close view from site entrance (Photo 1)</td>
</tr>
<tr>
<td>2</td>
<td>Harborough Road (A508)</td>
<td>110-170m</td>
<td>115-120m</td>
<td>Site largely screened by perimeter vegetation (Photos 2 &amp; 3)</td>
</tr>
<tr>
<td>3</td>
<td>Bridleway CZ5</td>
<td>130-270m</td>
<td>115m</td>
<td>Partial view across north-east corner (Photo 4)</td>
</tr>
<tr>
<td>4</td>
<td>Footpath CZ4</td>
<td>100-400m</td>
<td>115m</td>
<td>Site largely screened by perimeter vegetation (Photo 5)</td>
</tr>
<tr>
<td>5</td>
<td>Brampton Valley Way</td>
<td>280-360m</td>
<td>118m</td>
<td>Occasional minor filtered views (Photo 6)</td>
</tr>
<tr>
<td>6</td>
<td>Clipston Road, Great Oxendon</td>
<td>1100-1400m</td>
<td>124-150m</td>
<td>Elevated long distance views (Photos 7 &amp; 8)</td>
</tr>
<tr>
<td>7</td>
<td>Bridleway DH10</td>
<td>1360-1460m</td>
<td>130-140m</td>
<td>Site largely screened by intervening vegetation (Photo 9)</td>
</tr>
<tr>
<td>8</td>
<td>Footpath DH6/CB14</td>
<td>1200-1500m</td>
<td>115-145m</td>
<td>Elevated long distance views (Photo 10)</td>
</tr>
<tr>
<td>9</td>
<td>Braybrooke Road</td>
<td>1760-1860m</td>
<td>145m</td>
<td>Elevated long distance views (Photo 11)</td>
</tr>
<tr>
<td>10</td>
<td>Footpath CB5</td>
<td>1620-1870m</td>
<td>135-145m</td>
<td>Elevated long distance views (Photo 12)</td>
</tr>
</tbody>
</table>
### Private locations with views of site:

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td><strong>Dwellings on southern edge of Great Oxendon</strong></td>
<td></td>
<td>Potential elevated long distance views</td>
</tr>
<tr>
<td></td>
<td>1450-1550m</td>
<td>130-150m</td>
<td></td>
</tr>
</tbody>
</table>

NB. Elevations for receptor locations compare with an elevation of 115-120m AOD for the site.

3.3.2 The extent to which the proposed development would be seen from each of these receptor locations is considered in Section 11.3.
4.0 LANDSCAPE CHARACTER CLASSIFICATIONS

4.1 Definitions

4.1.1 GLVIA3 provides the following definitions:

"Landscape character: A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse."

"Landscape classification: A process of sorting the landscape into different types using selected criteria but without attaching relative values to different sorts of landscape."

4.2 National Landscape Character Classifications (2014)

4.2.1 Natural England has published a national study describing broad areas of distinct landscape character. These national character areas provide a useful framework within which more detailed local studies can be carried out.

4.2.2 The application site is located at the interface of National Character Area 89: Northamptonshire Vales\(^3\) and National Character Area 95: Northamptonshire Uplands\(^4\). Detailed descriptions of these character areas are provided at Appendix G.

4.3 Northamptonshire Environmental Character Assessment and Green Infrastructure Strategy (2006)

4.3.1 The Northamptonshire Environmental Character Assessment\(^5\) classifies the application site as falling within the ‘West Northamptonshire Uplands’ environmental character area.

4.3.2 The Environmental Character Assessment is comprised from three other more detailed studies: the Current Landscape Character Assessment, the Historic Landscape Character Assessment and the Biodiversity Character Assessment.

4.3.3 Under the Current Landscape Character Assessment the site is classified as falling within the ‘Undulating Hills and Valleys’ (13d Cottesbrooke and Arthingworth) near to the interface with the ‘Clay Plateau’ (5a Naseby Plateau). Relevant extracts for the ‘Undulating Hills and Valleys’ are provided at Appendix H.

4.3.4 Under the Historic Landscape Character Assessment the site is classified as falling within an area of ‘Pre-19\(^{th}\) Century Non-Parliamentary Enclosure’ (1b Brampton Brook-River Ise Watershed). Relevant extracts for areas of ‘Pre-19\(^{th}\) Century Non-Parliamentary Enclosure’ are provided at Appendix I.
4.3.5 Under the Biodiversity Character Assessment the site lies at the interface of the ‘Liassic Slopes’ (2i Ise Valley Liassic Slopes) and the ‘Minor Floodplain’ (101 River Ise). Relevant extracts both of these character areas are provided at Appendix J.
5.0 LANDSCAPE VALUE

5.1 Definition

5.1.1 GLVIA3 provides the following definition:

“Landscape value: The relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a whole variety of reasons.”

5.1.2 Landscape value therefore involves a degree of subjectivity, in that it calls for comparisons between one landscape and another. All landscapes have value to someone. Landscapes of recognised value at a national, county or district level have traditionally been recognised by the making of landscape designations. However, in recent years national planning policy has discouraged the use of local landscape designations and these have now been revoked over substantial parts of the country.

5.2 Landscape Value Criteria

5.2.1 The landscape value criteria in Table 2 below have been developed to provide a recognisable scale against which any landscape area or landscape feature can be assessed.

<table>
<thead>
<tr>
<th>Table 2: Landscape Value Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>National/International Level</strong></td>
</tr>
<tr>
<td><strong>County/Regional Level</strong></td>
</tr>
<tr>
<td><strong>Parish/District Level</strong></td>
</tr>
<tr>
<td><strong>Local Level</strong></td>
</tr>
<tr>
<td><strong>Negligible or Negative</strong></td>
</tr>
</tbody>
</table>
5.3 Landscape Value Assessment

5.3.1 There are no national or local landscape designations affecting the application site or the surrounding landscape.

5.3.2 The Brampton Valley Way to the east of the A508 is a promoted recreational route facilitating good public access to the countryside. However footpath provision to the west of the A508 is rather limited as illustrated on the plan at Appendix E.

5.3.3 Taking account of the criteria in Table 2, the application site and the immediate surrounding countryside is assessed as having Local Level Value. Similarly, existing landscape features on the site, such as the agricultural land, trees and hedgerows would have Local Level Value.
6.0 LANDSCAPE SUSCEPTIBILITY

6.1 Definition

6.1.1 GLVIA3 provides the following definition:
"Susceptibility: The ability of a defined landscape or visual receptor to accommodate the specific proposed development without undue negative consequences."

6.2 Landscape Susceptibility Criteria

6.2.1 The landscape susceptibility criteria in Table 3a below have been developed to provide a recognisable scale against which landscape areas or landscape features can be assessed in terms of their ability to accommodate the development proposed.

<table>
<thead>
<tr>
<th>Table 3a: Landscape Susceptibility Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High</strong></td>
</tr>
<tr>
<td>Landscape areas or landscape features which taking into account the nature of the change anticipated and the potential for mitigation are vulnerable to relatively small changes.</td>
</tr>
<tr>
<td><strong>Medium/High</strong></td>
</tr>
<tr>
<td>Landscape areas or landscape features which taking into account the nature of the change anticipated and the potential for mitigation can accommodate some change, subject to sensible siting and design.</td>
</tr>
<tr>
<td><strong>Medium</strong></td>
</tr>
<tr>
<td>Landscape areas or landscape features which taking into account the nature of the change anticipated and the potential for mitigation can reasonably accommodate moderate change, subject to sensible siting and design.</td>
</tr>
<tr>
<td><strong>Low/Medium</strong></td>
</tr>
<tr>
<td>Landscape areas or landscape features which taking into account the nature of the change anticipated and the potential for mitigation can accommodate larger scale change, subject to sensible siting and design.</td>
</tr>
<tr>
<td><strong>Low</strong></td>
</tr>
<tr>
<td>Landscape areas or landscape features which taking into account the nature of the change anticipated and the potential for mitigation can accommodate substantial change, subject to sensible siting and design.</td>
</tr>
</tbody>
</table>

6.2.2 Table 3b identifies some of the factors that can affect landscape susceptibility, based on Natural England’s Technical Note TIN101. It provides a general guide, but it is not a rigid checklist, as most landscapes will display a mixture of factors indicating both a greater and lesser degree to which development can be accommodated. These factors therefore need to be considered ‘in the round’.
Table 3b: Landscape Character Susceptibility Factors

<table>
<thead>
<tr>
<th>Factor</th>
<th>Indicators of lower susceptibility (Increased chance that development can be accommodated in the landscape)</th>
<th>Indicators of moderate susceptibility</th>
<th>Indicators of higher susceptibility (Reduced chance that development can be accommodated in the landscape)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landform (also related to visual factors such as elevation and viewing angle)</td>
<td>Absence of strong topographical variety. Featureless, convex or flat.</td>
<td>Moderate topographical variety.</td>
<td>Presence of strong topographical variety or distinctive landform features.</td>
</tr>
<tr>
<td>Landscape pattern and complexity</td>
<td>Simple, regular or uniform.</td>
<td>Sub-regular.</td>
<td>Complex, rugged and irregular.</td>
</tr>
<tr>
<td>Settlement and man-made influence</td>
<td>Presence of major contemporary structures, for example, utility, infrastructure or industrial elements.</td>
<td>Some contemporary development.</td>
<td>Absence of modern development, presence of small scale, historic or vernacular settlement.</td>
</tr>
<tr>
<td>Inter-visibility with adjacent landscapes</td>
<td>Little inter-visibility with adjacent sensitive landscapes or viewpoints.</td>
<td>Moderate inter-visibility with sensitive landscapes or viewpoints.</td>
<td>Strong inter-visibility with sensitive landscapes. Forms an important part of a view from sensitive viewpoints.</td>
</tr>
<tr>
<td>Perceptual aspects (sense of remoteness, tranquillity)</td>
<td>Close to visible signs of human activity and development.</td>
<td>Some signs of human activity and development.</td>
<td>Physically or perceptually remote, peaceful or tranquil.</td>
</tr>
<tr>
<td>Existing mitigating features or potential for new mitigation</td>
<td>Presence of existing mitigating features (eg. woodlands and hedgerows).</td>
<td>Some existing mitigating features.</td>
<td>Absence of mitigating features (eg open moorland).</td>
</tr>
<tr>
<td>Proximity of sensitive landscape features</td>
<td>Absence of sensitive features</td>
<td>Presence of more distant sensitive features (eg. designated heritage assets)</td>
<td>Presence of closer sensitive features (eg. designated heritage assets)</td>
</tr>
</tbody>
</table>

Adapted from Natural England Technical Information Note TIN101 (September 2011)
6.3 Landscape Susceptibility Assessment

6.3.1 The landscape character of the application site and surrounding locality has been considered in Sections 3.0 & 4.0 above. The factors set out in Table 3b are considered below on a site specific basis.

Landform

6.3.2 The application site sits relatively low in the landscape adjacent to the existing farm buildings at Wormslade Farm. It occupies the lower slope of a minor valley through which flows Sidom’s Ford, a tributary to the River Ise. The valley sides rise immediately to the south of the site and to the north of Sidom’s Ford towards Great Oxendon.

Landscape Patterns and Complexity

6.3.3 The field patterns in the vicinity of the site are regular to sub-regular in shape with a mix of small, medium and large scale fields.

Settlement and Man-Made Influences

6.3.4 There are no dwellings in close proximity to the site. The closest village is Great Oxendon approximately 1.5km to the north. Other nearby villages include Arthingworth (1.5km to the east) and Clipston (1.9km to the west). The A508 lies immediately to the east.

Inter-visibility with Adjacent Landscapes

6.3.5 Views of the application site are well contained to the south by rising ground; to the east by tree cover along the disused railway; and to the west by tree cover in the hedgerows and along the watercourse. The only open views towards the site are from the north as the land rises towards Great Oxendon. However from this direction the site is seen against the backdrop of rising ground, with wooded slopes and a wind farm in the distance. There are no sensitive landscapes or views likely to be unduly affected by the proposed development.

Perceptual Aspects

6.3.6 Although the site is located in open countryside, away from settlements there are visible signs of human activity and development. Any sense of remoteness or tranquillity is diminished by the busy A508 to the east and the wind farm to the south.
**Existing Mitigating Features or Potential for New Mitigation**

6.3.7 There are a number of existing mitigating landscape features nearby including good tree cover along the nearby watercourse; in the hedgerows along the valley bottom; and along the dis-used railway. The valley sides tend to be more open. The roads adjacent to the site are largely screened by perimeter vegetation and there is the potential to further strengthen this with new planting.

**Proximity of Sensitive Landscape Features**

6.3.8 There are no sensitive landscape features such as designated heritage assets in close proximity to the site.

**Conclusion**

6.3.9 There are some indicators of lower landscape susceptibility in the vicinity of the application site but most of the indicators point towards moderate landscape susceptibility. There is an absence of factors that might suggest higher landscape susceptibility. The site therefore appears to be reasonably capable of accommodating a development of the type proposed without giving rise to unacceptable effects on the character of the wider landscape.

6.3.10 Taking account of the criteria in Tables 3a & 3b the application site is assessed as having Medium Landscape Susceptibility to an AD plant of this scale.

6.3.11 Similarly, existing landscape components on and around the application site (i.e. agricultural land & hedgerows), are also assessed as having Medium Susceptibility to a development of this nature.
7.0 MAGNITUDE OF LANDSCAPE EFFECTS

7.1 Definition

7.1.1 GLVIA3 provides the following definition:

"Magnitude (of effect): A term that combines judgements about the size and scale of the effect, the extent of the area over which it occurs, whether it is reversible or irreversible and whether it is short or long term in duration."

7.2 Magnitude of Landscape Effects Criteria

7.2.1 The criteria in Tables 4, 5, 6 & 7 below have been developed to provide a recognisable scale against which the magnitude of landscape change can be assessed.

<table>
<thead>
<tr>
<th>Table 4: Criteria for Scale of Effect on Landscape Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>(adverse or beneficial)</td>
</tr>
<tr>
<td>High</td>
</tr>
<tr>
<td>Medium/High</td>
</tr>
<tr>
<td>Medium</td>
</tr>
<tr>
<td>Low/Medium</td>
</tr>
<tr>
<td>Low</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 5: Criteria for Scale of Effect on Landscape Character</th>
</tr>
</thead>
<tbody>
<tr>
<td>(adverse or beneficial)</td>
</tr>
<tr>
<td>High</td>
</tr>
<tr>
<td>Medium/High</td>
</tr>
<tr>
<td>Medium</td>
</tr>
</tbody>
</table>
features, whilst taking account the effectiveness of any landscape mitigation measures.

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low/Medium</td>
<td>A minor change in landscape characteristics such as the introduction or removal of a less noticeable development (e.g. domestic scale buildings, low farm buildings) and/or a minor loss of characteristic landscape features, whilst taking account the effectiveness of any landscape mitigation measures.</td>
</tr>
<tr>
<td>Low</td>
<td>A slight change in landscape characteristics and/or a slight loss of characteristic landscape features, whilst taking account the effectiveness of any landscape mitigation measures.</td>
</tr>
</tbody>
</table>

**Table 6: Criteria for Geographical Extent of Landscape Effect**

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Substantial change on a scale influencing landscape character or landscape features over several landscape types or character areas.</td>
</tr>
<tr>
<td>Medium/High</td>
<td>Notable change on a scale influencing landscape character or landscape features over a broad area such as the landscape type or character area within which the proposal lies.</td>
</tr>
<tr>
<td>Medium</td>
<td>Moderate change on a scale influencing landscape character or landscape features within the local area.</td>
</tr>
<tr>
<td>Low/Medium</td>
<td>Minor change on a scale influencing landscape character or landscape features within the immediate setting of the site.</td>
</tr>
<tr>
<td>Low</td>
<td>Slight change on a scale influencing landscape character or landscape features within the development site itself.</td>
</tr>
</tbody>
</table>

**Table 7: Criteria for Duration and Reversibility of Landscape Effects**

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Term</td>
<td>Permanent landscape effects likely to last for over 20 years.</td>
</tr>
<tr>
<td>Medium/Long Term</td>
<td>Permanent landscape effects capable of reasonable mitigation within 15 to 20 years.</td>
</tr>
<tr>
<td>Medium Term</td>
<td>Permanent landscape effects capable of reasonable mitigation within 10 to 15 years.</td>
</tr>
<tr>
<td>Short/Medium Term</td>
<td>Permanent landscape effects capable of reasonable mitigation within 5-10 years.</td>
</tr>
<tr>
<td>Short Term</td>
<td>Permanent landscape effects capable of reasonable mitigation within 5 years.</td>
</tr>
<tr>
<td>Temporary</td>
<td>Developments seeking temporary planning permission after which the land will be reinstated eg some windfarm developments; or developments where use will only last over a certain period, after which the land will be restored eg. mineral workings</td>
</tr>
<tr>
<td>Seasonal</td>
<td>Some developments may be of a seasonal nature eg. polytunnel covers</td>
</tr>
<tr>
<td>Intermittent</td>
<td>Some developments may be of an intermittent nature eg. polytunnels forming part of arable rotations</td>
</tr>
</tbody>
</table>
7.3 Assessment of Magnitude of Landscape Effects

Effects on landscape components

7.3.1 The proposed development would result in approximately 4.0ha of arable farmland being permanently lost (to buildings/structures/plant, hardstandings, and ground modelling/landscaping etc). Arable farmland is the dominant land use in the local countryside. Taking account of the criteria in Tables 4, 6 & 7 this level of agricultural land loss is assessed as having a Medium adverse scale of effect; across a Low geographical extent; over a Long Term period.

7.3.2 The improved access and visibility splays would affect a length of approximately 150m of existing hedgerow on the east side of the entrance and 165m on the west side of the entrance. These hedgerows would either be translocated or replanted behind the visibility splays. This level of hedgerow loss is assessed as having a Low/Medium adverse scale of effect; across a Low geographical extent; over a Short/Medium Term period.

7.3.3 The associated landscape proposals would result in a net increase of approximately 8700m² of new woodland planting. This would equate to a Low/Medium beneficial scale of effect; across a Low geographical extent; over a Long Term period.

Effects on landscape character

7.3.4 There will inevitably be a change in the character of this site from agricultural land to AD plant should the planning application be approved. However the proposed development would occupy relatively low lying ground which is well contained visually by the perimeter vegetation, the rising ground to the south and by strong tree cover in the wider landscape to the east and west. The only open views towards the site are from the north as the land rises towards Great Oxendon. However from this direction the site is seen against the backdrop of rising ground, with wooded slopes and a wind farm in the distance (Photos 7, 10, 11 & 12).

7.3.5 The digester tanks and buildings will be finished in dark receding colours which will help to reduce their impact. The associated landscape mitigation and enhancement measures will further help to soften the effect of the development on the wider landscape.

7.3.6 Taking account of the criteria in Tables 5, 6 & 7 the proposed development is assessed as having a Medium adverse scale of effect on the character of the local landscape during construction and on completion. The effect would be of Medium geographical extent over a Long Term period.
8.0 OVERALL LEVEL OF LANDSCAPE EFFECTS

8.1 Approach to Combining Judgements

8.1.1 With respect to determining the overall level of effects the GLVIA3 guidelines advise that there are two main alternative approaches to combining the individual judgements made under the various contributing criteria:

"1. They can be sequentially combined: susceptibility to change and value can be combined into an assessment of sensitivity for each receptor, and size/scale, geographical extent and duration and reversibility can be combined into an assessment of magnitude for each effect. Magnitude and sensitivity can then be combined to assess overall significance.
2. All the judgements against the individual criteria can be arranged in a table to provide an overall profile of each identified effect. An overview can then be taken of the distribution of the judgements for each criterion to make an informed professional assessment of the overall significance of each effect."

8.1.2 This assessment follows the second approach.

8.2 Overall Level of Effects Criteria

8.2.1 The criteria in Table 8 below provide a recognisable scale against which the level of landscape effects can be assessed. The criteria are based on Environmental Impact Assessment: A Guide to Good Practice and Procedures Consultation Paper (DCLG 2006)(6).

<table>
<thead>
<tr>
<th>Level of effect</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe</td>
<td>Landscape effects that represent key factors in the decision-making process. They are generally, but not exclusively associated with sites and features of national importance and resources/features which are unique and which, if lost, cannot be replaced or relocated.</td>
</tr>
<tr>
<td>Major</td>
<td>Landscape effects that are likely to be important considerations at a regional/district scale and, if adverse, are potential concerns to the project, depending upon the relative importance attached to the issue during the decision making process.</td>
</tr>
<tr>
<td>Moderate</td>
<td>Landscape effects that while important at a local scale, are not likely to be key decision making issues. Nevertheless, the cumulative effect of such issues may lead to an increase in the overall effects on a particular area or on a particular resource.</td>
</tr>
<tr>
<td>Minor</td>
<td>Landscape effects that may be raised as local issues but are unlikely to be of importance in the decision making process. Nevertheless, they are of relevance in the detailed design of the project.</td>
</tr>
<tr>
<td>Negligible</td>
<td>Landscape effects that are so slight that there is no need to take them into consideration in the design or mitigation of the development.</td>
</tr>
</tbody>
</table>

8.3 Assessment of Overall Level of Landscape Effects

8.3.1 All the judgements relating to landscape value, landscape susceptibility, scale of effect, geographical extent, duration and reversibility have been arranged in Table 9 below to provide an overall profile of each identified effect. An informed professional judgement has then been made of the overall level of each effect, as explained in the following paragraphs.

8.3.2 The main direct effect of the proposed development on existing landscape features would be the loss of approximately 4.0ha of arable farmland. Although the scale of effect has been assessed as Medium adverse and Long Term these factors have to be weighed against the landscape value and susceptibility of arable farmland to change, which have been assessed as Local and Medium respectively. Whilst such an effect may be raised as a local issue, arable farmland is the dominant land use in this locality and loss on this scale is unlikely to be a key decision making issue. The overall level of this effect is therefore considered to be Minor adverse.

8.3.3 In addition the existing hedgerows affected by the improved access and visibility splays, would give rise to a Low/Medium adverse scale of effect of Short/Medium Term duration until the replanting takes effect. These landscape features have been assessed as having Local Level value and Medium susceptibility to change. Again the overall level of effect is considered to be Minor adverse.

8.3.4 The proposed landscaping would result in a Low/Medium beneficial effect of Long Term benefit to the local landscape. The overall level of effect is therefore considered to be Minor beneficial.

8.3.5 The most important landscape consideration is the effect that the proposed development will have on the character of the local landscape. This landscape has been assessed as having Local Level value and Medium susceptibility to this type of development. The scale of landscape effect has been assessed as Medium adverse and Long term over a Medium geographical area. Whilst such considerations are important at a local level they are unlikely to be of overriding importance to the decision making process. The overall change to landscape character is therefore assessed as being a Moderate adverse level of effect.
<table>
<thead>
<tr>
<th>Effect</th>
<th>Sensitivity of Landscape Receptor</th>
<th>Magnitude of Landscape Effect</th>
<th>Level of Landscape Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Landscape Value</td>
<td>Landscape Susceptibility</td>
<td>Scale of Landscape Effect</td>
</tr>
<tr>
<td>Loss of agricultural land</td>
<td>Local</td>
<td>Medium</td>
<td>Medium adverse</td>
</tr>
<tr>
<td>Loss of hedgerows</td>
<td>Local</td>
<td>Medium</td>
<td>Low/ Medium adverse</td>
</tr>
<tr>
<td>Gain of new tree &amp; hedgerow planting</td>
<td>Local</td>
<td>N/A</td>
<td>Low/ Medium beneficial</td>
</tr>
<tr>
<td>Changes to landscape character</td>
<td>Local</td>
<td>Medium</td>
<td>Medium adverse</td>
</tr>
</tbody>
</table>
9.0 VISUAL AMENITY VALUE

9.1 Definition

9.1.1 GLVIA3 provides the following definition:

"Visual amenity: The overall pleasantness of the views people enjoy of their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating, visiting or travelling through an area."

9.1.2 The guidelines also offer the following guidance about judging the value attached to views:

"Judgements should also be made about the value attached to the views experienced. This should take account of:

- recognition of the value attached to particular views, for example in relation to heritage assets, or through planning designations;
- indicators of the value attached to views by visitors, for example through appearances in guidebooks or on tourist maps, provision of facilities for their enjoyment (such as parking places, sign boards and interpretive material) and references to them in literature or art (for example 'Ruskin's View' over Lunedale, or the view from the Cob in Porthmadog over Traeth Mawr to Snowdonia which features in well-known Welsh paintings, and the 'Queen's View' in Scotland)."

9.2 Visual Amenity Value Criteria

9.2.1 The visual amenity value criteria in Table 10 below have been developed to provide a recognisable scale against which the value of views can be assessed.

<table>
<thead>
<tr>
<th>Table 10: Visual Amenity Value Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>National/International Level</td>
</tr>
<tr>
<td>County/Regional Level</td>
</tr>
<tr>
<td>Parish/District Level</td>
</tr>
<tr>
<td>Local Level</td>
</tr>
<tr>
<td>Negligible or Negative</td>
</tr>
</tbody>
</table>
9.3 Visual Amenity Value Assessment

9.3.1 The views identified on the Visual Receptor Plan at Appendix F are generally of value at a Local Level to local residents and users of the local roads and footpaths.

9.3.2 The only views identified in this study as being of more than local level value are those from Footpath DH6 and Bridleway DH10 in the vicinity of the air shaft for the disused railway tunnel. This elevated location on the edge of Great Oxendon appears to be a well-used publicly accessible viewpoint of Parish/District Level Value.
10.0 VISUAL RECEPTOR SUSCEPTIBILITY

10.1 Definitions

10.1.1 GLVIA3 provides the following definitions:

"Visual receptors: Individuals and/or defined groups of people who have the potential to be affected by a proposal."

"Susceptibility: The ability of a defined landscape or visual receptor to accommodate the specific proposed development without undue negative consequences."

10.1.2 The guidelines also offer the following guidance about judging the susceptibility of visual receptors to change:

"The susceptibility of different visual receptors to changes in views and visual amenity is mainly a function of:

• the occupation or activity of people experiencing the view at particular locations;
and

• the extent to which their attention or interest may therefore be focused on the views and the visual amenity they experience at particular locations."

10.1.3 Whilst the guidelines indicate that visual receptors most susceptible to change are likely to include residents at home it should be noted that there is no provision in English law to protect such private views. There have been a number of planning appeal decisions in recent years where Planning Inspectors considering the outlook from residential properties have adopted a stringent approach, whereby a visual impact would have to be overwhelming to the degree that a property would come to be widely regarded as an unattractive and unsatisfactory place in which to live, before giving rise to a reason for refusal. This has become known as the 'Lavender Test'.

10.1.4 As with landscape susceptibility, the susceptibility of visual receptors is also likely to vary according to the type of development envisaged. For example, residential properties on existing farmsteads are likely to be less susceptible to agricultural development than residential properties not associated with farmsteads.

10.2 Visual Receptor Susceptibility Criteria

10.2.1 The criteria in Table 11 below have been developed to provide a recognisable scale against which potential visual receptors can be assessed in terms of their susceptibility to the development proposed.
Table 11: Visual Receptor Susceptibility Criteria

<table>
<thead>
<tr>
<th>Susceptibility</th>
<th>People engaged in activities where landscape views are likely to be the prime focus of their attention eg:</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Visitors to scenic viewpoints</td>
</tr>
<tr>
<td></td>
<td>Users of strategically promoted footpath routes</td>
</tr>
<tr>
<td></td>
<td>Visitors to heritage attractions or to other attractions where views of the surroundings are an important contributor to the experience.</td>
</tr>
<tr>
<td>Medium/High</td>
<td>People engaged in activities where landscape views might be important but not necessarily the prime focus of their attention eg:</td>
</tr>
<tr>
<td></td>
<td>Users of other public rights of way</td>
</tr>
<tr>
<td></td>
<td>Occupiers of residential properties in open countryside</td>
</tr>
<tr>
<td></td>
<td>Residents at home occupying principle daytime rooms.</td>
</tr>
<tr>
<td>Medium</td>
<td>People engaged in activities where landscape views provide a backdrop to their main activity eg:</td>
</tr>
<tr>
<td></td>
<td>Motorists on minor rural roads</td>
</tr>
<tr>
<td></td>
<td>Users of other open space/outdoor recreational facilities</td>
</tr>
<tr>
<td></td>
<td>Occupiers of residential properties on existing farmsteads</td>
</tr>
<tr>
<td></td>
<td>Occupiers of residential properties in urban fringe locations</td>
</tr>
<tr>
<td></td>
<td>Residents at home occupying non-principle daytime rooms.</td>
</tr>
<tr>
<td>Low/Medium</td>
<td>People engaged in activities who might only get a fleeting glance or occasional view of a particular landscape eg:</td>
</tr>
<tr>
<td></td>
<td>Users of public rights of way in urban areas</td>
</tr>
<tr>
<td></td>
<td>Low usage or inaccessible public rights of way</td>
</tr>
<tr>
<td></td>
<td>Motorists on rural A &amp; B roads and motorways</td>
</tr>
<tr>
<td></td>
<td>Users of railways</td>
</tr>
<tr>
<td></td>
<td>Occupiers of residential properties in urban areas</td>
</tr>
<tr>
<td>Low</td>
<td>People engaged in activities whose attention is unlikely to be focused on the landscape eg:</td>
</tr>
<tr>
<td></td>
<td>Motorists on urban roads</td>
</tr>
<tr>
<td></td>
<td>People at their place of work</td>
</tr>
</tbody>
</table>

10.3 Visual Receptor Susceptibility Assessment

10.3.1 Potentially susceptible visual receptor locations are listed in Table 12 below. Each location is numbered and can be cross referenced to the Visual Receptor Plan at Appendix F. The susceptibility of each receptor is also assessed in Table 12, using the criteria from Table 11 above.

Table 12: Assessment of Visual Receptor Susceptibility

<table>
<thead>
<tr>
<th>Ref</th>
<th>Receptor Location</th>
<th>User Type</th>
<th>Susceptibility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Public views:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Road to Clipston</td>
<td>Walkers</td>
<td>Medium/High</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Motorists</td>
<td>Medium</td>
</tr>
<tr>
<td>2</td>
<td>Harborough Road (A508)</td>
<td>Motorists</td>
<td>Low/Medium</td>
</tr>
<tr>
<td>3</td>
<td>Bridleway CZ5</td>
<td>Walkers/horse riders</td>
<td>Medium/High</td>
</tr>
<tr>
<td>4</td>
<td>Footpath CZ4</td>
<td>Walkers</td>
<td>Low/Medium</td>
</tr>
<tr>
<td>5</td>
<td>Brampton Valley Way</td>
<td>Walkers/horse riders/cyclists</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Location</td>
<td>Users</td>
<td>Susceptibility</td>
</tr>
<tr>
<td>---</td>
<td>--------------------------------------</td>
<td>-------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>6</td>
<td>Clipston Road, Great Oxendon</td>
<td>Walkers Motorists</td>
<td>Medium/High Medium</td>
</tr>
<tr>
<td>7</td>
<td>Bridleway DH10</td>
<td>Walkers/horse riders</td>
<td>High</td>
</tr>
<tr>
<td>8</td>
<td>Footpath DH6/CB14</td>
<td>Walkers</td>
<td>High</td>
</tr>
<tr>
<td>9</td>
<td>Braybrooke Road</td>
<td>Walkers Motorists</td>
<td>Medium/High Medium</td>
</tr>
<tr>
<td>10</td>
<td>Footpath CB5</td>
<td>Walkers</td>
<td>Medium/High Medium</td>
</tr>
<tr>
<td></td>
<td><strong>Private views:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Dwellings on southern edge of Great Oxendon</td>
<td>Residents/visitors</td>
<td>Medium/High</td>
</tr>
</tbody>
</table>

10.3.2 Users of the Brampton Valley Way have been treated as having High susceptibility on the basis that these are people using a promoted trail where landscape enjoyment is likely to be the prime focus of their attention. Visitors to the viewpoint near the air shaft for the disused railway tunnel (Footpath DH6/Bridleway DH10) have also been treated as having High susceptibility as the view from this location is likely to be the prime purpose of their visit.

10.3.3 Walkers using the other local footpaths and roads have generally been treated as having Medium/High susceptibility on the basis that these are people engaged in activities where landscape views might be important but not necessarily the prime focus of their attention. Footpath CZ4 is the exception as this route is not waymarked and it is inaccessible from the A508 direction. It has therefore been treated as having Low/Medium susceptibility.

10.3.4 Motorists using minor rural roads have been treated as having Medium susceptibility on the basis that these are people going about their everyday business. Motorists using the A508 have been treated as having Low/Medium susceptibility on the basis that this is a busy A road with people travelling at faster speeds.

10.3.5 Occupants of residential properties at Great Oxendon have been treated as having Medium/High susceptibility as these are properties on the edge of the village where landscape views might be important, but not always the prime focus of their attention.

10.3.6 The extent of potential visibility and degree of visual impact for each receptor location is discussed in Section 11.3 below.
11.0 MAGNITUDE OF VISUAL EFFECTS

11.1 Definition

11.1.1 GLVIA3 provides the following definition:

"Magnitude (of effect): A term that combines judgements about the size and scale of the effect, the extent of the area over which it occurs, whether it is reversible or irreversible and whether it is short or long term in duration."

11.2 Magnitude of Visual Effects Criteria

11.2.1 The criteria in Tables 13, 14, & 15 below have been developed to provide a recognisable scale against which the magnitude of visual change can be assessed.

<table>
<thead>
<tr>
<th>Table 13: Criteria for Scale of Visual Effects (adverse or beneficial)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
</tr>
<tr>
<td>Medium/High</td>
</tr>
<tr>
<td>Medium</td>
</tr>
<tr>
<td>Low/Medium</td>
</tr>
<tr>
<td>Low</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Table 14: Criteria for Geographical Extent of Visual Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
</tr>
<tr>
<td>Medium/High</td>
</tr>
<tr>
<td>Medium</td>
</tr>
<tr>
<td>Low/Medium</td>
</tr>
<tr>
<td>Low</td>
</tr>
</tbody>
</table>
Table 15: Criteria for Duration and Reversibility of Visual Effects

<table>
<thead>
<tr>
<th>Duration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Term</td>
<td>Permanent visual effects unlikely to be capable of reasonable mitigation within 20 years.</td>
</tr>
<tr>
<td>Medium/Long Term</td>
<td>Permanent visual effects capable of reasonable mitigation within 15 to 20 years.</td>
</tr>
<tr>
<td>Medium Term</td>
<td>Permanent visual effects capable of reasonable mitigation within 10 to 15 years.</td>
</tr>
<tr>
<td>Short/Medium Term</td>
<td>Permanent visual effects capable of reasonable mitigation within 5 to 10 years.</td>
</tr>
<tr>
<td>Short Term</td>
<td>Permanent visual effects capable of reasonable mitigation within 5 years.</td>
</tr>
<tr>
<td>Temporary</td>
<td>Temporary visual effects after which the view will be reinstated.</td>
</tr>
<tr>
<td>Seasonal</td>
<td>Seasonal visual effects.</td>
</tr>
<tr>
<td>Intermittent</td>
<td>Intermittent visual effects.</td>
</tr>
</tbody>
</table>

11.3 Assessment of Magnitude of Visual Effects

Road to Clipston

11.3.1 The road to Clipston runs along the northern site boundary. The site is largely screened from view by the northern boundary hedgerow although there is a view into the site from the existing field entrance as illustrated in Photograph 1 at Appendix D.

11.3.2 A length of approximately 150m of existing hedgerow would need to be removed in order to accommodate the improved access and visibility splay on the east side of the site entrance. This would open up the proposed development to view from the road to Clipston in the short term. The hedgerow would either be translocated or replanted behind the visibility splay and once established any views would again be restricted to the site entrance.

11.3.3 Taking account of the criteria in Tables 13, 14, & 15 the proposed development is assessed as having a High adverse scale of effect of Low/Medium geographical extent along the road to Clipston during construction and on completion. The duration of this effect would be Short/Medium Term until the perimeter hedgerow replanting and on-site landscaping takes effect.

Harborough Road (A508)

11.3.4 Harborough Road (A508) runs along the eastern site boundary. The site is largely screened from view by the field boundary hedgerows as illustrated in Photographs 2 & 3. However there are occasional filtered views through this boundary vegetation, more so in winter.

11.3.5 In the short term proposed development would be partially visible through any gaps in the perimeter vegetation and particularly through the section of hedgerow that needs to be relocated to accommodate the entrance visibility.
splays. However once the proposed landscaping takes effect the development would be largely screened from view.

11.3.6 The proposed development is therefore assessed as having a Medium adverse scale of effect along Harborough Road during construction and on completion. The geographical extent would be Low/Medium and the duration of this effect would be Medium Term until the proposed landscaping takes effect.

Bridleway CZ5

11.3.7 Bridleway CZ5 runs between the A508 and Brampton Valley Way. It continues eastwards towards Arthingworth as Bridleway CB2, although the site is screened from view from that section of the route by intervening vegetation along the disused railway line. There are views of the existing farm buildings on site from Bridleway CZ5 across the north-eastern corner of the application site field, where the perimeter hedgerow weaker at that point, as illustrated in Photograph 4.

11.3.8 Parts of the proposed development may be visible through this weak section of hedgerow in the short term although most of the development would be screened by the proposed landscaping in due course.

11.3.9 The proposed development is therefore assessed as having a Low adverse scale of effect of Low/Medium geographical extent along Bridleway CZ5 during construction and on completion. The duration of this effect would be Medium Term until the proposed landscaping takes effect.

Footpath CZ4

11.3.10 Footpath CZ5 runs between the A508 and the road to Clipston. However this route is not waymarked and it is inaccessible from the A508 direction. The site is largely screened by the northern boundary hedgerow from this direction, although there are views of the existing farm buildings through the site entrance as illustrated in Photograph 5.

11.3.11 In the short term the proposed development would be visible through the section of hedgerow that needs to be relocated to accommodate the entrance visibility splays. However once the proposed landscaping takes effect the development would be largely screened from view.

11.3.12 The proposed development is assessed as having a Medium/High adverse scale of effect along Footpath CZ4 during construction and on completion. The geographical extent would be Medium and the duration of the effect would be Medium Term.
Brampton Valley Way

11.3.13 Brampton Valley Way runs in a north/south direction, to the east of the A508 along a disused railway line. The section nearest to the site is on embankment, although it is lined with trees and scrub. Views of the site are therefore restricted to the occasional minor filtered view through this vegetation as illustrated in Photograph 6.

11.3.14 Any views of the proposed development in the short term would be similarly limited to the occasional minor filtered glimpse.

11.3.15 The proposed development is assessed as having a Low adverse scale of effect along Brampton Valley Way during construction and on completion. The geographical extent would be Low and the duration of the effect would be Medium Term.

Clipston Road, Great Oxendon

11.3.16 Clipston Road runs from Great Oxendon towards Clipston in a south-westerly direction, approximately 1100-1400m away from the application site. There are elevated long distance views from the higher ground along this road near to Great Oxendon as illustrated in Photograph 7. As the road drops in height towards Spinney Farm the site becomes gradually more difficult to identify (Photograph 8). In all cases though, the site is seen against the backdrop of rising ground and wooded slopes.

11.3.17 Similarly, the proposed development would be more noticeable from the higher ground than the lower ground, but always seen against the backdrop of rising ground and wooded slopes.

11.3.18 The proposed development is assessed as having a Low/Medium adverse scale of effect along Clipston Road during construction and on completion. The geographical extent would be Medium and the duration of the effect would be Medium/Long Term as it would take longer for the proposed landscaping to become effective from more elevated viewpoints.

Bridleway DH10

11.3.19 Bridleway DH10 links the Brampton Valley Way to Braybrooke Road allowing users to avoid the disused railway tunnel below. There are elevated views of the surrounding countryside from this route, but the application site is largely screened from view by intervening vegetation as illustrated in Photograph 9.

11.3.20 The proposed development would be partially visible from this bridleway but largely obscured by the intervening vegetation.

11.3.21 The proposed development is assessed as having a Low adverse scale of effect along Bridleway DH10 during construction and on completion. The
11.3.22 Footpath DH6 runs from Braybrooke Road, Great Oxendon in a south-easterly direction towards Arthingworth. It becomes Footpath CB14 where it crosses the Parish boundary. There are elevated views of the site at a distance of 1200-1500m from this footpath as illustrated in Photograph 10. However the site only takes up a small proportion of the overall view from this footpath and it is seen against the backdrop of rising ground, wooded slopes and the recently erected windfarm adjacent to the A14 at Kelmarsh.

11.3.23 The proposed development would be visible in the distance from this footpath against the backdrop of rising ground, wooded slopes and the windfarm.

11.3.24 The development is assessed as having a Low/Medium adverse scale of effect along Footpath DH6/CB14 during construction and on completion. The geographical extent would be Medium and the duration of the effect would be Medium/Long Term as it would take longer for the proposed landscaping to become effective from more elevated viewpoints.

11.3.25 Braybrooke Road runs out of Great Oxendon in an easterly direction. The site is largely screened from view by roadside hedgerows. However there is one section of road with no hedges giving rise to elevated views towards the site at a distance of 1760-1860m as illustrated in Photograph 11. Again the site is seen against the backdrop of rising ground, wooded slopes and the windfarm.

11.3.26 The proposed development is assessed as having a Low adverse scale of effect along Braybrooke Road during construction and on completion. The geographical extent would be Low/Medium and the duration of the effect would be Medium/Long Term.

11.3.27 Footpath CB5 runs from Braybrooke Road in a southerly direction towards Arthingworth. There are elevated views of the site at a distance of 1620-1870m from this footpath as illustrated in Photograph 12. Once again the site is seen against the backdrop of rising ground, wooded slopes and the windfarm.

11.3.28 The proposed development is assessed as having a Low adverse scale of effect along Footpath CB5 during construction and on completion. The geographical extent would be Low/Medium and the duration of the effect would be Medium/Long Term.
Dwellings on southern edge of Great Oxendon

11.3.29 Based on observations from the site there are approximately 15 properties on the southern edge of Great Oxendon with potential views of the site. These would be elevated distant views similar to the views illustrated in Photographs 7 & 10 taken from either end of the village.

11.3.30 The proposed development is assessed as having a Low/Medium adverse scale of effect at these properties during construction and on completion. The geographical extent across the village would be Low/Medium and the duration of the effect would be Medium/Long Term.
12.0 OVERALL LEVEL OF VISUAL EFFECTS

12.1 Approach to Combining Judgements

12.1.1 With respect to determining the overall level of effects the GLVIA3 guidelines advise that there are two main alternative approaches to combining the individual judgements made under the various contributing criteria:

"1. They can be sequentially combined: susceptibility to change and value can be combined into an assessment of sensitivity for each receptor, and size/scale, geographical extent and duration and reversibility can be combined into an assessment of magnitude for each effect. Magnitude and sensitivity can then be combined to assess overall significance.

2. All the judgements against the individual criteria can be arranged in a table to provide an overall profile of each identified effect. An overview can then be taken of the distribution of the judgements for each criterion to make an informed professional assessment of the overall significance of each effect."

12.1.2 This assessment follows the second approach.

12.2 Overall Level of Effects Criteria

12.2.1 The criteria in Table 16 below provide a recognisable scale against which the level of visual effects can be assessed. The criteria are based on Environmental Impact Assessment: A Guide to Good Practice and Procedures Consultation Paper (DCLG 2006)\(^{(6)}\).

<table>
<thead>
<tr>
<th>Level of effect</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe</td>
<td>Visual effects that represent key factors in the decision-making process. They are generally, but not exclusively associated with sites and features of national importance and resources/features which are unique and which, if lost, cannot be replaced or relocated.</td>
</tr>
<tr>
<td>Major</td>
<td>Visual effects that are likely to be important considerations at a regional/district scale and, if adverse, are potential concerns to the project, depending upon the relative importance attached to the issue during the decision making process.</td>
</tr>
<tr>
<td>Moderate</td>
<td>Visual effects that while important at a local scale, are not likely to be key decision making issues. Nevertheless, the cumulative effect of such issues may lead to an increase in the overall effects on a particular area or on a particular resource.</td>
</tr>
<tr>
<td>Minor</td>
<td>Visual effects that may be raised as local issues but are unlikely to be of importance in the decision making process. Nevertheless, they are of relevance in the detailed design of the project.</td>
</tr>
<tr>
<td>Negligible</td>
<td>Visual effects that are so slight that there is no need to take them into consideration in the design or mitigation of the development.</td>
</tr>
</tbody>
</table>

12.3 Assessment of Overall Level of Visual Effects

12.3.1 All the judgements relating to visual amenity value, visual receptor susceptibility, scale of effect, geographical extent, duration and reversibility have been arranged in Table 17 below to provide an overall profile of each identified effect. An informed professional judgement has then been made of the overall level of each effect, as explained in the following paragraphs.

12.3.2 The main publicly accessible view of the proposed development would be from the road to Clipston which runs along the northern site boundary. The scale of visual effect here would be High adverse over a Low/Medium geographical extent during the construction phase and in the Short/Medium term of the operational phase until the boundary hedgerow is re-established and the on-site landscaping starts to take effect. Walkers using this road have been assessed as having Medium/High susceptibility and motorists would have Medium susceptibility, although the visual amenity value along this road is at a Local Level only.

12.3.3 Such effects, whilst important at a local scale are rarely considered to be key decision making issues in their own right and therefore the overall level of visual effect is assessed as Moderate adverse.

12.3.4 Although there would be a Medium/High adverse scale of effect of Medium geographical extent along Footpath CZ4 access difficulties suggest that this is a low usage path. Susceptibility is therefore considered to be Low/Medium and the overall level of visual effect is considered to be Minor adverse. Similarly, the overall visual effects on users of the A508 are considered to be Minor adverse due to the Low/Medium susceptibility of motorists driving at faster speeds on A roads.

12.3.5 Whilst walkers using Bridleway CZ5, Footpath DH6/CB14, and Clipston Road, Great Oxendon have all been treated as having Medium/High susceptibility, the scale of visual effect along these routes is much lower (Low to Low/Medium). Whilst such effects may be raised as local issues they are unlikely to be important factors in the decision making process. The overall level of visual effect is therefore considered to be Minor adverse.

12.3.6 The overall level of visual effect at the other publicly accessible locations identified is considered to be Negligible adverse.

12.3.7 Whilst the visual effects of the proposed development on residential properties at Great Oxendon may be raised by local residents, as explained in Section 10.0 there is no provision in planning law to protect such views. It is unlikely therefore that such issues would be regarded as key decision making issues. The overall level of visual effect on these properties is therefore considered to be Minor adverse.
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<td>1</td>
<td>Road to Clipston Walkers</td>
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<td>Short/Medium Term</td>
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<td>3</td>
<td>Bridleway CZ5 Walkers/horse riders</td>
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<td>Low/Medium</td>
<td>Medium Term</td>
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<td></td>
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<td>Medium/High</td>
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<td>Footpath CZ4 Walkers</td>
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<td>Low/Medium</td>
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<td>5</td>
<td>Brampton Valley Way Walkers/horse riders/cyclists</td>
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<td>6</td>
<td>Clipston Road, Great Oxendon Walkers Motorists</td>
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<td>Medium/Long Term</td>
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<td>Medium/High</td>
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<td>7</td>
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<td>Braybrooke Road Walkers Motorists</td>
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<td>Low/Medium</td>
<td>Medium/Long Term</td>
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<td>Medium/High</td>
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<td>Dwellings on southern edge of Great Oxendon</td>
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<td>Low/Medium</td>
<td>Medium/Long Term</td>
<td>Minor adverse</td>
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<tr>
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13.0  LANDSCAPE MITIGATION AND ENHANCEMENT

13.1  Recommendations

13.1.1  The following recommendations are made for incorporation into the proposed development:

Hedgerow Translocation

13.1.2  Consideration should be given to translocating the existing northern boundary hedgerow to its new position behind the entrance visibility splay in preference to removal and replanting. Hedge translocation has significant advantages over the alternative of removal and replanting. The surviving roots will remain in contact with the soil and as a result of the removal of the canopy through coppicing the translocated hedges will be capable of vigorous growth compared with new planting. In addition, the hedgerow soils will also be retained and these will contain the seeds of appropriate ground cover plants that grow naturally along the bases of hedgerows.

13.1.3  Hedgerow translocation will require the affected sections of hedgerow to be coppiced prior to movement to compensate for root damage. The receptor location will need to be prepared to receive the hedge. The hedge will then need to be undercut to sever the roots and free it from its surroundings. It can then be gradually pulled into place by an excavator with railway sleepers attached to the bucket to maintain the integrity of the hedge. Any gaps will need to be filled with new planting. The translocation operation will need to be carried out in the dormant season (November to March) in order to minimise impact on the hedge and outside the bird nesting season (early March to late July) in order to avoid disturbance to nesting birds. That leaves a window of opportunity between November and February for the completion of such work.

Hedgerow Reinforcement

13.1.4  Any gaps in the remaining perimeter hedgerows will need to be reinforced with new planting. New hedgerow trees should also be introduced at appropriate intervals.

13.1.5  Once established all perimeter hedgerows should be managed at a height of 4.0m+ in order to minimise any views of the proposed development from the surrounding locality.

Existing Tree & Hedgerow Protection

13.1.6  All existing trees and hedgerows to be retained should be protected in accordance with BS5837:2012 during the construction phase.
New Planting

13.1.7 Appropriate indigenous species should be used for all the new tree and hedgerow planting proposed in order to respect the character of the surrounding countryside and to maximise wildlife potential. A proportion of quicker growing species such as Aspen could be incorporated into the woodland mix in order to speed up the screening effect, but climax species such as Oak and Field Maple should be the dominant species for the long term.

Allan Moss BA (Hons), BPl, MRTPI, Dip LA, CMLI
November 2015
REFERENCES


5. Northamptonshire Environmental Character Assessment and Green Infrastructure Strategy River Nene Regional Park 2006

APPENDIX A

Proposed Layout
(Not to Scale)
APPENDIX B

Location Plan
Job: Proposed AD Plant at Wormslade Farm, Kelmarsh, Northamptonshire
Title: Location Plan
Scale: 1:10,000 Date: Nov 2015
Drawing No: 1462.01 Rev: 
APPENDIX C

Aerial Photographs (May 2009)
APPENDIX D

Photographs 1 to 12
Photograph 1: View from site entrance on road to Clipston.

Photograph 2: View from north-east on Harborough Road.
Photograph 3: View from south along Harborough Road (A508).

Photograph 4: View from east along Bridleway CZ5.

Photograph 5: View from north on Footpath CZ4.
Photograph 6: Typical view from east along Brampton Valley Way.

Photograph 7: View from north-west on Clipston Road, Great Oxenden.

Photograph 8: View from north-west on Clipston Road, Great Oxenden.

Photograph 9: View from north on Bridleway DH10.
Photograph 10: View from north along Footpath DH6/CB14.

Photograph 11: View from north-east on Braybrooke Road.

Photograph 12: View from north-east on Footpath CB5.
APPENDIX E

Public Rights of Way
APPENDIX F

Visual Receptor Plan
Proposed AD Plant at Wormslade Farm, Kelmarsh, Northamptonshire

Location Plan

Job:

Title:

Scale: 1:10,000

Date: Nov 2015

Drawing No: 1462.01

Rev:

KEY:
- Site Location
- Local ridgelines
- Important woodlands and hedgerows
- Major built development
- Approximate Visual Envelope

Photograph Locations

Public locations with potential views of site:
1. Road to Clipston
2. Harborough Road (A508)
3. Bridleway CZ5
4. Footpath CZ4
5. Brampton Valley Way
6. Clipston Road, Great Oxendon
7. Bridleway DH10
8. Footpath DH6/CB14
9. Braybrooke Road
10. Footpath CB5

Private dwellings with potential views of site:
11. Dwellings on southern edge of Great Oxendon

Important woodlands and hedgerows

Approximate Visual Envelope

Public locations with potential views of site:

1. Road to Clipston
2. Harborough Road (A508)
3. Bridleway CZ5
4. Footpath CZ4
5. Brampton Valley Way
6. Clipston Road, Great Oxendon
7. Bridleway DH10
8. Footpath DH6/CB14
9. Braybrooke Road
10. Footpath CB5

Private dwellings with potential views of site:
11. Dwellings on southern edge of Great Oxendon

Public locations with potential views of site:

1. Road to Clipston
2. Harborough Road (A508)
3. Bridleway CZ5
4. Footpath CZ4
5. Brampton Valley Way
6. Clipston Road, Great Oxendon
7. Bridleway DH10
8. Footpath DH6/CB14
9. Braybrooke Road
10. Footpath CB5

Private dwellings with potential views of site:
11. Dwellings on southern edge of Great Oxendon
APPENDIX G

Descriptions of National Character Area 89: Northamptonshire Vales
and National Character Area 95: Northamptonshire Uplands
Summary

The Northamptonshire Vales National Character Area (NCA) consists of a series of low-lying clay vales and river valleys, including the valleys of the rivers Nene and Welland and their tributaries. The area is 10 per cent urban, and settlement is often visually dominant. Major road networks that traverse the area include the M1, A45, A6 and A5. This area adjoins the Leicestershire Vales NCA to the north-west and has many similar characteristics.

Despite the predominance of built settlements and related levels of low tranquillity, this contrasts strongly with a distinctly more rural feel and higher levels of tranquillity particularly along river corridors and in areas of arable and pastoral farmland.

This area is rich in historic character, with country houses, historic parkland, ridge and furrow and open field patterns, especially in the valleys of the Welland, Ise and Nene. These river valleys are striking features of the area, with their riverside meadows and waterside trees and shrubs. Also common are the flooded gravel pits and their associated wetlands, which result from reclamation schemes. These have given rise to some of the most important freshwater wetlands in the Midlands, supporting large numbers of wetland birds and wildfowl, especially over winter. The Upper Nene Valley Gravel Pits were designated as a Special Protection Area in 2011 in recognition of their wetland bird assemblage, which includes non-breeding great bittern, gadwall and European golden plover. The rivers and associated habitats also provide regional ecosystem services such as regulating water flow, quality and availability, as well as providing extensive recreational and biodiversity resources for the surrounding urban areas.

Challenges for this area include retaining the sense of place in light of ongoing pressure for development growth, and protecting and enhancing key features such as the many heritage assets, meadows, woodlands and hedgerows in the light of new development, continuing gravel extraction and the pressure to produce more food. However, these issues also provide opportunities to strengthen and increase habitat networks and appropriate recreational provision for the surrounding urban communities.
Statements of Environmental Opportunity

**SEO 1:** Appropriately manage the flood plains of the River Nene and River Welland, their tributaries, and the Upper Nene Valley Gravel Pits Special Protection Area, and deliver the most beneficial restoration of sand and gravel extraction sites, to enhance associated habitats and biodiversity and connections with the farmed environment; to regulate water flow, water quality and water availability; to enhance landscape character; and to increase the opportunities for informal recreation.

**SEO 2:** Sustainably manage the soils, productive farming, woodlands, coverts and spinneys that contribute to the sense of place, maintaining viable long-term food production and protecting historical and cultural assets such as the ridge-and-furrow sites found in the Nene and Welland valleys, the historic parklands and the variety of field patterns.

**SEO 3:** Plan ongoing strategic growth and development within the area so that it strengthens the sense of place and increases biodiversity, incorporating extended and restored hedgerow networks, open spaces and the conservation, management and promotion of geological features as part of green infrastructure planning.
National Character Area profile: 89: Northamptonshire Vales

Description

Physical and functional links to other National Character Areas

The Northamptonshire Vales National Character Area (NCA) is shaped like an anchor, with the Yardley Whittlewood Ridge and the Bedfordshire and Cambridgeshire Claylands NCAs sharply defining the southern edge. High Leicestershire and the Leicestershire Vales NCAs are to the north. The Welland Valley extends north-eastwards as part of the area, north of Rockingham Forest NCA. The Northamptonshire Vales NCA sweeps between the Northamptonshire Uplands NCA to the south-west and Rockingham Forest NCA to the north-east, the latter forming the northern boundary of the Nene Valley.

This NCA shares many key characteristics with the Leicestershire Vales NCA, including a shared geology with most of the area. Outcrops of the Great Oolite Group along the Nene Valley have more in common with the Rockingham Forest NCA.

The area is dominated by the major rivers of the Welland and Nene, both of which link several NCAs – such as High Leicestershire and The Fens – and drain into The Wash. The River Nene is an important source of water for public water supply, supplying water to fill and maintain both the Pitsford (located in the Northamptonshire Uplands NCA) and the Rutland (located in the Leicestershire and Nottinghamshire Wolds NCA) reservoirs. The Grand Union Canal runs through the area from London to Birmingham with the Northampton Arm linking the canal with the River Nene.

The slightly higher ground around Market Harborough defines the Soar from the Welland catchment. Higher ground on the Northamptonshire Clay Wolds–

Rockingham Forest axis divides the Welland Valley from the Nene Valley, where the extensive northern catchment is fed by large streams and small rivers including the Ise. Expansive views over the vales landscape are afforded from the fringes of the elevated clay wolds. This contrasts with the views along the Nene and Welland, which are much more contained.

The M1 cuts through the western end of this NCA, linking London with the North. The A45, which starts in this NCA at the A14 (Thrapston), runs along the Nene Valley to Northampton and then on through the Northamptonshire Uplands NCA, Dunsmore and Feldon NCA and on into Birmingham, which sits within Arden NCA.

The Northamptonshire Round long-distance footpath links the Northamptonshire Vales NCA with its neighbour the Northamptonshire Uplands. This footpath is approximately 80 km long and circles Northampton. The 140-kilometre Jurassic Way long-distance footpath runs through the centre of the area, from Banbury in the south-west to Stamford to the north-east.
Key characteristics

- An open landscape of gently undulating clay ridges and valleys with occasional steep scarp slopes. There is an overall visual uniformity to the landscape and settlement pattern.
- Diverse levels of tranquillity, from busy urban areas to some deeply rural parts.
- Mixed agricultural regime of arable and pasture, with arable land tending to be on the broader, flat river terraces and smaller pastures on the slopes of many minor valleys and on more undulating ground.
- Relatively little woodland cover but with a timbered character derived largely from spinneys and copses on the ridges and more undulating land, and from waterside and hedgerow trees and hedgerows, though the density, height and pattern of hedgerows are varied throughout.
- A strong field pattern of predominantly 19th-century and – less frequently – Tudor enclosure.
- Distinctive river valleys of the Welland and the Nene, with flat flood plains and gravel terraces together with their tributaries (including the Ise). Riverside meadows and waterside trees and shrubs are common, along with flooded gravel pits, open areas of winter flooded grassland, and wetland mosaics supporting large numbers of wetland birds and wildfowl.
- Frequent large settlements that dominate the open character of the landscape, such as Northampton and Wellingborough, and associated infrastructure, including major roads, often visually dominant.
- Frequent small towns and large villages often characterised by red brick buildings and attractive stone buildings in older village centres and eastern towns and villages. Frequent imposing spired churches are also characteristic, together with fine examples of individual historic buildings.
- Relatively frequent, prominent historic parklands and country houses towards the outer edges and close to more wooded areas. Other characteristics include ridge and furrow and nationally important townships such as Sutton Bassett and Clipston.
- Localised high concentrations of threshing barns and high status timber-framed farm buildings from the 18th century or earlier.
Summary

The Northamptonshire Uplands National Character Area (NCA) is an area of gently rolling, limestone hills and valleys capped by ironstone-bearing sandstone and clay Lias, with many long, low ridgelines. Rivers flow out from the NCA in all directions, including several major rivers – the Cherwell, Avon, Welland, Tove, Ouse, Nene and Ise. While there are areas differing in character, there are strong unifying landscape features across the Northamptonshire Uplands, most importantly the extensive areas of open field systems with ridge and furrow and the earthworks of deserted and shrunken settlements which occur throughout. Other features include the strong, mostly Parliamentary enclosure pattern with high, wide, A-shaped hedgerows bounding the largely rectilinear fields with their frequent mature ash and oak trees; the many country houses and their associated extensive areas of historic and nationally important designed parkland landscapes; the distinctive ironstone, cob and brick nucleated settlements with their large stone churches, often with prominent steeples; the narrow lanes with very wide grassy verges; and the small, scattered but prominent broadleaved woods and coverts. There are also wide, long-distance views from the edges and across the ridgetops throughout the area.

Land is in mixed agricultural use, mostly pasture and arable, and reservoirs are a significant feature. Woodland is sparse, with many scattered, small broadleaved coverts and copses, some in prominent hill-top positions, dotted across the landscape. The few ancient woodlands, such as Badby, take on a special value and interest in an NCA with few other areas of semi-natural vegetation and relatively limited wildlife interest. Flood plain grazing marsh occurs around Banbury and there are small, scattered pockets of

Northamptonshire Uplands

Note: in most instances, the NCA boundary is not precisely mapped and should be considered as a zone of transition between NCAs.
Statements of Environmental Opportunities:

■ **SEO 1:** Protect, manage and promote the historic and archaeological features, designed landscapes and field patterns – including the parkland, battlefield sites, canals, ridge and furrow and settlement sites, and distinctive high hedgerows with their many trees – to ensure that these key features for sense of place and history are conserved, people’s enjoyment and understanding is increased, and recreation opportunities are enhanced.

■ **SEO 2:** Conserve, enhance, expand and restore the semi-natural and farmed features of the area – including the mix of agricultural production, particularly the pasture and meadows, patches of semi-natural habitats, and veteran and ancient trees – to enhance biodiversity and landscape character and to safeguard the continued sustainable provision of food.

■ **SEO 3:** Conserve, manage and enhance the river catchments and reservoirs, improving water quality and flow management and benefiting biodiversity and recreation through managing soils, diffuse pollution and run-off, reconnecting flood plains and extending natural habitats.

■ **SEO 4:** Conserve, maintain and promote local building styles and materials and plan strategic growth, infrastructure development and mineral extraction to ensure they protect remaining areas of high tranquillity, strengthen local sense of place and biodiversity, and increase adaptation for climate change through multifunctional green infrastructure networks, building on existing resources such as canals, rivers and access routes, creating strong ecological and recreation networks.

Wide panoramic views are a key feature of the area, here from the Knightley Way, one of many named long-distance paths.
Description

Physical and functional links to other National Character Areas

The Northamptonshire Uplands National Character Area (NCA) extends north-east from the Cotswolds NCA south of Banbury to border the Northamptonshire Vales NCA and Leicestershire Vales NCA around Market Harborough at its northern extent. In the west it borders Dunsmore and Feldon NCA and it shares most of its eastern boundary with the Northamptonshire Vales NCA. A small area in the south-east abuts the Yardley Whittlewood Ridge NCA. It is part of the wider Jurassic ‘wolds’ landscapes that include the dip slope of the Cotswolds and extend north to the High Leicestershire NCA and the Leicestershire and Nottinghamshire Wolds NCA. The south-western corner of the NCA is designated as part of the Cotswolds Area of Outstanding Natural Beauty (AONB).

The hills are ‘the main watershed of Middle England’, with wide, far-reaching views from the edges and across the ridgetops. The area is an important supplier of water to towns in surrounding NCAs with many reservoirs and much abstraction from rivers. The River Cherwell rises in the south near Charwelton and flows south. The Tewkesbury Avon rises on the north-eastern edge near Naseby, and flows west then south-west, while the north-east-flowing Welland rises near Sibbertoft. The rivers Tove and Ouse rise here too and flow south-east. The eastern slopes form the upper catchment of the Nene, with the major tributary of the Ise in the far north-east. Topographically, the Upper Nene divides the Northamptonshire Heights to the north from the Cherwell/Ouse plateau, sometimes known as the ‘Ironstone Wolds’ in the south.

The NCA is crossed by several nationally important transport corridors. It is effectively divided in two from Rugby to Northampton by the M45, M1, A5, the West Coast Main Line railway and the Grand Union Canal. In the south, the M40, A423 and the Oxford Canal cross through, and further north the A14. Urban areas and large towns include Daventry and Banbury. Close by in neighbouring NCAs are Northampton and Milton Keynes, Kettering, Rugby, Coventry, Leamington Spa and Warwick. The many historic houses, parks and gardens, the Knightley Way, Jurassic Way, Brampton Valley Way, Battlefields Trail and the Grand Union and Oxford canals provide well-used recreation assets for people in surrounding areas.

Fawley Park; extensive areas of parkland are a key feature of the area, here being restored through agri-environment funding and grazed by the once locally common Hereford cattle.
Key characteristics

- Gently rolling rounded hills and valleys with many long, low ridgelines and great variety of landform. Wide, far-reaching views from the edges and across the ridgetops.
- Dominant Jurassic scarp slope of limestone and Lias clay hills capped locally with ironstone-bearing Marlstone and Northampton Sands. Glacial boulder clay covers the northern and eastern areas, with sands and gravels along river valleys.
- The Upper Nene Valley divides the gently undulating Northamptonshire Heights to the north from the hillier Cherwell/Ouse plateau (the ‘Ironstone Wolds’) to the south and has been exploited for sand and gravel.
- Rivers rise and flow outwards in all directions, including the rivers Cherwell, Avon, Welland, Tove, Ouse, Nene and Ise, and the area forms the main watershed of Middle England.
- Sparse woodland cover, but with scattered, visually prominent, small, broadleaved woods, copses and coverts, particularly on higher ground.
- Mixed farming dominates with open arable contrasting with permanent pasture.
- Typical ‘planned countryside’ with largely rectangular, enclosed field patterns surrounded by distinctive, high, often A-shaped hedgerows of predominantly hawthorn and blackthorn, with many mature hedgerow trees, mostly ash and oak. Some ironstone and limestone walls in places and some localised areas of early irregular enclosure.
- Small pockets of semi-natural vegetation with many small scattered broadleaved woodlands, some ancient and often on hill tops, with mires, areas of lowland meadow, calcareous grassland and lowland dry acid grassland in the river valleys. Bluebell woods occur in places.
- Nationally rare, locally abundant and prominent ridge and furrow, with frequent deserted and shrunken settlements. Several large historic country estates such as Cottesbrooke Hall and Althorp and many small country estates, with extensive parkland containing a great many mature, veteran and ancient trees.
- Nucleated villages often on hill tops or at valley heads with low densities of dispersed settlement. Cob, ironstone and limestone in older buildings with some remaining thatch, but mostly pantile and slate roofs. Brick buildings in some villages. Extensive new developments in villages along main transport corridors and in the two main towns.
- A dense network of narrow lanes with wide grassy verges, often following ridges, crossed by many strategic road and rail corridors, including the M1, M40, A14, West Coast Main Line railway, Great Western Railway line and the Oxford and Grand Union canals.
- The many historic houses, parks and gardens open to the public, the reservoirs, long-distance paths (such as the Knightley Way, Jurassic Way and Brampton Valley Way) and the Grand Union and Oxford canals provide well-used recreation assets.
APPENDIX H

Extracts from
Northamptonshire Current Landscape Character Assessment
Strategy and Guidelines\(^{(5)}\)
CURRENT LANDSCAPE CHARACTER ASSESSMENT
CHARACTER AREAS

13a Middleton Cheney and Woodford Halse
13b Bugbrooke and Daventry
13c Long Buckby
13d Cottesbrooke and Arthingworth
13e Stoke Albany and Ashley

KEY CHARACTERISTICS

• Extensive undulating and productive rural landscape stretching across the west of the county;
• cohesive and recognisable unity of character despite scale and extent;
• variations in the underlying geology influence local landform;
• watercourses form part of three principal river catchments of the Cherwell, Nene and Welland;
• reservoirs and man made lakes are conspicuous features in the local landscape displaying a wide range of size, function and age;
• navigable canals are an important visual component of the landscape and linear wildlife and recreational asset;
• mixed farming predominates across the landscape although local land use and field patterns are strongly influenced by changes in landform;
• numerous small deciduous woodlands, copses and shelterbelts punctuate the rural landscape;
• hedgerow trees, within the strong hedgerow network, contribute to the perception of a well treed landscape and combine with other landscape and landform features to create an intimate, human scale landscape;
• strong historic character underlies this deeply rural landscape;
• numerous villages linked by winding country lanes contribute to rural character; and
• communication routes and urban influences and infrastructure have, where present, eroded local rural landscape character where present.
Country houses of historic interest are characteristic of the area and often viewed from a distance as well wooded areas in the landscape. Althorp House and Park, listed Grade I is located on the eastern boundary and includes a late 18th Century house set within a landscaped park with traces of an earlier formal layout and later gardens. The park dates from 1512, although it has since been extended, with date stones recording planting between 1567 and 1901. Traces of avenues are also evident and are ascribed to Le Notre. In recent years, the house and gardens have become increasingly well known, providing the final resting place for Diana, Princess of Wales. Located north of Althorp is Holdenby House and gardens, Listed Grade II* on the register of historic parks and gardens and occupying around 250 hectares. Earthwork remains are evident of earlier formal gardens and a deer park laid out between 1579 and 1587. A falconry centre is also located at the house. To the east of the character area, adjacent to the River Nene, is Brockhall Park. The landscaped park was developed around 1800 and laid out to replace formal gardens developed in the 1720s. Also of interest in the area are remnants of the industrial revolution, the most notable being the Grand Union Canal. On the western edge of the character area, the canal passes through the Crick Tunnel. Constructed in 1815, the tunnel was built to allow two boats to pass without touching the sides. Running for a length of 1,518 yards, the tunnel is visible by a series of mounds in the landscape, although a number have been planted with trees. Located on the northeastern area boundary, Ravensthorpe Reservoir is a notable landscape feature. This is the oldest reservoir in the county, having ‘appeared’ in 1890, and covers an area of 46 hectares. The reservoir is one of the oldest water treatment plants in the region and is also a valuable habitat for many wintering birds and summer breeding birds, as well as providing an important local recreational resource. Fishing is also available on the reservoir. Other recreational facilities include numerous minor rights of way and sections of the Macmillan Way, Midshires Way and Jurassic Way.

13d Cottesbrooke and Arthingworth
The Cottesbrooke and Arthingworth Character Area, located to the north of Northampton, is drained by a number of tributaries along the base of undulations flowing into the Brampton Valley from the southern section of the character area, and the River Ise from the northern section, north of Maidwell.

Land cover in the area is a combination of both arable cereals horticulture and improved pastures. Land under arable cultivation predominates in the southern section of the character with improved pastures concentrated around the settlement and parkland landscape of Cottesbrooke Hall, and around Haselbech and Maidwell. A significant area of setaside land is evident around Haselbech Hill. Although arable and pastoral farmland occur in roughly equal proportions in the northern section of the area, and again generally surround settled areas, there is a greater concentration of fields under pastoral use with areas of calcareous grassland around Arthingworth.
Woodland in the character area is more extensive than in other areas of the Undulating Hills and Valleys landscape type. Broadleaved copses predominate with significant concentrations around Cottesbrooke Park, and although small in size, they combine to create a well wooded area. Broadleaved woodlands are also found around Haselbech, including Purser’s Hill and other hilltop locations north of Cottlesbrooke, around Kelmarsh, Far Hill and Warren Hill, northeast of Kelmarsh. Despite many copses having a geometric form, a number are more organic and often seen capping hill tops within the area, including Rickleboro Hill Spinney and Cott Hill Spinney. Dale Wood, a significant linear broadleaved woodland, is also evident along the course of the stream in Maidwell Dale. Smaller areas of mixed and coniferous composition are evident across the landscape, with the latter predominating around Hollowell Reservoir.

Although moderately settled, villages in the character area are sparser and generally on a smaller scale compared to other areas of the Undulating Hills and Valleys. Clipston, Arthingworth, Kelmarsh, Maidwell, Cottesbrooke and the outer edges of Harrington and Haselbech form the main villages in the area. In general, they have a linear form. Clipston, however, has a nucleated core from which development has extended along minor roads leading from the village centre. Beyond this lies a rural landscape of isolated farms and dwellings. Although there are no significant settlements within or adjacent to the area, glimpsed views of Desborough are possible from elevated parts of the landform. A network of minor roads connect settlement within the area with only limited stretches of the A14(T), A508 and A5199. Large areas remain inaccessible, however, even on foot. In other areas, rights of way cross the undulating landscape including the Brampton Valley Way, Midshires Way, Macmillan Way and a section of the Jurassic Way. Both the Brampton Valley Way and Midshires Way run along the course of a former railway line.

Features of heritage interest are numerous in the character area. Cottesbrooke Hall and Park, located close to the southern boundary of the character area, includes formal gardens with traces of early formal layout set within a landscaped park. The gardens were laid out in the early 18th Century, although altered in the late 18th Century and again in the 1930s, and are now Grade II listed. Leading to the hall from surrounding areas are tree lined roads bordered by large arable fields and a parkland landscape of mature parkland trees. The site of a Manor House at Harrington is located on the eastern boundary. Here, the remains of an early formal garden can be found, extending to the south and east of the manor house. The garden is thought to date from the late 16th or 17th Century and is Grade II* listed. Other features of value include Kelmarsh Hall, a Palladian house built around 1728 and surrounded by landscaped gardens, grazed parkland and a working estate of around 3,500 acres. Hollowell Reservoir is also of note. Occupying almost an entire valley on the southwestern edge of the character area, the reservoir covers an area of around 53 hectares. It provides a valuable habitat for a number of duck and wildfowl species and is also favourable for coarse fishing and is home to a local sailing club.
CURRENT LANDSCAPE CHARACTER
STRATEGY AND GUIDELINES
CHARACTER AREAS

13a Middleton Cheney and Woodford Halse
13b Bugbrooke and Daventry
13c Long Buckby
13d Cottesbrooke and Arthingworth
13e Stoke Albany and Ashley

KEY LANDSCAPE CHARACTER FEATURES

• **Extensive undulating and productive rural landscape stretching across the west of the county with a cohesive and recognisable unity of character despite scale and extent.** This is the quintessential agricultural landscape of the Midlands with its broad sweeping undulating landform, rich and productive agricultural land contained by a strong hedgerow enclosure, and a deeply rural character.

• **Variations in the underlying geology influence local landform** and introduce an ever changing pattern of local distinctiveness within the broader undulating landform.

• **Watercourses form part of three principal river catchments of the Cherwell, Nene and Welland**, and have eroded a dendritic drainage pattern and a complex network of interconnected valley forms.

• **Reservoirs and man made lakes are conspicuous features in the local landscape displaying a wide range of size, function and age.** This can vary from reservoirs as at Ravensthorpe, Drayton and Daventry, designed lakes in historic parkland as at Fawsley Hall and Cottesbrooke Park, and natural water bodies as in the Cherwell Valley to the south of Aynho. These create diversity and focal points in the landscape.

• **Navigable canals are an important visual component of the landscape and linear wildlife and recreational asset.** This important heritage resource has adapted in response to their popularity as a recreational resource for use by local communities and wider public, with wider use likely as a consequence of the growing population within the county and wider region.

• **Mixed farming predominates across the landscape although local land use and field patterns are strongly influenced by changes in landform.** The land use introduces local variety and diversity to the landscape and an intricate patchwork pattern of fields of contrasting colours and textures, contained by generally well managed hedgerows.

• **Numerous small deciduous woodlands, copses and shelterbelts punctuate the rural landscape and contribute to the impression of a well treed landscape.** While evident across the whole landscape they tend to be associated with steeper land and follow watercourses, emphasising the relationship with the landform.
• **Hedgerow trees** within the strong hedgerow network contribute to the perception of a well-treed landscape and combine with other landscape and landform features to create an intimate, human scale landscape. They are important features that add richness and a sense of maturity to this productive agricultural landscape.

• **Strong historic character** underlies this deeply rural landscape with evidence of a long period of settlement with wide ranging examples of heritage features and historic landscapes from many periods of occupation. The notable and rich remnants of ridge and furrow that occur within this Landscape Type are an iconic symbol of the Midlands agricultural landscape, and evidence of a long period of cultivation and production.

• **Numerous villages linked by winding country lanes contribute to rural character.** The dense network of narrow winding lanes, often bordered by tall hedgerows, and linking the wide distribution of villages and hamlets, contributes to the sense of a long settled area focused on agricultural production.

• **Communication routes and urban influences and infrastructure have, where present, eroded local rural landscape character** with the noise and movement associated with traffic and visual influences of urban activities contrasting with the sense of rural isolation and tranquility elsewhere.

**UNDULATING HILLS AND VALLEYS**

The Undulating Hills and Valleys Landscape Type covers the greatest land area within Northamptonshire. It extends across the western and central part of the county from the most southerly part near Aynho, sweeping northwards in a broad arc to the northern boundary near Weston by Welland. It includes much of the upper catchment area of the Nene, and its tributary the Brampton Arm.

This is the quintessential agricultural landscape of the Midlands with a strong sense of unity derived from a palette of well defined characteristics. The broad sweeping undulating landform supports a rich agricultural land use of mixed farming, with a patchwork pattern of fields contained within a strong hedgerow network with hedgerow trees. On more elevated land at the crest of the undulations, and where there are gaps in the hedgerows, there are wide vistas across this productive landscape, and the mosaic of hedgerows and fields. Elsewhere, a more intimate, human scale prevails as a consequence of the more enclosed landform and the containment provided by hedgerows and hedgerow tree cover, and the succession of small, mainly deciduous woods. Narrow winding lanes, often bordered with strong hedgerows, and small villages nestling into the folds of the landscape or on hill tops, often identifiable by their church tower or spire, creates a sense of harmony with this deeply rural landscape.

The many heritage features within this landscape type are indicative of a long period of settlement and enrich the experience of the landscape. These include Iron Age sites, such as the Borough Hill and Castle Dykes defensive structures, Roman roads, and numerous motte and bailey and manorial medieval sites, as well as more recent features associated with the canal network. The area is particularly renowned for the well preserved areas of ridge and furrow. Many historic houses and designed parklands add richness to the landscape, with Holdenby House and Althorp of particular note. Their parklands contribute to the tree cover, with the houses forming memorable landmark features. Larger settlements on the perimeter of the Landscape Type, notably Daventry and Brackley, and principal roads such as the M1 and A5, introduce urban influences that detract from the otherwise quiet and remote rural character.

**LANDSCAPE STRATEGY**

New development, change and land management should be controlled to conserve and enhance the balance of the rural elements that contribute to the intrinsic character of this productive agricultural landscape. In particular, the scale and pattern of the fields enclosed by a robust hedgerow network, the woodland mosaic, and village form and setting and their relationship with the undulating landform should be retained. Wherever possible, the distinctive and strong hedgerow network should remain intact, particularly where historic field patterns are evident, and conserved and managed to encourage species diversity and enhanced wildlife habitats. Valued intact historic landscapes and features should be retained, and protected from degradation, and agricultural practices should be encouraged to conserve and protect valued features from any further loss, notably the irreplaceable areas of ridge and furrow.

Large scale development should be resisted within this rural landscape and particularly in the open and remote areas. However, in view of the potential growth of urban areas surrounding this landscape, it is likely that areas adjacent to principal settlements may need to accommodate development and change. In addition, there may be opportunities for limited development within the lower and more secluded locations and in association with the rural villages. Where such development is considered, reference should be made to the locality for the effect on the landscape resource and wider setting, together with particular details of local vernacular building styles, materials, and layout and arrangement of features in the landscape.
### Key Landscape Character Features

#### Landform and Views

<table>
<thead>
<tr>
<th>Extensive undulating and productive rural landscape stretching across the west of the county with a cohesive and recognisable unity of character despite scale and extent. This is the quintessential agricultural landscape of the Midlands with its broad sweeping undulating landform, rich and productive agricultural land contained by a strong hedgerow enclosure, and a deeply rural character.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Conservation and Enhancement</strong> the cohesive and recognisable unity of character across the Undulating Hills and Valleys and ensure that the integrity of this quintessential rural agricultural landscape is not diminished through inappropriate development and loss of the characteristic combination of elements.</td>
</tr>
</tbody>
</table>

| Variations in the underlying geology influence local landform and introduce an ever changing pattern of local distinctiveness within the broader undulating landform. |
| **Conservation and Enhancement** the changing patterns of local distinctiveness that relate to the subtle variations in landform and land use patterns, and in respect of scale and enclosure, but within the wider character of a productive agricultural landscape. |

#### Hydrology and Water Features

| Watercourses form part of three principal river catchments of the Cherwell, Nene and Welland, and have eroded a dendritic drainage pattern and a complex network of interconnected valley forms. |
| **Conservation and Enhancement** the quality of watercourses that flow within the upper catchment areas of the Cherwell, Nene, and Welland. |
| **Creation** opportunities to strengthen the identity and presence of the watercourses by encouraging management practices that establish or enhance bank side planting and linear woodlands adjacent to the watercourses. |

| Reservoirs and man made lakes are conspicuous features in the local landscape displaying a wide range of size, function and age. This can vary from reservoirs as at Ravensthorpe, Drayton and Daventry, designed lakes in historic parkland as at Fawsley Hall and Cottesbrooke Park, and natural water bodies as in the Cherwell Valley to the south of Aynho. These create diversity and focal points in the landscape. |
| **Conservation** lakes and man made water bodies for their intrinsic visual appeal, as well as their recreational and nature conservation value. |
| **Enhancement** the setting and fabric of reservoirs, by seeking opportunities for enhanced recreational and nature conservation facilities. Seek to ensure that the character of the landscape is enhanced through habitat management and creation. |
| **Restoration and Enhancement** structures and landscape features that form part of the historic landscape associated with reservoirs. |
Navigable canals are an important visual component of the landscape and linear wildlife and recreational asset. This important heritage resource has adapted in response to their popularity as a recreational resource for use by local communities and wider public, with wider use likely as a consequence of the growing population within the county and wider region.

- **Conserve** and where applicable **Restore** neglected sections of the network of canals and encourage opportunities for their further **Enhancement** to serve the leisure requirements of local and wider communities, but ensuring that they appropriately and sensitively undertaken and accord with the principles of sustainable tourism.
- **Conserve** and **Enhance** the biodiversity value of habitats associated with these linear networks through appropriate management and strengthen their role as habitat links.

**Land Management**

Mixed farming predominates across the landscape although local land use and field patterns are strongly influenced by changes in landform. The land use introduces local variety and diversity to the landscape and an intricate patchwork pattern of fields of contrasting colours and textures, contained by generally well managed hedgerows.

- **Conserve** field patterns to reflect various episodes of enclosure and subsequent land management and as features of the landscape that emphasis the grain of the landform.
- **Discourage** hedgerow removal and field amalgamation that lead to broader areas of monoculture, and a consequent reduction in the visual interest associated with the mosaic of fields and cropping patterns.

**Woodland and Trees**

Numerous small deciduous woodlands, copses and shelterbelts punctuate the rural landscape and contribute to the impression of a well treed landscape. While evident across the whole landscape they tend to be associated with steeper land and follow watercourses, emphasising the relationship with the landform.

- **Conserve** and **Enhance** the existing small woodlands and copses, including shelterbelts close to farms, by appropriate management and encourage natural regeneration and replanting with broadleaved native species.
- **Create** new woodlands where appropriate but with a preference for locations that relate to and strengthen the local landform pattern. Encourage the use of broadleaved native species for woodland planting to enhance biodiversity.
### 13 UNDULATING HILLS AND VALLEYS

<table>
<thead>
<tr>
<th>Hedgerow trees within a strong hedgerow network contribute to the perception of a well treed landscape and combine with other landscape and landform features to create an intimate, human scale landscape.</th>
<th>• <strong>Conserve</strong> hedgerow patterns to reflect various episodes of enclosure. Where appropriate, manage more sympathetically for their nature conservation value and encourage more hedgerow trees to develop to further contribute to the character of the landscape. Whilst encouraging a more sympathetic hedgerow management regime, seek to ensure that the pattern of fields can still be appreciated.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heritage, Settlement and Infrastructure</strong></td>
<td><strong>Strong historic character underlies this deeply rural landscape</strong> with evidence of a long period of settlement with wide ranging examples of heritage features and historic landscapes from many periods of occupation. The notable and rich remnants of ridge and furrow that occur within this Landscape Type are an iconic symbol of the Midlands agricultural landscape, and evidence of a long period of cultivation and production.</td>
</tr>
<tr>
<td>• <strong>Conserve</strong> the heritage features within the landscape that are an irreplacable representation of past layers of occupation of the land, and enrich the experience and character of the landscape. Encourage farmers and landowners through guidance to limit damage to the heritage resource through sensitive land management. Limit any further loss or damage of the irreplaceable and well preserved areas of ridge and furrow by contemporary ploughing methods.</td>
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</tr>
<tr>
<td>Numerous villages linked by winding country lanes contribute to rural character. The dense network of narrow winding lanes, often bordered by tall hedgerows, and linking the wide distribution of villages and hamlets, contributes to the sense of a long settled area focused on agricultural production.</td>
<td>• <strong>Conserve</strong> the character of rural lanes in the landscape with their hedged enclosure and close relationship with the pattern of villages, hamlets, and scattered farmsteads that they connect. Ensure that road improvements do not adversely affect their rural character through the introduction of kerbing, roundabouts and other features such as lighting.</td>
</tr>
<tr>
<td>• Seek to limit the effects of infrastructure and urban influences on the wider rural landscape through sensitive siting of any necessary developments and through creative mitigation that is in keeping with local landscape character. • <strong>Create</strong> a vibrant and visually appealing urban rural fringe or interface that is functional, visually appealing and sensitive to variations in local landscape and townscape character.</td>
<td></td>
</tr>
<tr>
<td>Communication routes and urban influences and infrastructure have, where present, eroded the local rural landscape character with the noise and movement associated with traffic and visual influences of urban activities contrasting with the sense of rural isolation and tranquility elsewhere.</td>
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APPENDIX I

Extracts from
Northamptonshire Historic Landscape Character Assessment
Strategy and Guidelines(5)
HISTORIC LANDSCAPE CHARACTER ASSESSMENT
HISTORIC CHARACTER AREAS

1a Thornby – Watford Hills and Valleys
1b Brampton Brook – River Ise Watershed
1c Avon River Valley: Lilbourne
1d Holdenby Uplands
1e Rushton Clay Plateau

KEY CHARACTERISTICS

- Upper ground around watersheds and heads of valleys
- Clay geologies
- Irregular field patterns
- Historic parkland and garden remains
- Isolated but well-preserved ridge and furrow earthworks
- Small winding historic road and track systems

INTRODUCTION

The surviving pre-19th century non parliamentary landscapes are principally confined to the northwestern part of the county and as such generally occupy higher ground, often around the watersheds and upper valleys of the River Nene tributary streams. They typically represent 18th century landscapes comprising irregularly patterned fieldscape amongst which are set grand houses with historic garden remains. There has been little modern development and there are a number of deserted or shrunken medieval villages.

PHYSICAL INFLUENCES

Geology and Soils

The overall geology of the areas tends to be associated with heavy clays, principally the Whitby Mudstone Formation (formerly known as Upper Lias Clay) of the Northamptonshire Heights and the glacial Boulder Clay that forms the plateaux in the region. Exceptions to this occur when the areas cut across stream valleys where other geologies are exposed. These include small outcrops of Northampton Sand Formation ironstone in the River Ise valley and the Lincolnshire Limestone Formation (Lower) of the Welland Valley.
1b. BRAMPTON BROOK – RIVER ISE WATERSHED

Character Area 1b is a large area occupying the watershed and part of the valleys between the River Ise and the Brampton Brook. It incorporates both the high ground at the sources of these streams as well as parts of their respective valley sides and extends across the Lias Group and Boulder Clay geology of the area. Outcrops of Northamptonshire Sand Formation ironstone are exposed in places and these have been exploited for mineral extraction. Impressive garden remains survive associated with historic house sites.

The parishes of Cottesbrooke, Haselbech, Kelmarsh and Harrington all saw enclosure starting in the late 15th and early 16th Centuries whilst Draughton, Cransley and Orton were enclosed in the early 17th Century. Although both Oxendon and Lamport were subject to 18th century parliamentary enclosure, the fields within the Historic Character Area were all ‘old enclosures’ at that time and probably had their origins in the 16th Century.

Despite the presence of old enclosure, the area has undergone more recent changes. Areas to the north of Cottesbrooke Park have seen the removal of field boundaries to create large modern fields whilst land to the north of Kelmarsh saw the addition of fields in the 19th century. However, overall the area retains its non parliamentary character.

The area contains a number of 17th and 18th century houses or house sites with associated landscape features. Cottesbrooke Hall is early 18th century in origin. It was emparked and landscaped later in the 18th century but garden earthworks associated with the original house still survive within the park grounds, which serve to protect areas of ridge and furrow cultivation (Fig 2). Impressive garden remains survive at Harrington where they are part of an earthwork site representing a medieval manor enlarged in the 17th century. The present Kelmarsh Hall is 18th century in origin and is set in landscaped grounds that include a lake and a wilderness. The grounds preserve parts of the deserted medieval village of Kelmarsh. The grounds around Haselbech Hall are also thought to be 18th century in date and include 18th and 19th century landscaping features.

As elsewhere within HLCT 1, there has not been a great deal of modern development within the area. Some infilling has taken place at Arthingworth and Harrington whilst at Maidwell modern housing has extended out along the main road. However, overall the present villages are roughly the same size as shown on the 1st edition Ordnance Survey mapping. The villages in the area generally comprise regular row settlements although their modern forms may not fully reflect the medieval situation. At both Kelmarsh and Haselbech, there was a process of shrinkage and abandonment associated with the processes of enclosure and later emparking. In both cases the original village sites survive as earthworks and at Haselbech these remains suggest that the original village may have had a more nucleated form. Similarly at Cottesbrooke, the Royal Commission suggests that the surviving medieval settlement remains may indicate that the village was originally a polyfocal settlement. Also within the parish of Cottesbrooke are the earthworks of a possible monastic grange associated with Sulby Abbey.
### IMPORTANT SITES AND LANDSCAPES

<table>
<thead>
<tr>
<th><strong>Scheduled Ancient Monuments</strong></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>• Cottesbrooke, ‘Kalendar’ monastic grange (SAM 13624)</td>
<td></td>
</tr>
<tr>
<td>• Haselbech, medieval settlement remains (SAM 30070)</td>
<td></td>
</tr>
<tr>
<td>• Kelmarsh, medieval settlement remains (SAM 30074)</td>
<td></td>
</tr>
<tr>
<td>• Harrington, manor house, garden and monastic fishpond earthworks (SAM 133)</td>
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<table>
<thead>
<tr>
<th><strong>Conservation Areas</strong></th>
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<tbody>
<tr>
<td>• Cottesbrooke</td>
<td></td>
</tr>
<tr>
<td>• Harrington</td>
<td></td>
</tr>
<tr>
<td>• Loddington</td>
<td></td>
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<tr>
<td>• Cransley</td>
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<table>
<thead>
<tr>
<th><strong>Parks and Gardens</strong></th>
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<tbody>
<tr>
<td>• Cottesbrooke Hall Park and Gardens (Registered, Grade II)</td>
<td></td>
</tr>
<tr>
<td>• Kelmarsh Hall historic park/garden (non-registered)</td>
<td></td>
</tr>
<tr>
<td>• Harrington, The Falls (Registered, Grade II*)</td>
<td></td>
</tr>
<tr>
<td>• Haselbech Hall parkland (non-registered)</td>
<td></td>
</tr>
<tr>
<td>• Thorpe Malsor Hall parkland (non-registered)</td>
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<table>
<thead>
<tr>
<th><strong>Registered Battlefields</strong></th>
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<tbody>
<tr>
<td>• None</td>
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<thead>
<tr>
<th><strong>Relict landscapes</strong></th>
<th><strong>Open fields (including meadow):</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Part of Great Oxendon Open Field remains adjoining DMV (Turning the Plough /List A). Extends into 5d.</td>
<td></td>
</tr>
<tr>
<td>• Harrington Open Field remains, adjoining fishponds (List C)</td>
<td></td>
</tr>
<tr>
<td>• Cottesbrooke Open Field remains (List A)</td>
<td></td>
</tr>
</tbody>
</table>

**Other:**

- Part of - Northampton to Market Harborough turnpike (A508)
- Part of - Northampton to Market Harborough railway
- Cransley Wood, Cransley Hall parkland with possible motte

<table>
<thead>
<tr>
<th><strong>Other key sites</strong></th>
<th><strong>Non SAMs:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Little Oxendon DMV</td>
<td></td>
</tr>
<tr>
<td>• Cottesbrooke, shrunken village remains</td>
<td></td>
</tr>
<tr>
<td>• Maidwell, ponds and Open Field remains to W of village</td>
<td></td>
</tr>
<tr>
<td>• Cransley, settlement remains</td>
<td></td>
</tr>
</tbody>
</table>

**Other:**

- WW2 petrol depot at Arthingworth (close to Kelmarsh)
- WW2 Harrington Cold War Thor Missile site

<table>
<thead>
<tr>
<th><strong>Ancient and Replanted Ancient Woodland</strong></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>• Scotland wood</td>
<td></td>
</tr>
<tr>
<td>• Blue Covert</td>
<td></td>
</tr>
<tr>
<td>• Faxton Corner</td>
<td></td>
</tr>
<tr>
<td>• Cransley Wood</td>
<td></td>
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</tbody>
</table>
HISTORIC LANDSCAPE CHARACTER STRATEGY AND GUIDELINES

1  PRE 19TH CENTURY NON-PARLIAMENTARY ENCLOSURE

HISTORIC CHARACTER AREAS

1a Thornby – Watford Hills and Valleys
1b Brampton Brook – River Ise Watershed
1c Avon River Valley; Libbourne
1d Holdenby Uplands
1e Rushton Clay Plateau

KEY HISTORIC CHARACTER FEATURES

- Upper ground around watersheds and heads of valleys; Commanding views of the rolling landscape have formed important choices for the development of landscape parkland
- Clay geologies; predominately heavy clay soils derived from Whitby Mudstone Formation (Upper Lias Clay) and Boulder Clay, however more varied geologies are exposed in stream and river valleys.
- Irregular field patterns; generally, early enclosure fields were large, with curving hedges building on the lines of earlier medieval ridge and furrow furlongs or other existing landscape features linked to deer parks or landscape parklands. Some of these areas were later subdivided with more regular straight hedgelines as the landscape evolved, but the erosion of smaller fieldscapes by modern agricultural practices and the resulting loss of associated ridge and furrow to ploughing for arable cultivation has not been as extensive as elsewhere in the county, possibly due to the prevalence of halls, parks and gardens.
- Historic parkland and garden remains; large houses and halls with associated park and garden remains form the principal monument type, dominating the upper ground of the county and fossilising many earlier features within their pastoral landscapes, including entire deserted medieval villages such as at Holdenby House.
- Isolated but well-preserved ridge and furrow earthworks; medieval ridge and furrow survives sporadically where there has been a long history of pasture as opposed to arable agriculture, often lying preserved within the enclosed field boundaries cutting across the larger scale sinuous earthworks. Some of the best examples of large landscape scale preservations are to be found within parklands associated with large houses.
- Small winding historic road and track systems; threaded between the earlier enclosure boundaries these subdivide the landscape and exhibit a sinuous country road character.
1 PRE 19TH CENTURY NON- PARLIAMENTARY ENCLOSURE

HISTORIC STRATEGY FOR THE PRE 19TH CENTURY NON- PARLIAMENTARY ENCLOSURE TYPE

The surviving Pre-19th century non parliamentary landscapes are principally confined to the north western part of the county and as such generally occupy higher ground, often around the watersheds and upper valleys of the River Nene tributary streams. They typically represent 18th century landscapes comprising irregularly patterned fieldscapes amongst which are set grand houses with historic garden remains. There has been little modern development and there are a number of deserted or shrunken medieval villages surviving either because of inclusion in parkland, or because of absence of agricultural intensification. Ridge and furrow survival is sporadic where arable intensification and other land use practices have had an impact, however where pasture remains survival is relatively good. Some of the best-preserved samples of ridge and furrow occur within the landscape parklands.
### Key Historic Character Features

- **Upper ground around watersheds and heads of valleys:** Commanding views of the rolling landscape have formed important choices for the development of landscape parkland.

- **Irregular field patterns:** Generally, early enclosure fields were large, with curving hedges building on the lines of earlier medieval ridge and furrow furlongs or other existing landscape features linked to deer parks or landscape parklands. Some of these areas were later subdivided with more regular straight hedgelines as the landscape evolved, but the erosion of smaller fieldscapes by modern agricultural practices and the resulting loss of associated ridge and furrow to ploughing for arable cultivation has not been as extensive as elsewhere in the county, possibly due to the prevalence of halls, parks and gardens.

- **Historic parkland and garden remains:** Large houses and halls with associated park and garden remains form the principal monument type, dominating the upper ground of the county and fossilising many earlier features within their pastoral landscapes, including many deserted medieval villages such as at Holdenby House.

- **Isolated but well-preserved ridge and furrow earthworks:** Medieval ridge and furrow survives sporadically where there has been a long history of pasture as opposed to arable agriculture, often lying preserved beneath the later enclosed field patterns for example as seen at Lilbourne. Some of the best examples of large landscape scale preservations are to be found within parklands associated with large houses.

### Historic Landscape Guidelines

- **To conserve the overall landscape settlements must seek to retain their 19th Century limits, wherever possible development should be limited to within existing village envelopes where it does not have a negative impact on existing archaeological remains.**

- **Conserve and enhance historic hedgerows and other historic boundary features such as Parish and township boundaries. The restoration of lost hedgerow lines will be actively encouraged where this strengthens local character. Hedgerow species and inclusion of hedgerow trees will reflect the requirements of the Biodiversity Character Guidance.**

- **Conserve the characteristic winding roads and track systems.**

- **Conserve, enhance and restore historic parklands; any proposed landscape restoration must be based on historic planting but respect the integrity of other archaeological features preserved within the landscape park.**

- **Conserve, enhance and positively manage archaeological earthworks and historic buildings within the wider landscape.**

- **Relict open field landscape evidence surviving within pasture fields must be a high priority for active conservation. Retain relict landscape features, particularly ridge and furrow where it survives in contiguous blocks or has a strong visual impact within the local landscape.**
APPENDIX J

Extracts from
Northamptonshire Biodiversity Character Assessment
Strategy and Guidelines\(^{(5)}\)
BIODIVERSITY
CHARACTER
ASSESSMENT
2. LIASSIC SLOPES

CHARACTER AREAS

2a Cherwell Valley Liassic Slopes  
2b Great Ouse Valley Liassic Slopes  
2c Upper Tove Valley Liassic Slopes  
2d Wootton Brook Liassic Slopes  
2e Upper Nene Valley Liassic Slopes  
2f Avon Valley Liassic Slopes  
2g Brampton Valley Liassic Slopes  
2h Ecton to Great Doddington Liassic Slopes  
2i Ise Valley Liassic Slopes  
2j Upper Welland Liassic Slopes  
2k Dingley to Wakerley Liassic Slopes  
2l Collyweston to Easton-on-the-Hill Liassic Slopes

KEY CHARACTERISTICS

- A narrow band of Northampton Sand Formation on the upper slopes with Lias Group Clays on the lower slopes;  
- soils are generally slightly acidic;  
- retention of all unimproved semi-natural habitats is low;  
- a range of woodland types occur, influenced by the sandy or clay soils;  
- occasional acid grasslands and acid variants of mesotrophic grasslands are retained;  
- concentrations of small ponds are found in some areas; and  
- springs issue at the interface between the Sands and the Clay.
2. LIASSIC SLOPES

2i  ISE VALLEY LIASSIC SLOPES

An area of 107km² that forms the catchment of the River Ise. Land use is a combination of larger arable fields interspersed with agriculturally improved grassland. Former ironstone and limestone quarries are a feature of the Finedon area. Retained unimproved semi-natural habitat is relatively low, but there are a variety of vegetation types. Woodlands are small and isolated, apart from a concentration on the Kelmarsh Estate. Various woodland types occur. Some are associated with lighter soils and others with heavy clays. A unique example of wet ash-wych elm woodland can be found at Ragsdale Spinney, part of Birch Spinney and Mawsley Marsh SSSI. Unimproved grasslands tend to be mesotrophic, with a more acidic influence in places and some examples of damper grassland are retained. However, on quarried sites the grasslands have a calcareous influence. Areas of standing open water also occur in several quarries.

Birch Spinney and Mawsley Marsh SSSI lies in a small valley and comprises a unique mixture of wildlife habitats. Birch Spinney is an unusual woodland type partly developed on peat and no other examples are known in the county. Unimproved and botanically rich grassland adjoins one of the finest remaining Northamptonshire marshes. The variety of vegetation types is due to the complex geology and hydrology. Birch Spinney is a variant of ash Fraxinus excelsior - field maple Acer campestre woodland developed on light soils with poor drainage. The canopy is of ash Fraxinus excelsior, pedunculate oak Quercus robur and downy birch Betula pubescens over a shrub layer of hazel Corylus avellana, elder Sambucus nigra and goat willow Salix caprea. The ground flora is notable for the abundance of ferns. Ragsdale Spinney is by contrast a heavy soil form of wet ash - wych elm woodland. Its situation on a spring-line gives rise to a rich ground flora, including the locally rare giant bellflower Campanula latifolia.

The grassland is of a geographically widespread calcareous loamy type. The sward comprises a large number of herbs and grasses characterised by sweet vernal grass Anthoxanthum odoratum, crested dog’s tail Cynosurus cristatus, quaking grass Briza media, yellow oat-grass Trisetum flavescens, harebell Campanula rotundifolia, dwarf thistle Cirsium acaule and salad burnet Sanguisorba minor. There are several damp flushes on the slopes that enhance the botanical interest.

Mawsley Marsh lies outside the character area, on the valley floor, and is described under the section on the River Ise Floodplain.

Sunderland Wood is one of a group of woodlands on the Kelmarsh Estate, all of which overlie Whitby Mudstone Formation. It is apparently replanted ancient woodland with ash Fraxinus excelsior, sycamore Acer pseudoplatanus, oak Quercus robur and larch Larix decidua. Some older oaks and old ash coppice stools remain. The substrate is mainly clay, and most of the site is poorly drained, however, the more elevated areas are on more acidic sandy soils largely dominated by bracken Pteridium aquilinum and bramble Rubus fruticosus. This change in the soils demonstrates the variability of the Whitby Mudstone Formation. Species on the rather wet, grassy rides are a mixture of ruderal and typical woodland species, and include rough meadow-grass Poa trivialis, meadow fox-tail Alopecurus pratensis, soft rush Juncus effusus, cuckooflower Cardamine pratensis, creeping buttercup Ranunculus repens, wood avens Geum urbanum, ramsons Allium ursinum, meadowsweet Filipendula ulmaria, marsh bedstraw Galium palustre and nettle Urtica dioica. Creeping soft-grass Holcus mollis is locally abundant in the vicinity of the bracken Pteridium aquilinum and the sandier parts of the rides. The scrub layer is open but rather neglected in appearance, and mostly consists of hawthorn Crataegus monogyna and elder Sambucus nigra.
Corner Meadow adjacent to the Brampton Valley Way in the upper reaches of the Ise Valley is a fragment of mesotrophic grassland, more typical of a floodplain, with tussocks of tufted hair-grass *Deschampsia cespitosa*, cock’s-foot *Dactylis glomerata* and abundant crested dog’s-tail *Alopecurus pratensis*. There is also red fescue *Festuca rubra*, Yorkshire fog *Holcus lanatus*, common bent *Agrostis capillaris*, creeping bent *A. stolonifera* and jointed rush *Juncus articulatus*. The herb content is high, with abundant great burnet *Sanguisorba officinalis*, marsh thistle *Cirsium palustre*, sorrel *Rumex acetosa*, lady’s bedstraw *Galium verum*, tormentil *Potentilla erecta*, germander speedwell *Veronica chamaedrys*, meadowsweet *Filipendula ulmaria* and patches of the rarities sneezewort *Achillea ptarmica* and saw-wort *Serratula tinctoria*.

A series of grasslands with a calcareous influence have developed on the former ironstone and limestone quarries around Finedon, many of these sites have associated ponds. The grassland at White Lodge Quarry, a typical site, includes red fescue *Festuca rubra*, sheep’s fescue *F. ovina*, crested dog’s-tail *Cynosurus cristatus*, glaucous sedge *Carex flacca*, common knapweed *Centaurea nigra*, abundant bird’s-foot-trefoil *Lotus corniculatus*, self heal *Prunella vulgaris*, fairy flax *Linum catharticum*, dwarf thistle *Cirsium acaule* and wild carrot *Daucus carota*. The pools are surrounded by hawthorn *Crataegus monogyna* scrub, with some grey and goat willow *Salix spp* and young ash *Fraxinus excelsior*. The pools are dominated by common spike-rush *Eleocharis palustris* associated with frequent tubular water-dropwort *Oenanthe fistulosa*, a county rarity. Other emergent species include common club-rush *Schoenoplectus lacustris*, jointed rush *Juncus articulatus* and water plantain *Alisma plantago-aquatica*, with abundant amphibious bistort *Persicaria amphibia*, rigid hornwort *Ceratophyllum demersum* and broad-leaved pondweed *Potamogeton natans* in the water.

**DESIGNATED SITES**

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| Local Nature Reserves | None |
### 10. MINOR FLOODPLAIN

#### CHARACTER AREAS

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<td>Willow Brook</td>
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#### KEY CHARACTERISTICS

- Surface drift is dominated by Alluvium;
- Narrow valleys subject to periodic winter flooding, defined by the extent of the Easter floods of 1998;
- Small, often fast flowing streams in the upper reaches of the catchments;
- Wider, slower flowing rivers lower down the river system;
- Grasslands are predominant, but the majority are agriculturally improved;
- Habitats are often damp all year round;
- Wet woodland and carr is typical, but very limited in extent;
- A variety of wet and marshy grasslands occur;
- Reservoirs and ornamental lakes are characteristic;
- Sand and gravel pits are infrequent;
Unlike many areas of Minor Floodplain in the north of the county, this area has a good proportion and
diversity of retained unimproved semi-natural habitat. The Ise floodplain covers 13km² and part of the
river is designated as SSSI.

The River Ise SSSI upstream of Kettering is the best example in the county of a lowland river on clay,
fed by base-rich water. The channel displays a variety of semi-natural features that are increasingly
uncommon in areas of intensive agriculture. Between Barford Bridge railway viaduct and the village of
Geddington the river channel is narrow and meandering with numerous sharp bends and loops; with
alternating pools, slacks, riffles and runs that modify the water flow. The substrate is equally varied with
silty pools, gravel shoals and beds and bare clay. Areas of tall fen, woodland and semi-improved grassland
along the banks, together with an area of species-rich flood meadow, provide additional habitats which
complement the interest of the site.

The eastern section of the river is lined with mature trees including alder Alnus glutinosa, ash Fraxinus
excelsior, pedunculate oak Quercus robur and white willow Salix alba pollards. Hawthorn Crataegus
monogyna, Midland hawthorn C. laevigata and blackthorn Prunus spinosa are well represented, with
occasional buckthorn Rhamnus cathartica and guelder rose Viburnum opulus. Where gaps in the tree
cover allow, there are stands of aquatic plants dominated by unbranched bur-reed Sparganium emersum,
spiked water-milfoil Myriophyllum spicatum, yellow water-lily Nuphar lutea, arrowhead Sagittaria
sagittifolia and, on silt deposits, swards of branched bur-reed Sparganium erectum. Aquatic plant growth
is more luxuriant and diverse in the western section where there are fewer trees and shrubs. Additional
species occur here such as common club-rush Schoenoplectus lacustris, broad-leaved pondweed
Potamogeton natans, greater pond sedge Carex riparia and rigid hornwort Ceratophyllum demersum. The
bank vegetation is rich and varied showing a typical zonation from nettle Urtica dioica, great willowherb
Epilobium hirsutum and purple-loosestrife Lythrum salicaria to water forget-me-not Myosotis scorpioides
at the water’s edge. Skullcap Scutellaria galericulata is less common.

There is a small self-supporting population of grayling Thalassoma thalassum, the only example in
Northamptonshire, and an important population of white-clawed crayfish Austropotamobius pallipes,
a species which, due primarily to disease introduced by non-native crayfish species, is declining
nationally.

Wet and marshy grassland is well represented. Species-rich mesotrophic flood meadow adjacent to the
SSSI section of the River Ise is characterised by meadow foxtail Alopecurus pratensis, yellow oat-grass
Trisetum flavescens and great burnet Sanguisorba officinalis, with drier slopes supporting lady’s bedstraw
Galium verum and crested dog’s-tail Cynosurus cristatus.
Southfield Farm Marsh is the largest area of long-established tall grass washland in the county, a characteristic, but now much reduced vegetation type on alluvial soils in river valleys that are subject to regular winter flooding. The site includes base-rich and floristically diverse mire developed on silty peats and watered by calcareous spring-flows. This locally rare community supports a specialised and uncommon invertebrate fauna. The washland is composed of large stands dominated by a few plants, notably reed sweet-grass *Glyceria maxima*, with locally abundant reed canary-grass *Phalaris arundinacea*, tufted hair-grass *Deschampsia cespitosa*, floating sweet-grass *Glyceria fluitans*, lesser pond-sedge *Carex acutiformis* and tufted-sedge *Carex elata*. The spring-fed mire, by contrast, has a variety of wetland herbs with no obvious dominant, including wild angelica *Angelica sylvestris*, marsh thistle *Cirsium palustre*, water horsetail *Equisetum fluviatile*, greater bird’s-foot-trefoil *Lotus pedunculatus* and marsh-bedstraw *Galium palustre*.

Mawsley Marsh, part of a larger SSSI, lies at the bottom of a small valley comprising a unique mixture of wildlife habitats. Along the waterlogged valley floor there is an almost continuous linear strip of marshy grassland where rushes, sedges, grasses and herbs are all locally dominant. The more abundant species include blunt-flowered rush *Juncus subnodulosus*, bulbous rush *J. bulbosus*, jointed rush *J. articulatus*, false fox-sedge *C. otruba*, water horsetail *Equisetum fluviatile*, water mint *Mentha aquatica* and common fleabane *Pulicaria dysenterica*. Tussock sedge *Carex paniculata*, marsh arrow grass *Triglochin palustris* and marsh valerian *Valeriana dioica* are noteworthy.

Standing water is represented by Cransley and Thorpe Malsor Reservoirs and a few ornamental lakes. Cransley is the larger of the two reservoirs, which lie in adjacent valleys, and has vegetation typical of the water bodies in the area. It has an open perimeter, apart from occasional groups of grey willow *Salix cinerea* and hawthorn *Crataegus monogyna*. The open water contains abundant submerged and floating vegetation including shining pondweed *Potamogeton lucens*, amphibious bistort *Persicaria amphibia*, common duckweed *Lemna minor* and floating sweet-grass *Glyceria fluitans*, plus Canadian waterweed *Elodea canadensis*, rigid hornwort *Ceratophyllum demersum* and common water crowfoot *Ranunculus aquatilis*. There is a broad fringe of emergent vegetation including reed sweet-grass *Glyceria maxima*, meadowsweet *Filipendula ulmaria*, wild angelica *Angelica sylvestris*, reed canary-grass *Phalaris arundinacea*, bulrush *Typha latifolia* and common club-rush *Schoenoplectus lacustris*.

There are a few areas of plantation and park woodland mainly in the very highest reaches of the Ise valley. Kelmarsh Dale is a narrow wooded valley comprising a well-established, but rather neglected plantation, with large, well-spaced trees and tall scrub. Ash *Fraxinus excelsior* and poplar *Populus spp* are the main trees, with occasional oak *Quercus robur*, crack willow *Salix fragilis* and white willow *S. alba*, some of which have collapsed and are now regenerating. There is a well-lit under storey of tall hawthorn *Crataegus monogyna*, wych elm *Ulmus glabra*, elder *Sambucus nigra*, blackthorn *Prunus spinosa*, hazel *Corylus avellana* and wild privet *Ligustrum vulgare*. The field layer is marshy in places, especially next to the river. Species include abundant meadowsweet *Filipendula ulmaria*, cleavers *Galium aparine*, nettle *Urtica dioica* and red campion *Silene dioica*, with lesser celandine *Ranunculus ficaria* and creeping buttercup *R. repens* in areas of short vegetation.

**DESIGNATED SITES**

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| Sites of Special Scientific Interest | Birch Spinney and Mawsley Marsh  
River Ise and Meadows  
Southfield Farm Marsh |
| Wildlife Sites | Burton Latimer Meadows  
Cransley Reservoir  
Ise Marsh and Cook’s Spinney  
Ise Marsh, Wicksteed  
Kelmarsh Dale  
New Lake  
New Lake Meadow  
Rushton Grange Meadow  
Rushton Park Woodland  
Thorpe Malsor Reservoir  
Wicksteed Park South Lake |
| Local Nature Reserves | None |
BIODIVERSITY CHARACTER STRATEGY AND GUIDELINES
2. LIASSIC SLOPES BIODIVERSITY

Biodiversity Character Areas

2a Cherwell Valley Liassic Slopes
2b Great Ouse Valley Liassic Slopes
2c Upper Tove Valley Liassic Slopes
2d Wootton Brook Liassic Slopes
2e Upper Nene Valley Liassic Slopes
2f Avon Valley Liassic Slopes
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2i Ise Valley Liassic Slopes
2j Upper Welland Liassic Slopes
2k Dingley to Wakerley Liassic Slopes
2l Collyweston to Easton-on-the-Hill Liassic Slopes

Physical and Human Influences

The Liassic Slopes Biodiversity Character Type occupies several areas of generally sloping ground on the valley sides, predominantly in west and central Northamptonshire. The Liassic Slopes exhibit similar characteristics to the Acid Sands. However, the extent of the Northampton Sand Formation is much more limited, occurring as a thin band at the top of the slopes. In the west of the county, where the valleys are deeper, the geology comprises the complete Lias Group sequence, beneath the narrow band of the Northampton Sand Formation. In more easterly areas of the county, the shallower valley sides comprise only Northampton Sand Formation and Whitby Mudstone Formation.

A range of soil types is associated with the variable geology. Fine clay loams occur widely over the Lias Group. Well-drained, fine and coarse loamy ferritic brown earths soils and slightly stoney, sandy loams over the Northampton Sand Formation tend to be slightly acidic at the surface. Elsewhere, on more level ground there are smaller areas of slowly permeable clays and fine loamy over clayey soils, both of which are also slightly acidic.

Agricultural change is the principal influence on the retention of unimproved semi-natural habitats. Woodlands tend to be isolated with many of those that remain being located on the steeper slopes and/or on the poorest soils. Here, the opportunity for high crop yields is compromised by poor access for agricultural machinery or by the quality of the soil. Where the free-draining soils over the sands occur on gentle slopes, many grasslands have been converted to arable cropping. This has resulted in the loss of traditionally managed grasslands. Where the ground is steeper, permanent grassland is still common, but here the diversity of the grassland has been diminished by fertiliser application to improve grass production. Unimproved grassland is now confined to occasional sites on the steepest hillsides.

Soils over the Lias Group Clay would once have supported semi-natural slightly acidic/neutral grassland. However, improved land drainage techniques now enable these clayey soils to yield moderately good crops of cereals and oil-seed rape. Retention of grassland in these areas is low and the floristic diversity of the swards, like that of the grasslands over the Northampton Sand Formation, has also been adversely affected by fertiliser application. Few unimproved semi-natural grasslands remain.

Quarrying and the construction of railways in some of the more elevated areas have created areas of thin soil on which areas of neutral grassland have developed.
KEY NORTHAMPTONSHIRE BIODIVERSITY ACTION PLAN HABITATS

• **LOWLAND MIXED WOODLAND**
  Woodland retention is low and variable across the associated Biodiversity Character Areas. The majority of the woodlands are mixed plantations with a significant conifer component. Few woodlands are of ancient origin. The two main identifiable woodland types are oak-bracken-bramble woods on the sandy soils and ash-field maple woods over the heavier clay soils. Coleready Plantation, a large woodland in the Cherwell Valley Liassic Slopes Biodiversity Character Area, exemplifies the variation of woodland types that occur over different soils. The more elevated sections lie on light soils and support an acid ground flora in the more open areas. The southern part, an area of ancient semi-natural ancient woodland, lies mostly on clay soils and comprises typical ash-field maple woodland.

• **LOWLAND NEUTRAL GRASSLAND**
  Lowland Neutral Grasslands and acid variants of neutral grassland are widespread, but limited in number, but would once have been common on the clay soils. Good examples include Adstone Meadows, a large area of neutral grassland with pronounced ridge and furrow in the Upper Tove Liassic Slopes Biodiversity Character Area and the more acidic Coombe Hill Hollow SSSI in the Upper Welland Liassic Slopes Biodiversity Character Area. Several sections of disused railway, e.g., Brackley Disused Railway in the Great Ouse Liassic Slopes Biodiversity Character Area also support areas of species-rich neutral grassland. Since the closure of the railways these grasslands have been unmanaged and many are now adversely affected by scrub encroachment. These linear habitats form important wildlife corridors.

• **LOWLAND ACID GRASSLAND**
  The distribution of acid grasslands is limited to the sandiest soils and consequently they are rare. They tend to occur in open areas in woodland and scrub, e.g., the acid grassland at Barnhill Spinney in the Upper Welland Liassic Slopes Biodiversity Character Area is found in an area of scattered oaks and gorse scrub.

• **HEDGEROWS**
  Grasslands tend to be bounded by stock-proof hedges, which provide food and shelter for a wide variety of species as well as forming the basis of important wildlife corridors. However, in arable areas, many hedgerows have been removed to allow more efficient crop management and where hedges are retained they often form low, discontinuous boundary features of limited biodiversity value.

• **OPEN STANDING WATER (field ponds, ornamental ponds and sections of canal)**
  A number of ponds, many of which are man-made, are designated as County Wildlife Sites, e.g., Arbury Hill Pond in the Upper Nene Valley Liassic Slopes Biodiversity Character Area. Several ponds are associated with the Grand Union Canal, which crosses several of the Biodiversity Character Areas. The Canal forms an important wildlife corridor in association with the adjacent grassland and hedgerows.

• **SPRINGS AND FLUSHES**
  Springs issue at the interface between the Northampton Sand Formation and the Whitby Mudstone Formation. However, moss and sedge-rich flushes watered by springs are very scarce due to land drainage. The flushes at Bosworth Mill Meadow SSSI in the Avon Valley Liassic Slopes Biodiversity Character Area are amongst the best examples in the county.
BIODIVERSITY STRATEGY FOR THE LIASSIC SLOPES BIODIVERSITY CHARACTER TYPE

The Liassic Slopes Biodiversity Character Type retains small, fragmented areas of broadleaved and mixed plantations. Few are of ancient origin. Lowland neutral grasslands are widespread, but scarce, and the survival of lowland acid grasslands, the majority of which are affected by woodland planting and scrub encroachment, is even more limited. Species-rich springs and flushes are a rare, but important feature. Disused railways and sections of canal provide important wildlife corridors. Overall the survival of semi-natural habitats is low.

Broadleaved woodlands, lowland neutral grasslands, lowland acid grassland, springs and flushes, hedgerows and open standing water are characteristic of this character type, and their extent should be conserved by controlling new development, change and land management.

As the overall retention of semi-natural habitats is low and their distribution is fragmented, land management should seek to reinforce biodiversity character by increasing the extent of characteristic habitats and reduce fragmentation by restoration, creation, buffering and linkage to create large sustainable mosaics of characteristic habitats. Habitat linkages should be enhanced by the conservation, restoration and buffering of sections of canal, streams and hedgerows to create functioning wildlife corridors.

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<th>GUIDELINES FOR NORTHAMPTONSHIRE BIODIVERSITY ACTION PLAN HABITATS</th>
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<td><strong>Lowland Mixed Woodland</strong></td>
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<td>• Conserve existing broadleaved woodlands that are currently in favourable condition to ensure that reservoirs of characteristic species are retained with the potential to colonise newly created or restored areas.</td>
</tr>
<tr>
<td>• Restore existing lowland mixed woodlands that are currently in unfavourable condition, including a reduction in the coniferous component, to enhance the reservoir of characteristic species with the potential to colonise newly created or restored areas.</td>
</tr>
<tr>
<td>• Create new areas of broadleaved woodlands that extend and link existing woodlands to create large sustainable habitat units and reduce habitat fragmentation. Where possible, new woodlands should be created by natural regeneration, particularly on sites adjacent to existing ancient and ancient-semi natural woodlands. New woodland planting should comprise a mix of species typical of woodlands associated with the underlying soils: oak - bracken - bramble woodlands on the sandy soils and ash - field maple woodlands on the clay soils. Planting stock should, ideally, be of local provenance.</td>
</tr>
<tr>
<td>• Buffer existing lowland mixed woodlands, where habitat creation is not possible, to protect them from potentially damaging environmental influences.</td>
</tr>
</tbody>
</table>

| **Lowland Neutral Grassland**                                  |
| • Conserve existing lowland neutral grasslands that are currently in favourable condition to ensure that reservoirs of characteristic species are retained with the potential to colonise newly created or restored areas. |
| • Restore existing lowland neutral grasslands that are currently in unfavourable condition to enhance the reservoir of characteristic species with the potential to colonise newly created or restored areas. |
| • Create new areas of lowland neutral grassland that extend and link existing sites to create large sustainable habitat units and reduce habitat fragmentation. The seed mix should comprise species typical of locally characteristic lowland neutral grasslands and, where possible seed should be sourced locally, for example in the form of green hay from existing wildlife sites. |
| • Buffer existing lowland neutral grasslands, where habitat creation is not possible, to protect them from potentially damaging environmental influences. |
**Lowland Acid Grassland**

- Conserve existing lowland acid grasslands that are currently in favourable condition to ensure that reservoirs of characteristic species are retained with the potential to colonise newly created or restored areas.
- Restore existing lowland acid grasslands that are currently in unfavourable condition to enhance the reservoir of characteristic species with the potential to colonise newly created or restored areas.
- Create new areas of lowland acid grasslands that extend and link existing sites to create large sustainable habitat units and reduce habitat fragmentation. The seed mix should comprise species typical of locally characteristic lowland acid grasslands and, where possible seed should be sourced locally, for example in the form of green hay from existing wildlife sites.
- Buffer existing lowland acid grasslands, where habitat creation is not possible, to protect them from potentially damaging environmental influences.

**Hedgerows**

- Conserve existing hedgerows by appropriate management to maintain woodland linkages and reduce habitat fragmentation.
- Enhance existing hedgerows through gapping up and the creation of uncultivated and/or grassland field margins to encourage the re-establishment of taller thicker hedges, improve habitat linkages and reduce habitat fragmentation. The species mix should comprise species typical of the locality, ideally be of local provenance and include a small proportion of new hedgerow trees.
Open StandingWater (field ponds, ornamental ponds and sections of canal)

- Conserve existing field ponds, ornamental ponds and sections of canal that are currently in favourable condition to ensure that reservoirs of characteristic species are retained with the potential to colonise newly created or restored areas.
- Restore existing field ponds, ornamental ponds and sections of canal that are currently in unfavourable condition to enhance the reservoir of characteristic species with the potential to colonise newly created or restored areas.
- Create buffer strips around field ponds and ornamental lakes to reduce the impact of soil erosion and diffuse pollution.
- Create new field ponds over clay soils.

Springs and Flushes

- Conserve existing springs and flushes that are currently in favourable condition to enhance the reservoir of characteristic species with the potential to colonise newly created or restored areas.
- Restore existing springs and flushes that are currently in unfavourable condition to enhance the reservoir of characteristic species with the potential to colonise newly created or restored areas.

Wildlife Corridors

- Enhance existing wildlife corridors, along hedgerows, streams, sections of canal and disused railways, which are beneficial to a wide range of species, improve habitat linkages and reduce habitat fragmentation.
10. MINOR FLOODPLAIN BIODIVERSITY

BIODIVERSITY CHARACTER AREAS

10a River Cherwell
10b River Great Ouse
10c Upper Tove
10d River Tove
10e Upper Nene
10f Brampton Nene
10g Wootton Brook
10h Grendon Brook
10i Sywell Bottom
10j River Avon
10k Upper Welland
10l River Ise
10m Alledge Brook
10n Harpers Brook
10o Southwick Brook
10p Willow Brook

PHYSICAL AND HUMAN INFLUENCES

The Minor Floodplain Biodiversity Character Type is found in the upper reaches of all the river systems in Northamptonshire. In the highest reaches of the river systems the streams are narrow and in places fast flowing, particularly where they drain steeper ground. In these areas the channels are least modified and in places retain a natural structure. At lower elevations, where the ground is less steeply sloping, the narrow rivers are slow flowing. Here they have often been modified to encourage rapid drainage of the surrounding land and to reduce the flood risk. As a result the channels are straighter and lack many characteristic features of natural river channels.

The surface geology is dominated by Alluvium with deep clayey alluvial soils. The sub-soils are usually slowly or moderately permeable, but the main cause of waterlogging is groundwater that fluctuates seasonally with changes in river level. The duration of waterlogging is often related to the micro-topography of individual fields. In the uppermost reaches of the catchments a variety of soils occur, influenced by erosion of the adjoining valley slopes. Thin peaty topsoil occurs occasionally.

Grassland retention in the, predominantly, narrow floodplains is high, the frequency of flooding making the land less suited to arable cropping. The use of chemical fertilisers has improved grass production resulting in a change to the natural botanical composition of many grasslands. A better grass crop has also allowed greater stocking densities. Silage production has now taken over from traditional hay cropping which maintained the floristic diversity.

The construction of reservoirs, firstly to recharge the canal network and latterly for drinking water supply, has had a positive effect on local biodiversity, by creating new wetland habitats. The creation of landscape parkland has also increased the extent of smaller open water habitats.
KEY NORTHAMPTONSHIRE BIODIVERSITY ACTION PLAN HABITATS

• **RIVERS AND STREAMS**
Unmodified streams occur in the upper reaches of many catchments. The River Ise upstream of Kettering in the River Ise Biodiversity Character Area is the outstanding example. It displays a variety of semi-natural features including meanders and a series of alternating of pools, slacks, ripples and runs which give rise to a variety of flow patterns. Varied substrates create a variety of silty pools, gravel shoals and beds and bare clay areas. Occasional trees and small areas of woodland line the banks, with alder and willow pollards being typical.

• **OPEN STANDING WATER** (ponds, reservoirs and ornamental lakes)
Open waters in the Minor Floodplain vary in size from small ponds, e.g. Yardley Gobion Ponds in the River Tove Biodiversity Character Area, to large reservoirs, e.g. Pitsford Reservoir SSSI in the Brampton Nene Biodiversity Character Area. The Grand Union and Oxford Canals are also a feature of the Minor Floodplain Biodiversity Character Areas wet of Northampton. Waterbodies vary in depth, which influences the nature of the marginal, emergent and aquatic vegetation. Open water habitats typically have a broad fringe of tall vegetation comprising a variety of swamp and tall herb fen communities. Open water also includes ornamental lakes, e.g. the lakes at Deene Park and Blatherwyke in the Willow Brook Biodiversity Character Area, and isolated gravel pits at Deaneshanger.

• **REEDBEDS AND SWAMPS**
Swamps tend to be relatively species-poor wetland habitats often dominated by a single species. They typically form in depressions or as fringing vegetation alongside rivers, ponds and reservoirs. A wide variety of swamp communities occur and several discrete communities may be found on the margins of open water and slow flowing rivers and streams. Marginal swamp and, to a lesser extent reedbeds, can be found in all the Minor Floodplain Biodiversity Character Areas in association with other wetland habitats. They are much less common in the farmed landscape and often occur as a component of wet and marshy grassland.

• **WET AND MARSHY GRASSLAND**
Although once more widespread, there are now very few area of wet and marshy grassland, where a few grass species, low-growing herbs and rushes, which can tolerate periodic inundation, typically dominate. Associated drainage channels often support important species assemblages. Southfield Farm Marsh in the River Ise Biodiversity Character Area is the largest area of long-established tall grass washland in the county. The site includes base-rich and floristically diverse mire developed on silty peat and watered by calcareous spring-flows. Syresham Marshy Meadows SSSI in the River Great Ouse Biodiversity Character Area comprises two wetlands of contrasting character situated in two narrow valleys. The northern area is relict valley mire on shallow peat and to the south is agriculturally unimproved neutral grassland and spring-fed marsh.

• **SPRINGS AND FLUSHES**
Springs and their associated wet flushes are very limited in their distribution. Springs occur where water wells up from underground aquifers, whilst flushes occur on sloping ground with impeded drainage. They support important wet grassland and swamp communities that include rushes, sedges and herb species such as marsh marigold and ragged robin, e.g. Bugbrooke Meadows SSSI in the Upper Nene Biodiversity Character Area.

• **LOWLAND WET WOODLAND**
The main woodland type is carr, which colonises waterlogged areas and the margins of open water, particularly where tributary streams join reservoirs, and is often associated with a variety of swamp communities. Willows dominate the canopy. A good example is Naseby Reservoir in the River Avon Biodiversity Character Area, which, apart from the dam, is surrounded by fringing willow carr. Wet woodland has also completely colonised some former ponds, e.g. Ayhho Viaduct Carr was once open water, but, through succession, has now developed in to dense wet woodland dominated by grey willow and osier.

• **HEDGEROWS**
Grasslands tend to be bounded by stock-proof hedges, which provide food and shelter for a wide variety of species as well as forming the basis of important wildlife corridors.
BIODIVERSITY STRATEGY FOR THE MINOR FLOODPLAIN BIODIVERSITY CHARACTER TYPE

Minor Floodplain Biodiversity Character Type comprises a range of semi-natural habitats. Biodiversity rich rivers and streams, and their associated reedbeds and swamps, and open standing water, in the form of ponds, reservoirs and ornamental lakes, and wet woodland associated with waterbodies are widespread. However, the occurrence of wet and marshy grassland, and associated springs and flushes, and drier plantation woodland is much more limited.

New development, change and land management should be controlled to conserve rivers and streams and their associated reedbed and swamp communities; open standing water (ponds, reservoirs and ornamental lakes) and their associated reedbed, swamp and wet woodland communities; other areas of wet woodland; wet and marshy grassland; springs and flushes and hedgerows. Although the retention of semi-natural habitats in relatively high, some distribution of some habitats is fragmented, therefore new development, change and land management should seek to increase the extent of wet and marshy grassland and associated springs and flushes, wet woodland and hedgerows by restoration, creation, buffering and linkage to create large sustainable mosaics of characteristic habitats. Habitat linkages should be enhanced by the conservation, restoration and buffering of rivers and streams ditches to create functioning wildlife corridors.
### GUIDELINES FOR NORTHAMPTONSHIRE BIODIVERSITY ACTION PLAN HABITATS

#### Rivers and Streams
- Conserve existing sections of rivers and streams that are currently in favourable condition to ensure that reservoirs of characteristic species are retained with the potential to colonise restored areas.
- Restore existing sections of rivers and streams that are currently in unfavourable condition by the reintroduction of characteristic features to enhance the reservoir of characteristic species with the potential to colonise newly restored areas.
- Buffer sections of rivers and streams to protect them from potentially damaging environmental influences.

#### Open Standing Water (ponds, reservoirs and ornamental lakes)
- Conserve existing areas of open standing water that are currently in favourable condition to ensure that reservoirs of characteristic species are retained with the potential to colonise other sites.
- Restore existing areas of open standing water that are currently in unfavourable condition by the restoration and creation of other wetland habitats and features that enhance the reservoir of characteristic species with the potential to colonise other sites.
- Buffer areas of open standing water to protect them from potentially damaging environmental influences.

#### Reedbeds and Swamps
- Conserve existing reedbeds and swamps that are currently in favourable condition to ensure that reservoirs of characteristic species are retained with the potential to colonise other sites.
- Restore, where appropriate, existing reedbeds and swamps, particularly where succession to wet woodland is in the early stages, to enhance the reservoir of characteristic species with the potential to colonise other sites.
- Create new areas of reedbed and swamp that extend and link existing reedbeds and swamps, particularly in association with the restoration of open standing water areas, to create large sustainable habitat units and reduce habitat fragmentation.
- Buffer areas of reedbeds and swamps to protect them from potentially damaging environmental influences.

#### Wet and Marshy Grassland
- Conserve existing wet and marshy grasslands that are currently in favourable condition to ensure that reservoirs of characteristic species are retained with the potential to colonise newly created or restored areas.
- Restore existing wet and marshy grasslands that are currently in unfavourable condition to enhance the reservoir of characteristic species with the potential to colonise newly created or restored areas.
- Create new areas of wet and marshy grassland that extend and link existing sites to create large sustainable habitat units and reduce habitat fragmentation. The seed mix should comprise species typical of locally characteristic wet and marshy grasslands and, where possible seed should be sourced locally, for example in the form of green hay from existing wildlife sites.
- Buffer existing wet and marshy grasslands, where habitat creation is not possible, to protect them from potentially damaging environmental influences.

#### Springs and Flushes
- Conserve existing springs and flushes that are currently in favourable condition to enhance the reservoir of characteristic species with the potential to colonise newly created or restored areas.
- Restore existing springs and flushes that are currently in unfavourable condition to enhance the reservoir of characteristic species with the potential to colonise newly created or restored areas.
Lowland Wet Woodland

- Conserve existing wet woodlands that are currently in favourable condition to ensure that reservoirs of characteristic species are retained with the potential to colonise newly created or restored areas.
- Restore existing wet woodlands that are currently in unfavourable condition to enhance the reservoir of characteristic species with the potential to colonise newly created or restored areas.
- Create new areas of wet woodland, particularly in association with the restoration of open standing water areas, that extend and link existing wet woodlands to create large sustainable habitat units and reduce habitat fragmentation. Where possible, new wet woodlands should be created by natural regeneration. New woodland planting should comprise a mix of species typical of existing floodplain woodlands. Planting stock should, ideally, be of local provenance.
- Buffer existing wet woodlands, where habitat creation is not possible, to protect them from potentially damaging environmental influences.

Hedgerows

- Conserve existing hedgerows by appropriate management to maintain woodland linkages and reduce habitat fragmentation.
- Enhance existing hedgerows through gapping up and the creation of uncultivated and/or grassland field margins to encourage the re-establishment of taller thicker hedges, improve habitat linkages and reduce habitat fragmentation. The species mix should comprise species typical of the locality, ideally be of local provenance and include a small proportion of new hedgerow trees.

Wildlife Corridors

- Enhance existing wildlife corridors along sections of rivers and streams and hedgerows, which are beneficial to a wide range of species, improve habitat linkages and reduce habitat fragmentation.
Where the hedge impedes on the visibility requirements for the improved access the hedge is to be translocated. Existing hedge outside of visibility splay to remain.

Carriageway between site access and A508 to be widened to 6.0m minimum. This part of the existing roadway is to be returned to highway verge as part of the junction improvement.

Tangential Visibility Splay
A508 Harborough Road
Visibility Splay 4.5m x 215m
Kerb realigned to accommodate 16.5m max legal artic.

Refer to "Soft Landscaping Scheme" Document for full details of Proposed Plantings.
Wormslade Farm
Anaerobic Digester Facility

Arboricultural Assessment

Commissioned for:
Stuart Homewood
Raw Biogas Limited
Suite 321
2 Old Brompton Road
London
SW7 3DQ

May 2016

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Quality Assurance

Title: Wormslade Farm Anaerobic Digester. Arboricultural Assessment

Client:
Stuart Homewood
Renewable Planning Ltd.

Report Number
1A1A.Hom.CSA

Revision:
Draft

Date:
16-5-2016

Approved:

[Signature]

Chris Seabridge
Managing Director
Summary

- Chris Seabridge & Associates Ltd was commissioned to carry out an Arboricultural Assessment (in line with BS 5837:2012) of the proposed site of an anaerobic digester at Wormslade Farm.

- The assessment included a survey of trees within the development site, an evaluation of proposed tree losses, a tree protection plan and a planting scheme to compensate for tree losses.

- There will be a loss of 16 trees within the hedgerow along the northern edge of the development site.

- Protective barriers should be placed around the remaining trees in line with BS 5837:2012, to protect the Root Protection Zone of the trees during construction works.

- To compensate for the loss of trees, new woodland will be established surrounding the development site and comprising locally native trees and shrubs.
1 Introduction

The Arboricultural Assessment forms part of a planning application for an anaerobic digester plant at Wormslade Farm, Clipston Road, Kelmarsh, Northamptonshire LE18 9RX.

Following advice from Northampton Highways department, it is proposed to remove sections of hedgerow and associated trees either side of the main entrance onto Clipston Road to improve sight-lines from the entrance and achieve the visibility splays as depicted on the layout plan.

The Arboricultural Assessment included a survey of trees within the development site, an evaluation of proposed tree losses, a tree protection plan and a planting scheme to compensate for tree losses.

Stuart Homewood of Raw Biogas Ltd. instructed Nigel Baskerville of Chris Seabridge & Associates Ltd. to undertake an Arboricultural Assessment of the proposed development in line with BS 5837:2012.

1.1 Site description

The site of the anaerobic digester at Wormslade Farm lies to between the villages of Kelmarsh and Clipston at Grid Reference SP733816.

Plate 1: Aerial photograph of Wormslade Farm showing location of proposed anaerobic digester facility (site boundary shown in red).
2 Methodology

2.1 Assessment Area
The Arboricultural Assessment in this report includes all trees within the development site outlined with a red line in Figure 2.

2.2 Tree Survey
The tree survey was undertaken on 29th December 2015 in sunny, dry and mild weather conditions.

Each tree was numbered and the location of trees is shown in Figure 1. The following tree measurements were taken
- Height (to the nearest half metre)
- Stem diameter measured at breast height (to the nearest 10mm)
- Branch spread taken at each of the four cardinal points
- Age (e.g. young, semi-mature, early mature, mature, over-mature)
- Crown clearance (to the nearest half metre)

The condition of each tree was categorised using the criteria in Table 1 of the BS 5837:2012 Recommendations. A copy of the table is shown in the Appendix I.

2.3 Limitations
There were no constraints on access to the site and the full area was surveyed.

3 Results

3.1 Tree Survey
The results of the tree survey are shown in Table 1 below. The location of trees within the development site is shown in Figure 2 in the appendix II.
Table 1: Results of the tree survey at Wormslade Farm

<table>
<thead>
<tr>
<th>Tree No.</th>
<th>Species</th>
<th>Stem diameter (cm)</th>
<th>Height (m)</th>
<th>Age</th>
<th>Crown radius (m)</th>
<th>General observations</th>
<th>Estimated remaining contribution (years)</th>
<th>Tree Quality Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>Quercus robur</td>
<td>27</td>
<td>8</td>
<td>S/M</td>
<td>4.1 3.2 3.5 3.5</td>
<td></td>
<td>40+</td>
<td>B2</td>
</tr>
<tr>
<td>T2</td>
<td>Fraxinus excelsior</td>
<td>17,15,10</td>
<td>9</td>
<td>Y</td>
<td>3 2.7 3 3</td>
<td></td>
<td>40+</td>
<td>C2</td>
</tr>
<tr>
<td>T3</td>
<td>Fraxinus excelsior</td>
<td>17</td>
<td>9</td>
<td>Y</td>
<td>3.4 2.5 3.5 2.5</td>
<td></td>
<td>40+</td>
<td>C2</td>
</tr>
<tr>
<td>T4</td>
<td>Fraxinus excelsior</td>
<td>63</td>
<td>16</td>
<td>M</td>
<td>7.1 7.3 7.5 8.8</td>
<td></td>
<td>40+</td>
<td>B2</td>
</tr>
<tr>
<td>T5</td>
<td>Fraxinus excelsior</td>
<td>Ave 15</td>
<td>9</td>
<td>Y</td>
<td>3.0 3.0 3.0 3.0</td>
<td></td>
<td>40+</td>
<td>C2</td>
</tr>
<tr>
<td>T6</td>
<td>Fraxinus excelsior</td>
<td>84</td>
<td>16</td>
<td>M</td>
<td>6.8 4.2 8.0 9.5</td>
<td>Some ivy</td>
<td>40+</td>
<td>B2</td>
</tr>
<tr>
<td>T7</td>
<td>Fraxinus excelsior</td>
<td>16,14,9,17</td>
<td>8.5</td>
<td>Y</td>
<td>3.0 3.0 3.0 3.0</td>
<td>Coppiced</td>
<td>40+</td>
<td>C2</td>
</tr>
<tr>
<td>T8</td>
<td>Acer campestre</td>
<td>14</td>
<td>9</td>
<td>Y</td>
<td>3.0 3.0 4.5 3.0</td>
<td>Layed</td>
<td>40+</td>
<td>C2</td>
</tr>
<tr>
<td>T9</td>
<td>Fraxinus excelsior</td>
<td>21</td>
<td>10</td>
<td>S/M</td>
<td>3.0 3.0 2.8 3.0</td>
<td></td>
<td>40+</td>
<td>C2</td>
</tr>
<tr>
<td>T10</td>
<td>Fraxinus excelsior</td>
<td>23</td>
<td>8.5</td>
<td>S/M</td>
<td>2.5 2.5 3.0 1.7</td>
<td>Stem swept</td>
<td>40+</td>
<td>C2</td>
</tr>
<tr>
<td>T11</td>
<td>Quercus robur</td>
<td>34</td>
<td>8.5</td>
<td>S/M</td>
<td>4.8 3.8 3.6 4.8</td>
<td></td>
<td>40+</td>
<td>B2</td>
</tr>
<tr>
<td>T12</td>
<td>Quercus robur</td>
<td>29</td>
<td>8.5</td>
<td>S/M</td>
<td>3.5 3.0 3.0 3.8</td>
<td>Lower stem pruned</td>
<td>40+</td>
<td>B2</td>
</tr>
<tr>
<td>T13</td>
<td>Quercus robur</td>
<td>8</td>
<td>5</td>
<td>Y</td>
<td>1.0 1.3 1.3 1.0</td>
<td>Tree shelter splitting</td>
<td>40+</td>
<td>C2</td>
</tr>
<tr>
<td>T14</td>
<td>Quercus robur</td>
<td>15</td>
<td>6</td>
<td>Y</td>
<td>2.0 2.0 2.0 2.1</td>
<td></td>
<td>40+</td>
<td>C2</td>
</tr>
<tr>
<td>T15</td>
<td>Quercus robur</td>
<td>10</td>
<td>5</td>
<td>Y</td>
<td>2.0 1.4 1.4 1.8</td>
<td>Tree shelter intact</td>
<td>40+</td>
<td>C2</td>
</tr>
<tr>
<td>T16</td>
<td>Quercus robur</td>
<td>27</td>
<td>9.5</td>
<td>S/M</td>
<td>3.2 4.2 2.7 3.7</td>
<td></td>
<td>40+</td>
<td>C2</td>
</tr>
<tr>
<td>T17</td>
<td>Acer campestre</td>
<td>Ave 15</td>
<td>9</td>
<td>Y</td>
<td>3.1 2.8 4.0 3.5</td>
<td>Coppiced stools with c.10 stems</td>
<td>40+</td>
<td>C2</td>
</tr>
<tr>
<td>T18</td>
<td>Acer campestre</td>
<td>Ave 15</td>
<td>8</td>
<td>Y</td>
<td>2.5 3.5 3.5 3.5</td>
<td>Coppiced stools with c.10 stems</td>
<td>40+</td>
<td>C2</td>
</tr>
<tr>
<td>T19</td>
<td>Salix caprea</td>
<td>63</td>
<td>7</td>
<td>M</td>
<td>3.2 4.0 4.5 4.0</td>
<td>In decline. Developing deadwood in stem</td>
<td>10</td>
<td>B3</td>
</tr>
<tr>
<td>T20</td>
<td>Quercus robur</td>
<td>27</td>
<td>9</td>
<td>S/M</td>
<td>4.0 4.0 4.0 3.0</td>
<td></td>
<td>40+</td>
<td>B2</td>
</tr>
<tr>
<td>T21</td>
<td>Fraxinus excelsior</td>
<td>18</td>
<td>7.5</td>
<td>Y</td>
<td>3.4 3.5 2.5 3.0</td>
<td></td>
<td>40+</td>
<td>C2</td>
</tr>
<tr>
<td>T22</td>
<td>Acer campestre</td>
<td>15</td>
<td>7.5</td>
<td>Y</td>
<td>3.4 3.5 2.5 3.0</td>
<td></td>
<td>40+</td>
<td>C2</td>
</tr>
<tr>
<td>T23</td>
<td>Quercus robur</td>
<td>12</td>
<td>5.5</td>
<td>Y</td>
<td>2.0 1.5 1.5 1.5</td>
<td>Shelter constraining growth of tree</td>
<td>40+</td>
<td>C2</td>
</tr>
<tr>
<td>T24</td>
<td>Quercus robur</td>
<td>37</td>
<td>9</td>
<td>S/M</td>
<td>5.0 3.2 4.5 2.2</td>
<td></td>
<td>40+</td>
<td>B2</td>
</tr>
</tbody>
</table>
A total of 24 trees were recorded within the development site and these are all present with the hedges that form the northern and southern boundaries of the site. The majority of trees were pedunculate oak *Quercus robur* (10) and ash *Fraxinus excelsior* (9). Other species included field maple *Acer campestre* (4) and goat willow *Salix caprea* (1).

The majority of trees are young in age (13) and many have been allowed to grow up through the hedge following cessation of hedge trimming. Consequently some of the younger trees are multi-stemmed or have grown up following hedge laying in the past. The largest trees are two mature ash (T4 and T6) which are present in the northern boundary hedge. Several oak trees have been planted within the hedgerow of which the largest have reached a stem diameter to have split their tree shelter.

It should be noted that the natural life expectancy of the ash trees shown in Table 1 does not account for ash dieback disease caused by the fungus *Chalara fraxinea* which could substantially reduce the expected life span of this species should it become established in the local area.

### 3.2 Arboricultural Impacts

Sixteen trees will be lost within the northern boundary hedgerow, in works advised by Northampton Highways Department to improve visibility at the main entrance (T1-T15 and T24).

Half of the trees proposed to be removed are young in age and consequently the trees are not yet of a size or stature to have important arboricultural, landscape or cultural/conservation qualities. The loss of these trees will be mitigated for by planting new areas of broad-leaved woodland surrounding the development area.

Development works will entail the removal of two mature ash trees, shown as T4 and T6 in Appendix II. These trees have moderate landscape and conservation qualities and their loss would not be considered as being of a major impact in the landscape. There is also the possibility that the life expectancy of these trees would be reduced if they contracted ash dieback disease.

No obvious features for roosting bats were noted during the survey. However due to the trees size, there may be potential features higher in the crown and out of site. Therefore it is recommended that the tree is felled using reasonable avoidance measures.

The remaining trees to be felled are six semi-mature oak and ash trees which have not reached sufficient stature to be considered a major loss in the landscape.
At the southern end of the site, hard standing is proposed which will be within 3m of a goat willow tree (T19) and within the calculated root protection zone (see Table 2 and Appendix II). The tree is currently in decline and not likely to live beyond 10 years. It does however have some biodiversity value due to the deadwood developing in the stem. It is recommended that the stem is retained as deadwood habitat.

### 3.3 Tree protection plan

It is recommended that the remaining trees within the development site are protected from damage during and after construction works. All trees should be protected by barriers before works commence to encompass the root Protection Zone (RPA) for each tree. The Root Protection Zone (RPA) for all the trees to be retained within the development site is shown in Table 2 below together with the protective fencing radius required.

**Table 2: Root Protection Area and protected fencing radius required for all trees to be retained within development site.**

<table>
<thead>
<tr>
<th>Tree No.</th>
<th>Species</th>
<th>Stem diameter (cm)</th>
<th>Root Protection Area (m²)</th>
<th>Protective fencing radius (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T16</td>
<td><em>Quercus robur</em></td>
<td>27</td>
<td>33</td>
<td>3.24</td>
</tr>
<tr>
<td>T17</td>
<td><em>Acer campestre</em></td>
<td>Ave 15</td>
<td>102</td>
<td>5.69</td>
</tr>
<tr>
<td>T18</td>
<td><em>Acer campestre</em></td>
<td>Ave 15</td>
<td>102</td>
<td>5.69</td>
</tr>
<tr>
<td>T19</td>
<td><em>Salix caprea</em></td>
<td>63</td>
<td>180</td>
<td></td>
</tr>
<tr>
<td>T20</td>
<td><em>Quercus robur</em></td>
<td>27</td>
<td>33</td>
<td>3.24</td>
</tr>
<tr>
<td>T21</td>
<td><em>Fraxinus excelsior</em></td>
<td>18</td>
<td>15</td>
<td>2.16</td>
</tr>
<tr>
<td>T22</td>
<td><em>Acer campestre</em></td>
<td>15</td>
<td>10</td>
<td>1.80</td>
</tr>
<tr>
<td>T23</td>
<td><em>Quercus robur</em></td>
<td>12</td>
<td>7</td>
<td>1.50</td>
</tr>
</tbody>
</table>

The default specification for the protective barriers is shown below in Figure 1. It is recommended that all weather notices should be attached to the barrier with words such as “CONSTRUCTION EXCLUSION ZONE – NO ACCESS”
**Figure 1:** Default Specification for protective barrier BS 5837:2012

![Diagram of protective barrier]

**Key**
1. Standard scaffold poles
2. Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3. Panels secured to uprights and cross-members with wire ties
4. Ground level
5. Uprights driven into the ground until secure (minimum depth 0.6 m)
6. Standard scaffold clamps
4 Mitigation and Enhancement

To compensate for the loss of 16 trees, an area of approximately a hectare of land will be planted with trees around the development site.

The species mixture of trees and shrubs should be locally native and where possible, the provenance is of a local source. Species and quantities for are shown in Table 3 below. Ash has not been selected in the species mixture due to the risk of ash dieback disease.

Trees and shrubs will be planted at 3m x 2m spacing (1600 plants per hectare) and individually protected from mammal damage with tree shelters. Weed control by spot spraying will be carried out for a minimum of three years until trees and shrubs are well established. Any losses should be replaced in the winter following planting.

Table 3: Suggested tree and shrub species in proposed planting Scheme in at Wormslade Farm

<table>
<thead>
<tr>
<th>Species</th>
<th>%</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedunculate oak - Quercus robur</td>
<td>35</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Field maple - Acer campestre</td>
<td>15</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Crab apple – Malus sylvestris</td>
<td>10</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Wild cherry – Prunus avium</td>
<td>10</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Goat willow – Salix caprea</td>
<td>5</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Hawthorn- Crataegus monogyna</td>
<td>5</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Hazel - Corylus avellana</td>
<td>5</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Holly - Ilex aquifolium</td>
<td>5</td>
<td>2 litre pot</td>
</tr>
<tr>
<td>Dogwood - Cornus sanguinea</td>
<td>5</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Dog rose - Rosa canina</td>
<td>5</td>
<td>40-60cm</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5 References

# Appendix I: Tree Quality Assessment (BS 5837:2012)

## Table 1: Cascade chart for tree quality assessment

<table>
<thead>
<tr>
<th>Category and definition</th>
<th>Criteria (including subcategories where appropriate)</th>
<th>Identification on plan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trees unsuitable for retention (see Note)</strong></td>
<td>• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse,</td>
<td></td>
</tr>
<tr>
<td>Category U</td>
<td>including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason,</td>
<td></td>
</tr>
<tr>
<td>Those in such a condition that they cannot realistically be retained as living trees in</td>
<td>the loss of companion shelter cannot be mitigated by pruning)</td>
<td></td>
</tr>
<tr>
<td>the context of the current land use for longer than 10 years</td>
<td>• Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline</td>
<td>[ ]</td>
</tr>
<tr>
<td></td>
<td>• Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low</td>
<td></td>
</tr>
<tr>
<td></td>
<td>quality trees suppressing adjacent trees of better quality</td>
<td>[ ]</td>
</tr>
<tr>
<td><strong>NOTE</strong> Category U trees can have existing or potential conservation value which it</td>
<td></td>
<td></td>
</tr>
<tr>
<td>might be desirable to preserve; see 4.5.7.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>1 Mainly arboricultural qualities</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Trees to be considered for retention</strong></td>
<td><strong>2 Mainly landscape qualities</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Category A</strong></td>
<td><strong>3 Mainly cultural values, including conservation</strong></td>
<td></td>
</tr>
<tr>
<td>Trees of high quality with an estimated remaining life expectancy of at least 40 years</td>
<td>Trees that are particularly good examples of their species, especially if rare or unusual; or those that are</td>
<td></td>
</tr>
<tr>
<td><strong>Category B</strong></td>
<td>essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal</td>
<td></td>
</tr>
<tr>
<td>Trees of moderate quality with an estimated remaining life expectancy of at least 20</td>
<td>trees within an avenue)</td>
<td></td>
</tr>
<tr>
<td>years</td>
<td>Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating</td>
<td></td>
</tr>
<tr>
<td><strong>Category C</strong></td>
<td>than they might as individuals; or trees occurring as collectives but situated so as to make little visual</td>
<td></td>
</tr>
<tr>
<td>Trees of low quality with an estimated remaining life expectancy of at least 10 years,</td>
<td>contribution to the wider locality</td>
<td></td>
</tr>
<tr>
<td>or young trees with a stem diameter below 150 mm</td>
<td><strong>Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Trees with no material conservation or other cultural value</strong></td>
<td></td>
</tr>
</tbody>
</table>
Appendix II: Arboricultural Assessment Map of Wormslade Farm

Figure 1: Tree Survey Wormslade Farm

Legend
- Application boundary
- Hedgerow

Tree quality Assessment (BS5837: 2012)
- Category U
- Category A
- Category B
- Category C
- Root Protection Zone

Tree Species
- Fsnl - Fraxinus excelsior
- Qrob - Quercus robur
- Acam - Acer campestre
- Scap - Salix caprea

Client: Stuart Homewood
Raw Bloggs Limited
Suite 301
2 Old Brompton Road
London
SW7 3DQ

Scale: 1:1,416
SOFT LANDSCAPING SCHEME

IN SUPPORT OF THE PLANNING APPLICATION TO NORTHAMPTONSHIRE COUNTY COUNCIL FOR THE INSTALLATION AND OPERATION OF AN ANAEROBIC DIGESTION PLANT WITH SILAGE CLAMPS, ACCESS ROAD, DIGESTERS, ANCILLARY EQUIPMENT AND ATTENUATION POND ON LAND

AT

WORMSLADE FARM,
CLIPSTON ROAD,
KELMARSH,
NORTHAMPTONSHIRE,
LE16 9RX

Prepared by:

Phil Plant BSc (Hons) MRICS
Mid West Planning Ltd
18 Church Street
Shifnal
Shropshire
TF11 9AA

Tel: 01952 276745

May 2016
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<th>PAGE</th>
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<td>9</td>
</tr>
<tr>
<td>12.</td>
<td>PROTECTION OF EXISTING TREES AND HEDGES</td>
<td>9</td>
</tr>
</tbody>
</table>
1. **INTRODUCTION**

1.1 This landscaping scheme has been prepared on behalf of the applicant; Mr. Stuart Homewood of Raw Energy Ltd in conjunction with the planning application to establish an anaerobic digestion plant at Wormslade Farm, Clipston Road, Kelmarsh, Northamptonshire, LE16 9RX. The plant will operate using locally produced agricultural crops and livestock manures for feedstock.

1.2 This landscaping scheme should be read in conjunction with the Landscape and Visual Impact Appraisal prepared by Mr. Allan Moss of Allan Moss & Associates Ltd in November 2015, the October 2015 Ecological Appraisal and the January 2016 Arboricultural Assessment prepared by Mr. Nigel Baskerville, of Chris Seabridge and Associates Ltd, these documents have been submitted as part of the planning application.

1.3 The Landscape and Visual Impact Assessment prepared by Allan Moss Associates Ltd sets out four recommendations to be incorporated into the scheme. There were hedgerow translocation, hedgerow reinforcement, existing tree and hedgerow protection and new planting of trees and hedges as part of the scheme.

1.4 The Ecological Appraisal recommends that a hedgerow translocation program and new hedge planting is undertaken to improve diversity of species and habitat on the site. The Arboricultural Assessment identifies sixteen trees that will be lost as a consequence of the development, and recommends compensating for these trees by planting almost one hectare of new mixed native species trees around the development.

1.5 This landscaping scheme has been prepared to mitigate the visual impact and to protect and enhance biodiversity at the site. Landscape impact has been minimized by proposals to translocate the hedges to the east and west of the entrance to the proposed development because this will result in the much faster establishment of the roadside hedge, and the use of additional native species hedge planting to assimilate the development into the landscape.

1.6 This scheme also includes additional environmental enhancement measures, the planting of native trees and shrubs and the planting of native species grasses to increase foraging habitat for invertebrates, small mammals, and birds including Barn Owls.

1.7 The objectives of this landscaping scheme are twofold. The first objective is to satisfactorily assimilate the development into the landscape through the use of existing trees and hedges, including the translocation of the roadside hedge, with additional planting of hedges, trees and grassland where appropriate. The second objective is to enhance habitat diversity through the establishment of foraging habitat for Barn Owls on the site, retention of the native species roadside hedge diversity through translocation, the planting of mixed native species new hedges and the planting of native grassland and woodland.
2. SITE AREA

2.1 This landscape scheme comprises the establishment of a net increase of some 8,700m² of woodland planting, and the establishment of additional native mixed species hedge planting within the area of the proposed development.

2.2 The plan also details the area of hedge to be translocated at the site entrance to improve visibility splays onto the Clipston Road to the east and west. Any existing trees and hedges in close proximity to the site will not be adversely affected by this proposal. The full extent of the translocated hedge and new tree and hedge planting is outlined on drawing number P15-WORMSLADE-AD-003D - Proposed Site Layout Plan (Rev D) and the landscaping plan “Wormslade PL-05 Visual Landscaping Plan”.

3. TRANSLOCATION OF THE ROADSIDE HEDGE

3.1 The landscaping proposals include the translocation of approximately 335m of hedgerow along Clipston Road, considered in the Ecology Appraisal as “not important” when considered in relation to the Hedgerow Regulations 1997. The hedge contains an average of 5.33 woody species to the east of the site access, and only 4.33 woody species to the west of the access to the site.

3.2 However, to preserve the existing habitat and range of species the hedge will be translocated to the position outside of the proposed visibility splays shown on drawing number P15-WORMSLADE-AD-003D - Proposed Site Layout Plan (Rev D). Translocating mature and complex hedge habitat provides better landscape structure, more effective screening and better habitat preservation than planting new hedges.

3.3 The translocation will take place at the optimum time of year which is the autumn when growth is limited and soils remain warm and new root growth is possible before winter. The hedge and smaller trees will first be cut back (coppiced) to a height of 300-500mm before translocation.

3.4 A suitable trench will be dug at the reception location immediately prior to the hedge translocation and be prepared by scarifying the base and adding slow-releasing N:P:K fertilisers and water retaining gel. The hedge will then be excavated in sections approximately 1.5m along the line of the hedge and at least 1m deep before being moved to the excavated trench with a large 360° excavator. Deep toots can be severed with a chainsaw rather than being torn.

3.5 Topsoil is then used to backfill the trench and all voids are filled and firmed down. Watering will need to take place regularly, especially in dry periods to encourage regrowth.

3.6 Regular monitoring of the hedge and hedge base habitat will take place to ensure that the hedge is regenerating and providing the screening and habitat benefits that are intended. It is recommended that photographic records are made to allow comparative assessment over the first five years following translocation. If areas along the translocated hedge are not showing healthy new growth after two
years the hedge should be gapped up with native hedge plants as specified in the new hedge planting scheme for this development.

4. NEW HEDGE AND TREE PLANTING

4.1 The following preparatory works will be carried out prior to the hedge and tree establishment:

- Application of glyphosate to undisturbed parts of the hedge establishment area where competitive weeds are abundant. The application should be in accordance with the manufacturer’s recommendations.

- Following the disturbance of any soils within the development area and following effective treatment of weed growth as described above, the establishment area is to be prepared by cultivation to remedy any surface compaction and provide a well-structured growing medium.

4.2 Approximately 400m of new native species hedge planting will take place along the northern and eastern boundaries of the site. Hedges will be planted in accordance with the recommendations contained in the Ecological Assessment (two staggered rows 500mm apart and 300mm spacing).

4.3 Hedgerow trees will be included at the rate of 4 per 100m run of hedge. Hedge planting will comprise the species listed in Table 1 below as advised by Chris Seabridge and Associates Ltd:

<table>
<thead>
<tr>
<th>Species</th>
<th>%</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedunculate Oak – Quercus robur (4/100m)</td>
<td></td>
<td>40-60cm</td>
</tr>
<tr>
<td>Field Maple – Acer campestre</td>
<td>10</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Crab apple – Malus sylvestris</td>
<td>2.5</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Hawthorne – Crataegus monogyna</td>
<td>50</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Hazel – Corylus avellana</td>
<td>20</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Holly – Ilex aquifolium</td>
<td>5</td>
<td>2 litre pot</td>
</tr>
<tr>
<td>Dogwood – Cornus sanguinea</td>
<td>2.5</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Blackthorne – Prunus spinosa</td>
<td>10</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

**Table 2:** Suggested tree and shrub species planting at Wormslade Farm.

4.4 Canes and spiral guards will be used to protect the hedge against rabbits and other pests. Weed control will continue to be used for three years post planting.

4.5 During the development phase a total of 16 trees will be felled. In mitigation for this loss of trees approximately 1 ha of native woodland will be planted around the development site. This planting will include the species listed in Table 2 below as advised by Chris Seabridge and Associates Ltd:
<table>
<thead>
<tr>
<th>Species</th>
<th>%</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedunculate Oak – Quercus robur</td>
<td>35</td>
<td>40-60cm</td>
</tr>
<tr>
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<td>15</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Crab apple – Malus sylvestris</td>
<td>10</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Wild cherry – Prunus avium</td>
<td>10</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Goat willow – Salix caprea</td>
<td>5</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Hawthorne – Crateaegus monogyna</td>
<td>5</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Hazel – Corylus avellana</td>
<td>5</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Holly – Ilex aquifolium</td>
<td>5</td>
<td>2 litre pot</td>
</tr>
<tr>
<td>Dogwood – Cornus sanguinea</td>
<td>5</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Dog rose – Rosa canina</td>
<td>5</td>
<td>40-60cm</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Suggested tree and shrub species planting at Wormslade Farm.

4.6 Soil type and depth will be such that the addition of soil ameliorants should not be necessary. The current use of the site is agriculture and as such, the soils will have a relatively high level of natural fertility. Cultivation of the top soil during the site preparation process should ensure the availability of sufficient nutrients for trees and hedges.

5. ACQUISITION AND TREATMENT OF PLANTING STOCK

5.1 Acquisition of the hedge plants and trees will be timed to coincide with the optimum planting season, i.e. when the plants are dormant. All plants will be obtained from a reputable supplier and will meet the following specification:

- All plants will be planted as transplants with moist, fibrous root systems.
- Hedging plants will be 0.4m to 0.6m in height when planted to quickly establish meaningful landscaping on the site.
- No plants should exhibit signs of molding or bruising and no plants should have broken apical shoots.
- All plants should comply with British Standard 3936 Part 1 for Nursery Stock.

5.2 If hedging plants are not planted immediately then they will be canopy stored (cool and shaded) in polythene bags for no longer than 2 weeks.

6. ESTABLISHMENT OF NEW WOODLAND AND NEW HEDGES

6.1 It is proposed to establish new woodland planting around the development site as laid out in the Wormslade Arboricultural Assessment May 2016 prepared by Mr. Baskerville, to translocate the existing hedges back to a suitable distance to increase the visibility splays onto the Clipston Road from the site.
6.2 The planting of hedgerows will be to meet the objectives and targets set out in the LVIA and Ecological Appraisal within the prescribed timescales. The hedgerow planting will comprise two translocated hedgerows at positions 6 and 7 in Figure 1 below. In addition any gaps in the hedgerow will be reinforced with native species planting and new hedgerow trees will be introduced at suitable intervals.

6.3

Figure 1: Site Plan extract from the Habitat Map of the Ecological Report showing position of hedges to be translocated.

7. ESTABLISHMENT OF GRASSLAND AREAS

7.1 A sward to create foraging habitat tussocky grassland will be planted to increase potential for invertebrates, small mammals and birds including Barn Owls. The species listed below are recommended.

<table>
<thead>
<tr>
<th>Grass Species</th>
<th>Proportion of Mix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Bent</td>
<td>5%</td>
</tr>
<tr>
<td>Timothy</td>
<td>20%</td>
</tr>
<tr>
<td>Meadow Fescue</td>
<td>20%</td>
</tr>
<tr>
<td>Red Fescue</td>
<td>25%</td>
</tr>
<tr>
<td>Cocksfoot</td>
<td>10%</td>
</tr>
<tr>
<td>Smooth Meadow Grass</td>
<td>20%</td>
</tr>
</tbody>
</table>

Table 3: Recommended tussocky grassland species mixture.
7.2 Native grass species (listed in table 3 above) have been selected to complement the grassland to the north of the site, and to add to the biodiversity of the site and surrounding area. The species mix will create natural habitat for insects, birds and small mammals and potential nesting sites for birds. Table 4 below contains the recommended sword mixture for pollen and nectar rich grassland establishment which will be used on the reinstatement of the road verge at the junction with the A508.

<table>
<thead>
<tr>
<th>Grass Species</th>
<th>Proportion of Mix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Bent</td>
<td>2%</td>
</tr>
<tr>
<td>Crested dogstail</td>
<td>15%</td>
</tr>
<tr>
<td>Sheeps fescue</td>
<td>15%</td>
</tr>
<tr>
<td>Red fescue</td>
<td>20%</td>
</tr>
<tr>
<td>Smaller Cats tail</td>
<td>12%</td>
</tr>
<tr>
<td>Smooth Meadow Grass</td>
<td>25%</td>
</tr>
<tr>
<td>Black knapweed</td>
<td>1%</td>
</tr>
<tr>
<td>Selfheal</td>
<td>1%</td>
</tr>
<tr>
<td>Yarrow</td>
<td>1%</td>
</tr>
<tr>
<td>Ox-eye daisy</td>
<td>2%</td>
</tr>
<tr>
<td>Lady’s bedstraw</td>
<td>1%</td>
</tr>
<tr>
<td>Bird’s-foot trefoil</td>
<td>1%</td>
</tr>
<tr>
<td>Wild carrot</td>
<td>2%</td>
</tr>
<tr>
<td>Sainfoin</td>
<td>2%</td>
</tr>
</tbody>
</table>

*Table 4: Recommended pollen and nectar rich grassland species mixture.*

8. TREE SPACING AND LAYOUT

8.1 The species mixture of trees and shrubs should be locally native and where possible, the provenance is of a local source. Species and quantities for are shown in Table 1 above. Trees and shrubs will be planted at 3m x 2m spacing (1600 plants per hectare) and individually protected from mammal damage with tree shelters. Weed control by spot spraying will be carried out for a minimum of three years until trees and shrubs are well established. Any losses should be replaced in the winter following planting.

8.2 The plants will be established within the areas broadly indicated on the drawing, and will be planted in irregular shaped species groups to create a more natural appearance and minimise adverse competition between species.

8.3 Native hedgerow trees will be established within the new hedges at 100m intervals.
9. **TREE AND HEDGE PLANTING METHOD AND TIMING**

9.1 All of the plants will be notch or pit planted to a sufficient depth to cover all the roots, which will be well spread out before firming the soil back down around the plant.

9.2 Planting will be carried out during the next winter dormant season following completion of the development works. It is anticipated that, subject to the timing of the planning consent and weather conditions, etc, planting will take place during the winter 2016/2017.

9.3 Planting will not take place during particularly frosty conditions.

10. **PLANT PROTECTION**

10.1 All trees and shrubs will be protected using 60 cm shrub shelters, which will be fixed in accordance with the manufacturer’s recommendations.

10.2 The shelters are to be pushed into the ground 2 to 4 cm to prevent entry by voles.

11. **AFTERCARE**

11.1 A competitive weed free area will be maintained within 0.5 meters radius of each plant using herbicides or mulch for the first three years after planting if required. The type and timing of herbicide applications will depend on the type and abundance of the weed species present. Periodic assessments will be carried out each year during the growing season.

11.2 An inspection and assessment the number of dead or diseased plants will be carried towards the end of each growing season. All failures will be replaced in the following winter dormant season in line with the specification above. Failures will be replaced each year to ensure that the intended stocking density is maintained. Hedge laying is recommended once the stem diameter reaches 5-15 cm, in the dormant period 30 September to 31 March.

11.3 The foraging grassland will be topped to a height of no less than c.15cm every other year. Fertilizers and herbicides will not be used, and the area will not be used for vehicle access, turning or storage.

12. **PROTECTION OF EXISTING TREES AND HEDGES**

12.1 The Arboricultural report (undertaken 29th December 2015) for the application site recorded 24 trees. The majority of these trees are young in age and consequently these trees are not of a size or stature to have important arboricultural, landscape or conservational qualities.
12.2 All trees that remain within the development site will be protected by a barrier to safeguard the tree root protection zone (RPZ). Each of the trees on site requiring protection have been identified on the landscaping plan “Wormslade PL-05 Visual Landscaping Plan, and have been assessed in the Arboricultural Assessment and the TPZ for each tree is listed in the table below.

<table>
<thead>
<tr>
<th>Tree No.</th>
<th>Species</th>
<th>Stem Diameter (cm)</th>
<th>Root Protection Area (m²)</th>
<th>Protective fencing radius (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T16</td>
<td>Quercus robur</td>
<td>27</td>
<td>33</td>
<td>3.24</td>
</tr>
<tr>
<td>T17</td>
<td>Acer campestre</td>
<td>Av 15</td>
<td>102</td>
<td>5.69</td>
</tr>
<tr>
<td>T18</td>
<td>Acer campestre</td>
<td>Av 15</td>
<td>102</td>
<td>5.69</td>
</tr>
<tr>
<td>T19</td>
<td>Salix caprea</td>
<td>63</td>
<td>180</td>
<td></td>
</tr>
<tr>
<td>T20</td>
<td>Quercus robur</td>
<td>27</td>
<td>33</td>
<td>3.24</td>
</tr>
<tr>
<td>T21</td>
<td>Fraxinus excelsior</td>
<td>18</td>
<td>15</td>
<td>2.16</td>
</tr>
<tr>
<td>T22</td>
<td>Acer campestre</td>
<td>15</td>
<td>102</td>
<td>5.69</td>
</tr>
<tr>
<td>T23</td>
<td>Quercus robur</td>
<td>12</td>
<td>7</td>
<td>1.50</td>
</tr>
</tbody>
</table>

**Table 5:** Root Protection Area and protected fencing radius required for all trees to be retained.

![Default specification for protective barrier](image)

**Figure Two:** Details of typical tree protection barrier specification (to BS 5837:2012) to be erected pre-construction.