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National Grid - Maelor Works, Wrexham

Preliminary Ecological Appraisal Report

(Extended Phase 1 Habitat Survey Report)

18th November 2013



Preliminary Ecological Appraisal

Preliminary Ecological Appraisal Report

(Extended Phase 1 Habitat Survey)

At

National Grid
Maelor Works
Marchwiel
Wrexham
LL13 0UW

for

James Wood
I & H Brown Ltd

On behalf of

National Grid Gas Property Holdings Limited

Preliminary Ecological Appraisal

Executive Summary

This section provides conclusions drawn from the desktop study and the site survey to determine the importance of the different habitat types on-site. It is also necessary to conclude what effects the proposed works will have on any locally protected wildlife species, with particular reference to mammals, amphibians, birds and reptiles.

“Planning authorities have a duty to consider biodiversity when assessing planning applications. Where there is a reasonable likelihood that a planning proposal might affect important protected species or habitats, the council will require information on the species and habitat likely to be affected, and an assessment of the impacts of the proposals. This information will need to be provided before a planning decision is made and if this information is not provided, the council may refuse to register the application.

This Duty was introduced by the Natural Environment and Rural Communities Act (The NERC Act) and came into force on 1 October 2006. This act clarified existing commitments with regard to biodiversity, raised the profile of biodiversity. It aimed to make the consideration of biodiversity a natural and integral part of policy and decision making.

In addition to the NERC Act there is also national and international biodiversity legislation. This includes legislation in relation to protected species and sites which operates outside of the planning system. Local Authorities and developers have a duty to comply with this legislation. Planning Policy Statement 9 - Biodiversity and Geological Conservation Local Policy in relation to biodiversity can be found in the Local Development Framework, retained Local Plan policies and in the emerging Core Strategy.”

For further information please go to
http://www.enfield.gov.uk/info/200052/advice_for_developers/1083/ecological_assessments_for_planning_applications

With regards to Rabbits (*Oryctolagus cuniculus*), although not protected under UK or European law, avoidance measures should be incorporated into the proposed works to ensure that no rabbits are intentionally harmed during the conduct of the trial pits/boreholes. This will include rabbit exclusion fencing which would effectively prevent any rabbits from entering their warrens and/or carrying out the ground investigations away from known warrens.

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As mentioned previously, Badger (*Meles meles*) setts were identified on the northern and southern boundaries of the western extension. With this being the case and although not identified directly onsite, it will still be necessary for avoidance measures to take place. This will mean maintaining a minimum distance of 10m from each sett entrance at any given point when conducting the trial pits/boreholes. Typically a minimum distance of 20m should be maintained away from Badger sett entrances when heavy machinery is to be used. However, as the embankments slope up and away from the site, this measurement can be reduced, as any tunnels created by Badgers are likely to lead away from the site.

With regards to reptiles and amphibians, there is a possibility that the site could be utilized by both of these groups. As mentioned previously, the pond located on site (but outside of the area for the proposed ground investigation works) is deemed to be of low value for GCN, as the HSI conducted by Ecosulis labelled the pond as being 'Poor'. However, as GCN have been identified on the ecological data search to be within the immediately surrounding area, there is a high likelihood that the area could be utilized as a foraging habitat for this species. This is said because GCN are known to migrate and forage within a 500m radius of breeding ponds, and the nearest GCN record was identified to be approximately 320m to the north-east of the site. If the areas of interest (scrub and woodland) are to be maintained as they currently stand (or if minimal vegetation clearance is to occur), there will be no issue from a GCN point of view with the conduct of the trial pits/boreholes. However, if the land tested is found to be contaminated, and the further removal of the soil [and subsequently the habitats which grow within it] is required, an amphibian presence/absence survey (during the optimal survey period: March - June) will be required to identify if these species reside within the area. If they are found to be on site, a development licence from Countryside Council for Wales to legally disturb GCN and their habitat would be required, and an individual mitigation strategy would need to be devised.

There is a possibility that hibernating reptiles (inc GCN) may occupy some of the disused rabbit warrens within the woodland on the north-western boundary. Similarly to the GCN, if this area is to be left as is during the trial pits/boreholes there will be no issues with regards to reptiles (as avoidance measures, by retaining as greater distance as possible from the warrens, will suffice). However, if the woodland is to be heavily impacted by the works, it will be necessary to conduct a reptile survey (during the months of April-May or September) to establish whether or not they are present within the gasworks site. Again, if it is discovered that they are, mitigation measures may need to be carried out for each species discovered.

Finally, birds are protected (Wildlife and Countryside Act 1981) during the nesting season (March – August) so any works which are likely to impact nesting birds (such as tree felling) should occur outside of the nesting season.

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Phase 1 habitat surveys can be conducted all year round and the site survey was carried out in November 2013. However, the optimal time for undertaking these surveys would be between the months of April and September. If surveys are undertaken outside this period, it is quite likely that a follow-up botanical survey will be required. It is therefore recommended because the site has a number of different types of habitats that a follow up flora survey is carried out in the optimal survey period.

To summarise the following surveys are required if the land investigated for contamination is to be removed off site.

1. GCN presence / absence pond survey (March – June).
2. Reptile presence / absence survey (April/May – September).
3. Update flora survey (April – September).

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1 INTRODUCTION

1.1 Background

This report has been prepared at the request of James Wood (I & H Brown Ltd) on behalf of National Grid Property Holdings Ltd, to provide an overview of the landscape and habitat types, any ecological features of interest and the potential to provide habitats for legally protected species at the former gaswork site located at Maelor Works, Marchwiel, Wrexham, LL13 0UW (OS Grid Reference: SJ 38108 48134). A site survey was undertaken on the 18th November 2013, by Evolution Ecology Ltd.

Aim

The aim of this survey was to identify which, if any, habitats and flora species may be affected by any alterations to the site, and to assess the habitat needs for them to exist on the site alongside any proposed re-development in accordance with the Preliminary Ecological Appraisal (Extended Phase 1 Habitat Survey) criteria.

Surveyor Details

The site was surveyed by Mr Paul Keeling BSc (Hons) MCIEEM – Senior Ecologist and Miss Charlotte Richardson BSc (Hons) – Ecologist.

1.2 Site Description

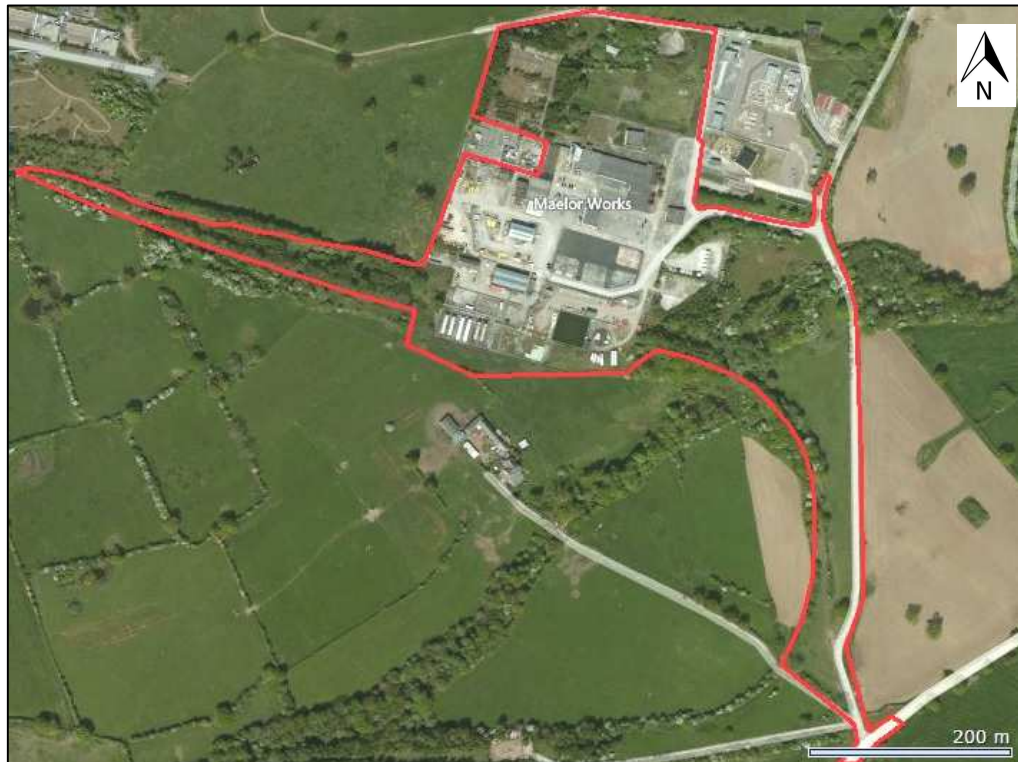
The former gasworks site located at Maelor Works is situated approximately 5km to the south-east of the town of Wrexham, with residential areas to the south-west and a large industrial estate expanding from the north-west to the north-east of the site. Open countryside occupies the vast majority of the surrounding area (to all sides) which comprises of; agricultural grasslands, scattered trees and hedgerows. Additionally, running water courses are present in the surrounding area, (one of which - a small brook which diverts from the River Clywedog - runs through the site itself), as are a number of standing water bodies.

The site is made up of predominantly buildings and hard standing towards the centre, but some areas (of varying size) to the west, north, east, south and south-east of the site are occupied by more ecologically beneficial habitats. These include; semi-natural broad-leaved woodland, dense and continuous scrub, semi-improved grassland and standing water. The surveyed site measures approximately 13.92ha, but the approximate total area of the sites to undergo the proposed works measure only approximately 6.26ha. Proposals have been made to conduct trial pits and

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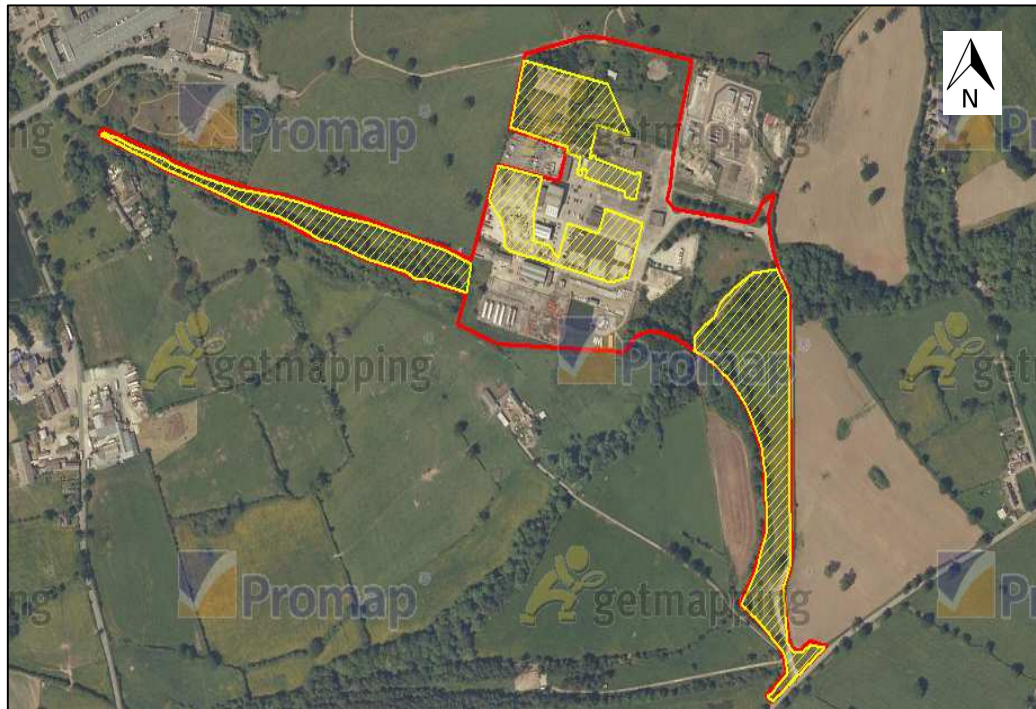
boreholes in order to allow ground investigation works/contamination testing to take place. Each of the habitat types at this site has varying ecological value and these will be assessed individually in turn.

Figure 1: A map showing the location of the site in relation to the surrounding landscape (indicated by the red boundary).



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Figure 2: This map illustrates the approximate locations where the proposed works are to take place (hatched in yellow) in relation to the National Grid Property Holdings Ltd boundary (red line).



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2 METHODOLOGY

2.1 Desktop Study (Ecological Data Search)

North Wales Environmental Information Service (COFNOD) was commissioned to carry out an ecological data search of all protected species and sites recorded within 2km radius of the site.

2.2 Preliminary Ecological Appraisal (Extended Phase 1 Habitat Site Survey)

To fulfil the brief, a Preliminary Ecological Appraisal (Extended Phase 1 Habitat Survey) was conducted according to the methodology of the JNCC (2010). Preliminary Ecological Appraisal is a standard technique for classifying British habitats. The aim is to provide records of habitats that are of significant ecological value.

Additional Target Notes

Additional target notes were made where applicable to record:

- Key habitat features.
- Urban ecological features not covered in sufficient detail in the Phase 1 Methodology.
- Important habitats too small to be mapped and to identify dominant species.
- Other features of ecological interest.

2.3 Protected Fauna and Flora Species

Potential signs and suitable habitats for the presence of European and Domestically protected species (amphibians, reptiles, mammals and birds) were recorded according to the Biodiversity Action Plan (BAP) and Birds of Conservation Concern (RSPB, 2009).

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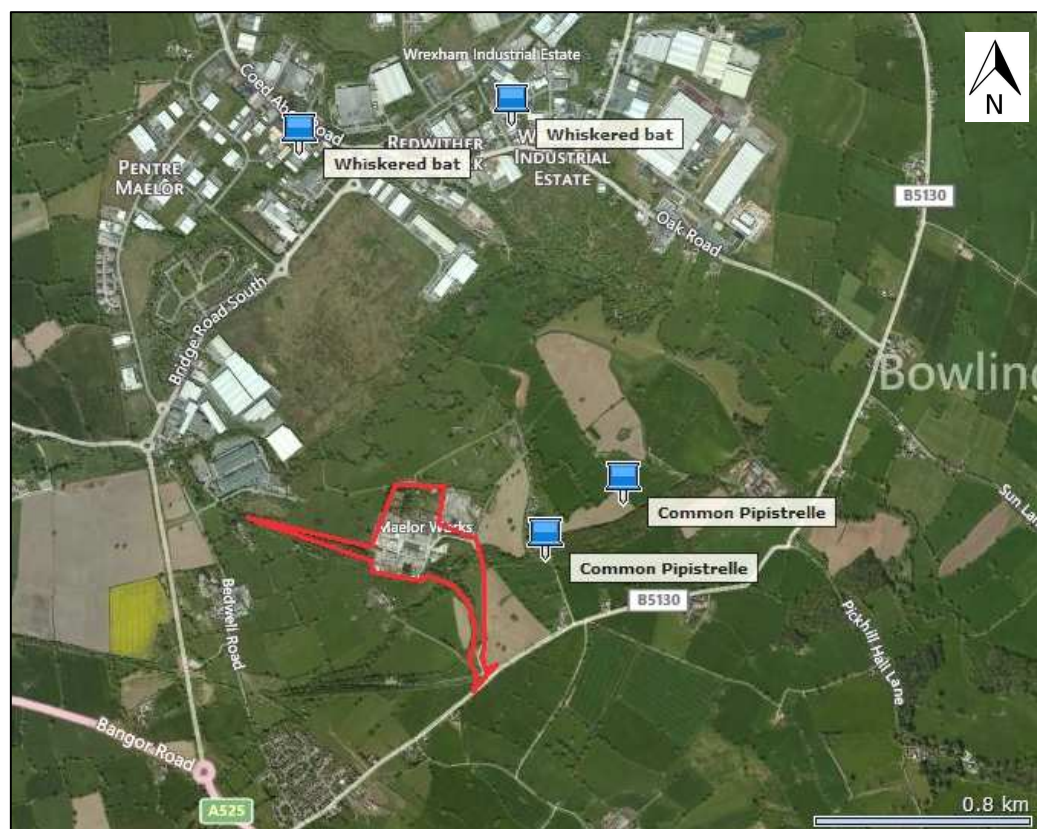
3 FIELD SURVEY RESULTS

3.1 Desktop Survey (Ecological Data Search)

North Wales Environmental Information Service (COFNOD) was commissioned to carry out an ecological data search of all protected species and sites recorded within 2km radius of the site. The search uncovered records of numerous protected species, but none of which have been recorded directly on the site. This being said, a few records were identified immediately adjacent to the site.

With regards to bats, two distinct species were recorded; the Common Pipistrelle (*Pipistrellus pipistrellus*) and the Whiskered bat (*Myotis mystacinus*). The closest of these records was of a Common Pipistrelle (*Pipistrellus pipistrellus*) and it was located approximately 500m to the east of the gasworks site.

Figure 3: A map illustrating the approximate locations of some of the bat species recorded in the surrounding area of the gasworks site.



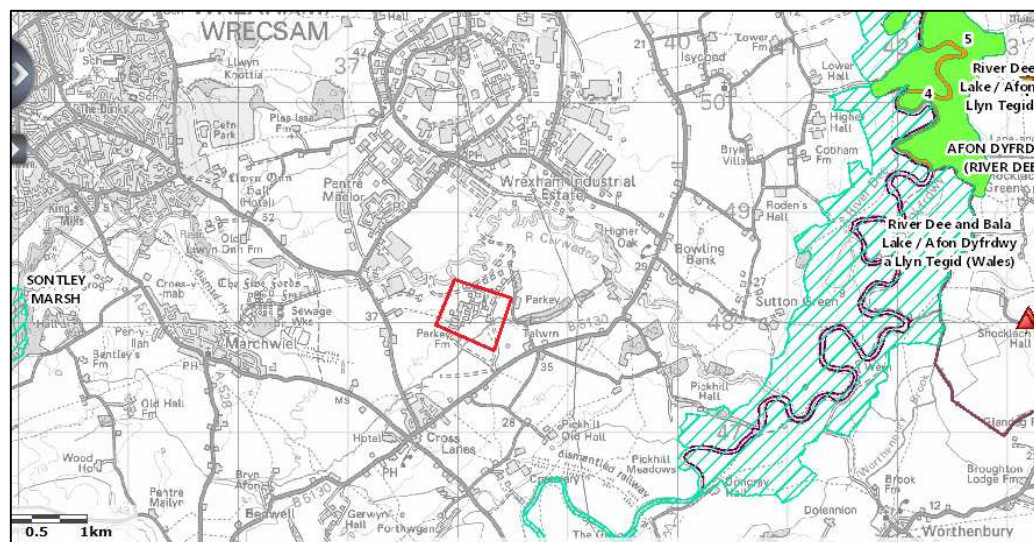
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A number of declining bird species have also been recorded within the 2km search radius. These included: Kingfisher (*Alcedo atthis*), Kestrel (*Falco tinnunculus*), Red Kite (*Milvus milvus*) and Fieldfare (*Turdus pilaris*). All of these species have been noted as having either amber (unfavourable conservation status) or red population status (globally threatened) however, they were not recorded within the boundary of the proposed trial pits/boreholes and building demolition. Other records of protected species in the surrounding area include: Badger (*Meles meles*), Otter (*Lutra lutra*) and Grass Snake (*Natrix natrix* – within a nearby pond) but again, none of these records were obtained from anywhere within the gaswork site boundary.

Finally, a number of Great Crested Newt (*Triturus cristatus*) records were identified within the immediately surrounding area. The closest of these records was identified as being approximately 320m to the north-east of the site, but again, no records were identified within the gasworks site boundary itself.

The ecological data search and MAGIC have also revealed that the site itself contains no sites with statutory or non-statutory designations. The nearest statutory site designation is of a Site of Special Scientific Interest (SSSI – River Dee and Bala Lake) and is located roughly 3.6km to the east of the site. Similarly, Sontley Marsh is another nearby SSSI, but this is located even further away to the west at a distance of approximately 4.1km. Bearing this information in mind, there are no records of any such designations on the site itself (or within the immediately surrounding area), meaning that the proposed works are unlikely to have a substantial impact upon the wider surrounding landscape.

Figure 4: A MAGIC map which shows the statutory and non-statutory sites within the surrounding area of the site (the approximate site boundary is illustrated by the red square).



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3.2 Preliminary Ecological Appraisal (Extended Phase 1 Habitat Site Survey) and Limitations

The site is dominated by a number of habitat types, predominantly buildings and hard standing, but with some areas dominated by woodland, tall ruderal, scrub and semi-improved grassland and in one area, a small standing water body. All of these habitat types have varying ecological value and will be addressed individually. The dominant species, if any, will be noted and their ecological value will be assessed to conclude what affects the proposed works will have on the habitats that are situated on-site. Each habitat is colour coded and can be found in Appendix A: Preliminary Ecological Appraisal (Extended Phase 1 Habitat Survey) Map. This Phase 1 has been conducted using JNCC (Joint Nature Conservation Committee, 2010) Handbook for Phase 1 habitat survey.

Limitations/constraints: As the site consists predominantly of buildings and hard standing, there was generally little in the way of accessibility issues. This being said, it was difficult to access some areas (particularly to the north of the site) due to the density of the vegetation. However, this was not much of an issue, as the habitats present were fairly standard, as were the floral species. Additionally, access to another area of the site (the woodland area towards the east of the site) was not available, as this part of the site was sectioned off by a chain link fence. This being said, a visual inspection was made through the fence, which concluded that this area was of similar habitat composition to some of those already recorded (i.e. woodland/scrub). Other than these issues, no other constraints were noted during the survey.

Phase 1 habitat surveys can be conducted all year round and the site survey was carried out in November 2013. However, the optimal time for undertaking these surveys would be between the months of April and September. If surveys are undertaken outside this period, it is quite likely that a follow-up botanical survey will be required. See below for further details.

A1.1 – Semi-natural Broad-leaved Woodland

There are a number of areas within the site boundary which are dominated by semi-natural broad-leaved woodland, the most extensive of these being on the southern boundary of the western extension and also to the east of the site, surrounding the running water course. The woodland within the western extension consisted of a number of species, including; Silver Birch (*Betula pendula*), Hawthorn (*Crataegus monogyna*), Dog-rose (*Rosa canina*) and Elderberry (*Sambucus nigra*). This area had a varying age

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structure (some trees older than others) which often provides a greater variety of habitats for invertebrate species, and in turn, birds. Although this stretch of land is fenced off from the adjacent embankment along the southern boundary and the fields to the north, two badger setts were identified within these areas. The first had two entrances (at least one of which is thought to be active) and was located in the south-eastern corner, adjacent to the main gasworks site. The second was also located outside the proposed works boundary, but this time on the northern side (within the adjacent fields). As both of these setts are within very close proximity to the proposed development works, it will be necessary to ensure that the works are conducted at least 10m away from each sett. This distance to maintain is less than the usual (20m when using machinery) when a badger sett is discovered, but as the setts are situated within lands which raise above ground level (therefore leading away from the site), it is unlikely that any badgers will be disturbed as the tunnels should lead away from the site to the north and south. As well as the badger setts located offsite, there is also a rabbit warren within the northern field to the north-east of this section. But, as rabbit are not protected under UK or European legislation, this will not be an issue. The locations of all of the setts/warrens within this area can be found on the Phase 1 Habitat Map within the appendix.

Figure 5: The woodland and semi-improved grassland within the western extension. Silver Birch (*Betula pendula*) trees are once again abundant throughout the wooded areas.



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In addition to the first area of woodland, a further three patches were discovered to the north-west of the site. One of these areas ran adjacently to the site boundary on the north-western corner and was situated on a steep embankment. This woodland consisted predominantly of semi-mature Silver Birch (*Betula pendula*) trees and in addition to this, in excess of 100 rabbit warren entrances (which were of missed use) and droppings were discovered. As mentioned previously, two further patches of woodland were located in the northern portion of the site. These were adjacent to one another and both consisted of young Silver Birch (*Betula pendula*) trees with stands of Bramble (*Rubus fruticosus*), Nettle (*Urtica dioica*), Creeping Thistle (*Cirsium arvense*) and Rosebay Willowherb (*Chamerion angustifolium*) also being abundant. The final area of woodland is quite possibly the densest and most mature (although still not classed as 'mature'), and it is located to the east of the site. As access to this area was restricted (as mentioned previously) it is difficult to ascertain the precise species present. However, from a distance, Silver Birch (*Betula pendula*) was observed. Due to the fact that this woodland is located upon a steep embankment which leads to a running water course, it is unlikely that any of the proposed works will be able to take place within this area. This is correlated with the information received by I & H Brown Ltd regarding the areas to be impacted, this woodland of which, is not one.

Figure 6: This image illustrates the area of Silver Birch (*Betula pendula*) woodland along the north-western boundary of the site. A number of the rabbit warren entrances can also be seen.



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With regards to birds, all of the woodland areas hold some potential in terms of foraging; however, due to the age structure of some of the areas (particularly the two central sections to the north of the site) they are unlikely to hold nesting opportunities. This is said as birds prefer to make their nests in well-established mature trees and none of the trees recorded could be classed as 'mature'. This being said, some small birds may utilize the semi-mature trees within the western extension, the area along the north-western boundary and the area towards the south-east of the site, as some of these semi-mature trees appear to be nearing 'mature' status.

In addition to birds, as there are a number of rabbit warrens on the embankment of the north-western woodland, there is a possibility that this area may be used by reptiles. This is said because some reptiles will often use disused rabbit warrens to hibernate within over the winter months. The amount of suitable habitat nearby (i.e. standing water for amphibians and woodland/scrub for reptiles) would suggest that reptiles hibernating within this section of the woodland could be a possibility.

Please see Appendix A: Preliminary Ecological Appraisal (Extended Phase 1 Habitat Survey) Map, for the location of the semi-natural broad-leaved woodland (A1.1).

A2.1 – Dense and Continuous Scrub

Dense and continuous scrub was present within three main areas of the site. These were; within the central portion of the northern semi-improved rough grassland, along the northern boundary of the western extension and along the western edge of the south-eastern semi-improved grassland. These stands consisted of species including; Bramble (*Rubus fruticosus*), Blackthorn (*Prunus spinosa*) and Gorse (*Ulex europaeus*). Dense scrub can often be of interest to foraging small mammals, which may in turn attract predatory reptiles and birds. Not only is this habitat useful for foraging purposes, but the density of the vegetation works well as a protective barrier and thus provides shelter. The patches of scrub onsite are ultimately of potential interest to small mammals, reptiles and birds which means that care should be taken when conducting any disturbance works around these habitats. Although not classed as a specific habitat, one area on the northern boundary within the western extension has a dense pile of cut trees/branches. These piles work in a similar way to the scrub in that they provide dense shelter for all of the above mentioned fauna.

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Figure 7: The dense scrub which separates the northern semi-improved grassland from B2 can be observed to the left of the photograph.



Please see Appendix A: Preliminary Ecological Appraisal (Extended Phase 1 Habitat Survey) Map, for the location of the Dense and Continuous Scrub (A2.1).

A3.1 – Broad-leaved Scattered Trees

A number of scattered trees were identified onsite, predominantly to the north of the central hard standing area and within the field to the south-east of the site. With regards to those located to the north of the site, they were all young Silver Birch (*Betula pendula*) specimens which were scattered along the boundaries of the semi-improved rough grassland and dense and continuous scrub habitats. Generally, these trees were of relatively low ecological value due to their immature status. Further scattered semi-mature trees were identified along the western boundary of the south-eastern field, but due to their distance away and access issues, it was not possible to identify them. In addition to these semi-mature trees within the south-eastern field, one large mature Oak (*Quercus robur*) tree was identified within the centre of the southern portion of the field. Mature trees such as this can often be utilized by roosting bats or nesting birds which means that they are of ecological importance. Finally, in addition to the areas already mentioned, a number of scattered Ash (*Fraxinus excelsior*) trees were identified [along with Hawthorn (*Crataegus*

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monogyna) and Dog-rose (*Rosa canina*)] across the far southern boundary of the western extension. Within these scattered trees in this area, one further rabbit warren was discovered.

Overall, the scattered trees onsite appear to be of varying ecological importance, with the lone Oak (*Quercus robur*) tree being of the highest value to protected species.

Please see Appendix A: Preliminary Ecological Appraisal (Extended Phase 1 Habitat Survey) Map, for the location of the Broad-leaved Scattered Trees (A3.1).

B6 – Poor Semi-improved Rough Grassland

Poor semi-improved rough grassland was one of the most extensive habitats onsite (after the hard standing). It occupied the vast majority of the remaining western extension (after scrub and woodland), the areas to the north and south of the central hard standing and the field which extends from the east to the south-east of the site. The species discovered within these stands are typical of the habitat type and include; Nettle (*Urtica dioica*), Creeping Buttercup (*Ranunculus repens*), Creeping Thistle (*Cirsium arvense*), Spear Thistle (*Cirsium vulgare*), Bramble (*Rubus fruticosus*), White Dead Nettle (*Lamium album*) and Broad-leaved Dock (*Rumex obtusifolius*). In addition to these species, some stands of scattered Hawthorn (*Crataegus monogyna*) were present within the south-eastern field and it was also recognized that this area was being grazed by horses (which contribute greatly to keeping the vegetation relatively low and thus preventing succession). Semi-improved rough grassland is often used by mammals for foraging purposes so it can sometimes attract reptiles (who prey after small mammals) and amphibians. This is indeed the case with regards to the semi-improved grassland to the north of the hard standing, as multiple skulls and droppings were found which were identified as those of European Rabbits (*Oryctolagus cuniculus*). Finally, due to the lack of suitable shelter, this habitat is thought to be of foraging use only.

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Figure 8: The poor semi-improved grassland to the north of the site can be seen in the foreground, followed by the patch of scrub and scattered trees to the rear.



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G1 – Standing Water

There is one small standing water body located on site, but it is outside of all of the proposed work zones (refer to figure 2). It is located directly to the west of the most northerly building and is approximately 10m² in size. A number of floral species which are typical colonizers of pond margins have established within/on the edge of the pond. These include; Common Reed (*Phragmites australis*), Bulrush (*Typha latifolia*) and Rush species (*Juncus spp.*).

Figure 9: The pond located towards the north of the site. This image illustrates some of the species present (Rushes are abundant), the small size of the pond and its shaded nature (by the overhanging tree).



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A Habitat Suitability Index (HSI) was conducted on this pond by Ecosulis in 2010 to establish its potential for housing the Great Crested Newt (*Triturus cristatus*) which is a European Protected Species (EPS). The results from this HSI can be found in table 1.

Table 1: The results from the HSI assessment conducted by Ecosulis in 2010.

HSI Criteria	Score for pond at Maelor Works
Location	1.0
Pond area	0.02
Pond drying	0.1
Water quality	0.67
Shade	0.8
Water fowl	1.0
Fish	1.0
Ponds	1.0
Terrestrial habitat	1.0
Macrophytes	0.3
Calculation	$(1.0 \times 0.02 \times 0.1 \times 0.67 \times 0.8 \times 1.0 \times 1.0 \times 1.0 \times 1.0 \times 0.3)^{0.1}$
HSI score	0.45
Pond suitability	<u>Poor</u>

After comparing these results with the current condition of the pond, it can be concluded that no change has occurred in the pond's suitability since this HSI was conducted. Ultimately, due to the high level of shade and small size of the pond, it would appear that the potential of this pond for housing protected amphibians (GCN) is low. However, there are at least four other ponds within 500m radius of the site (one of them is known to have GCN), which along with the pond on site, may form part of a network of GCN breeding ponds.

Please see Appendix A: Preliminary Ecological Appraisal (Extended Phase 1 Habitat Survey) Map, for the location of the Standing Water (G1).

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G2 – Running Water

One running water course passes through the site. It passes under the road which leads to the site and through the eastern woodland area. This water course is situated well below ground level at the bottom of the wooded embankment so the proposed works are unlikely to affect it.

Figure 10: A view of the running water course that cuts through the site. The steep embankments can be observed to either side, particularly to the left in this image.



Please see Appendix A: Preliminary Ecological Appraisal (Extended Phase 1 Habitat Survey) Map, for the location of the Running Water (G2).

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J1.2 – Amenity Grassland

One area which contained amenity grassland was discovered onsite and this was found towards the east of the site. Amenity grassland is of very low ecological value as it is often regularly maintained (i.e. via mowing etc.) meaning that it is not a stable habitat. Some of the species which were present within this grassland include; Creeping Buttercup (*Ranunculus repens*) Broad-leaf Plantain (*Plantago major*) and Creeping Thistle (*Cirsium arvense*).

Please see Appendix A: Preliminary Ecological Appraisal (Extended Phase 1 Habitat Survey) Map, for the location of the Amenity Grassland (J1.2).

J3.6 – Buildings

Although there are a number of buildings onsite, only one of them is within the boundaries of the proposed works. The vast majority of the buildings within the central hard standing area have not been individually classified, as they will be unaffected by the trial pits/boreholes and are all of low ecological value for protected species (the offices are regularly used, have internal lighting installed, are flat roofed and show little potential ingress points). Due to this, the only buildings which have been classified are the disused ones which may exhibit some potential for housing protected species. These are; the one which is likely to be affected by the proposed works within the central hard standing area and the building to the east of the northern pond (as it is within close proximity to the proposed work zone).

The building within the hard standing area (B1) is proposed to be demolished as a part of the trial pit/borehole works. An external inspection of the building was conducted which revealed that it was a single-storey, flat roofed structure with no fascia/soffit boards. All of the windows and doors appeared to be in tact which again reduces the likelihood of bats/birds utilizing the building, as it lowers the number of potential access points into the structure. Bearing all of these points in mind, it is unlikely that the proposed works will affect any local bat or breeding bird populations.

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Figure 11: Building 1 (B1) and some of the hard standing from a south-eastern viewpoint.



The second building inspected (B2) located to the east of the pond, was of similar construction to B1, but on a much smaller scale. It was a flat roofed building with no fascia/soffit boards, but it had one noticeably broken window, which would be large enough to allow entry for birds up to the size of a Barn Owl (*Tyto alba*). As the building was locked, it was not possible to gain entry to the inside, but as it is not likely to be affected by the trial pits/boreholes, this should not be an issue. With regards to bats, although they would be able to gain access through the broken window, there would be no suitable areas inside to roost within (due to the lack of a roof void, roofing felt and roof tiles). Overall, it would appear that this building is of moderate potential for bird species, but low for bats.

Please see Appendix A: Preliminary Ecological Appraisal (Extended Phase 1 Habitat Survey) Map, for the precise location of the Buildings (J3.6).

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Table 2: Features of buildings and built structure classification, which may indicate the potential for bats. The full guidance can be found in the Bat Conservation Trust Good Practice Survey Guidelines (P53).

Likelihood of bats being present	Feature of the building or built structure and its location
Higher	Pre-20th century or early 20th century construction². Agricultural buildings of traditional brick, stone or timber construction. Large and complicated roof void with unobstructed flying spaces. Large (>20 cm) roof timbers with mortice joints, cracks and holes. Entrances for bats to fly through. Poorly maintained fabric providing ready access points for bats into roofs, walls, bridges, but at the same time not too draughty and cool. Roof warmed by the sun, in particular south facing roofs. Weatherboarding and/or hanging tiles with gaps. Low level of disturbance by humans. Bridge structures, follies, aqueducts and viaducts over water and/or wet ground. For rarer species, buildings or built structures in the core area of their distribution. Buildings and built structures in proximity to each other providing a variety of roosting opportunities throughout the year. Buildings or built structures close to good foraging habitat, in particular mature trees, parkland, woodland or wetland, especially in a rural setting
Lower	Modern, well-maintained buildings¹ or built structures that provide few opportunities for access by bats. Small, cluttered roof space. Buildings and built structures comprised primarily of prefabricated steel and sheet materials. Cool, shaded, light or draughty roof voids. Roof voids with a dense cover of cobwebs and no sections of clean ridge board. High level of regular disturbance. Highly urbanised location with few or no mature trees, parkland, woodland or wetland. High levels of external lighting.

Notes

¹ The features listed here may not be indicative of use of the site by bats during winter or spring. This table should be read in conjunction with Box 2.1 - Chapter 2, which provides triggers for bat surveys.

² Pre-1914 buildings may present the greatest likelihood of providing roost space for bats due to their design, materials used and age. Pre-1990 buildings, especially when close to good foraging habitat, and with favoured features such as cavity walls and soffits, also have a high likelihood of providing roost sites for some bat species.

³ Post-1990 buildings are generally less likely than older buildings to house roosts; however, some modern designs provide access to suitable roosting spaces for bats. Pipistrelles in particular occupy modern buildings and built structures providing that there are suitable access gaps (> 8mm) and provided the structure has appropriate characteristics for roosting

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J5 – Other Habitat: Hard Standing

The Hard standing area is situated throughout most of the site in the form of concrete paving, but it is most prominent towards the centre. Hard standing is considered to be of low ecological value as it possesses no suitable ecological features which could be utilized by protected species. However, reptiles have been known to use this man-made habitat to their advantage by basking upon it when the sun heats the ground.

With this being the case, as the trial pits/boreholes are only proposed to take place in certain sections of the hard standing, the remainder should remain unaffected and therefore, still suitable for reptile usage in the future.

Finally, the area which the gasholder used to occupy has been included within this habitat type and has been target noted on the Phase 1 Habitat Map.

Figure 12: The area of hard standing which is situated next to the woodland located on the north-western boundary of the main site. Although hard standing usually has little potential for protected species, in this case, this area is thought to have basking potential for reptiles.



Please see Appendix A: Preliminary Ecological Appraisal (Extended Phase 1 Habitat Survey) Map, for the precise location of the Hard Standing (J5).

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3.3 Protected Fauna Species

Bird species recorded during the field survey

As the survey was conducted outside of the bird nesting season, truly representative results of the birds which utilize the site could not be gained. This being said, a number of potential nesting areas were uncovered including; the building to the east of the pond, the mature Oak (*Quercus robur*) tree within the south-eastern grassland, the dense areas of scrub and the woodland areas. In relation to the lone Oak, birds generally make their nests within mature trees as they tend to house more opportunities for invertebrate colonization (cracks in the trunk etc.). The hard standing areas are only likely to be used by passerine (perching) birds, as they provide very little in the way of potential nesting or foraging habitat.

Overall, it would appear that the site has relatively high potential for nesting birds (due to the aforementioned suitable habitats). But as the majority of the areas which have potential are outside of the proposed work zones, it is unlikely that any nesting bird populations will be negatively impacted (ground investigation works proposed during the winter months). This being said, as a precautionary measure, any works which are to occur within close proximity to potential nesting bird habitat (i.e. dense scrub and semi-mature/mature trees) should occur out of the bird nesting season to ensure that they remain undisturbed.

Mammals

Although no mammals were directly discovered on site, multiple signs were identified from different species which suggest that mammals have been occupying the area. A number of Rabbit (*Oryctolagus cuniculus*) skulls and droppings were identified within the semi-improved grassland towards the north of the site, which suggests that this species have in the past and possibly still do occupy the site. This is in correlation with the evidence found within the woodland embankment to the north-west (and in other areas) of active and disused rabbit warrens with more than 100 entrances. With evidence of high rabbit usage being present, although not protected by law, it is recommended that the works proposed within the woodland be moved to the woodland boundary (within the lard standing) or as close to it as possible. This will not only protect the rabbits occupying the area, but it will also protect any herpetiles present from harm (as discussed in the 'Reptiles/Amphibians' section).

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Signs of Badger (*Meles meles*) activity were uncovered along the boundaries of the western extension. A sett with 2 entrances was discovered along the southern boundary just off site, but due to its proximity to the proposed development area, this should be taken into account. The same can be said for another sett located off site to the north within the adjacent grassland. Because of this, it is vital that a distance of 10m be kept away from the sett entrances at any given point to ensure that no badgers are negatively impacted. As mentioned previously, this distance is less than usual (which is typically 20m away with heavy machinery), because the setts are located on bank sides which slope up and away from the site (thus meaning that any tunnels will also lead away). If this proposed avoidance measure is incorporated, there will be no issues from a Badger point of view with regards to the conduct of the trial pits/boreholes.

No signs of Water Vole (*Arvicola amphibius*), Otter (*Lutra lutra*) or Bat species were identified on the site, however, the large Oak (*Quercus robur*) tree within the south-eastern semi-improved rough grassland may have potential for bats if any suitable cracks are present. Due to the ecological potential of this tree [for providing suitable habitats for a number of species], it is recommended that avoidance measures be carried out to leave as greater distance as possible between the tree and the proposed works when they begin, in order to safeguard any protected species which may be using it.

Insects

No insect species were noted during the preliminary ecological appraisal, which is likely to be down to the time of the year at which the survey was conducted (November 2013). However, a number of the features on-site (with particular reference to the semi-improved rough grassland, scrub, and woodland) provide excellent foraging opportunities for insects. These in turn provide a food source for other organisms such as small mammals and birds, which ultimately makes these habitats of moderate importance to local fauna.

Reptiles/Amphibians

Although no clear signs of usage were identified, the site is thought to hold potential for housing herpetiles (reptiles and amphibians), with particular reference to reptiles. The HSI conducted on the only standing water body on site concluded that this pond has poor suitability for housing GCN. As this is the only amphibian of direct conservation concern, and because the pond is outside of the proposed works zone (ground investigation works), there are no constraints from an amphibian

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point of view with regards to the conduct of the trial pits/boreholes, as no GCN breeding habitat will be lost. This being said, the site does house some potential with regards to reptiles, as many of the habitats on site provide ample opportunities for them to thrive. The woodland on the north-western corner of the site has multiple disused rabbit warrens, which may be used by hibernating herpetiles (inc GCN). The hard standing areas (particularly those close to the woodland) provide a suitable location to bask upon, as they are open habitats with little in the way of physical obstructions (i.e. trees, buildings etc.) which could block the sun. Finally, the semi-improved rough grassland and scrub habitats could be used for hunting purposes, as small mammals are likely to be present, and it is also known that some reptiles [particularly Grass Snakes (*Natrix natrix*)] prefer to bask near a water source, one of which is located within close proximity. Bearing this information in mind, the site has a relatively high potential for housing reptiles, so any areas which they are thought to inhabit should be treated with care or avoided in order to preserve their local populations.

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4 CONCLUSIONS AND RECOMMENDATIONS

This section provides conclusions drawn from the desktop study and the site survey to determine the importance of the different habitat types on-site. It is also necessary to conclude what effects the proposed works will have on any locally protected wildlife species, with particular reference to mammals, amphibians, birds and reptiles.

“Planning authorities have a duty to consider biodiversity when assessing planning applications. Where there is a reasonable likelihood that a planning proposal might affect important protected species or habitats, the council will require information on the species and habitat likely to be affected, and an assessment of the impacts of the proposals. This information will need to be provided before a planning decision is made and if this information is not provided, the council may refuse to register the application.

This Duty was introduced by the Natural Environment and Rural Communities Act (The NERC Act) and came into force on 1 October 2006. This act clarified existing commitments with regard to biodiversity, raised the profile of biodiversity. It aimed to make the consideration of biodiversity a natural and integral part of policy and decision making.

In addition to the NERC Act there is also national and international biodiversity legislation. This includes legislation in relation to protected species and sites which operates outside of the planning system. Local Authorities and developers have a duty to comply with this legislation. Planning Policy Statement 9 - Biodiversity and Geological Conservation Local Policy in relation to biodiversity can be found in the Local Development Framework, retained Local Plan policies and in the emerging Core Strategy.”

For further information please go to
http://www.enfield.gov.uk/info/200052/advice_for_developers/1083/ecological_assessments_for_planning_applications

With regards to Rabbits (*Oryctolagus cuniculus*), although not protected under UK or European law, avoidance measures should be incorporated into the proposed works to ensure that no rabbits are intentionally harmed during the conduct of the trial pits/boreholes. This will include rabbit exclusion fencing which would effectively prevent any rabbits from entering their warrens and/or carrying out the ground investigations away from known warrens.

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As mentioned previously, Badger (*Meles meles*) setts were identified on the northern and southern boundaries of the western extension. With this being the case and although not identified directly onsite, it will still be necessary for avoidance measures to take place. This will mean maintaining a minimum distance of 10m from each sett entrance at any given point when conducting the trial pits/boreholes. Typically a minimum distance of 20m should be maintained away from Badger sett entrances when heavy machinery is to be used. However, as the embankments slope up and away from the site, this measurement can be reduced, as any tunnels created by Badgers are likely to lead away from the site.

With regards to reptiles and amphibians, there is a possibility that the site could be utilized by both of these groups. As mentioned previously, the pond located on site (but outside of the area for the proposed ground investigation works) is deemed to be of low value for GCN, as the HSI conducted by Ecosulis labelled the pond as being 'Poor'. However, as GCN have been identified on the ecological data search to be within the immediately surrounding area, there is a high likelihood that the area could be utilized as a foraging habitat for this species. This is said because GCN are known to migrate and forage within a 500m radius of breeding ponds, and the nearest GCN record was identified to be approximately 320m to the north-east of the site. If the areas of interest (scrub and woodland) are to be maintained as they currently stand (or if minimal vegetation clearance is to occur), there will be no issue from a GCN point of view with the conduct of the trial pits/boreholes. However, if the land tested is found to be contaminated, and the further removal of the soil [and subsequently the habitats which grow within it] is required, an amphibian presence/absence survey (during the optimal survey period: March - June) will be required to identify if these species reside within the area. If they are found to be on site, a development licence from Countryside Council for Wales to legally disturb GCN and their habitat would be required, and an individual mitigation strategy would need to be devised.

There is a possibility that hibernating reptiles (inc GCN) may occupy some of the disused rabbit warrens within the woodland on the north-western boundary. Similarly to the GCN, if this area is to be left as is during the trial pits/boreholes there will be no issues with regards to reptiles (as avoidance measures, by retaining as greater distance as possible from the warrens, will suffice). However, if the woodland is to be heavily impacted by the works, it will be necessary to conduct a reptile survey (during the months of April-May or September) to establish whether or not they are present within the gasworks site. Again, if it is discovered that they are, mitigation measures may need to be carried out for each species discovered.

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Finally, birds are protected (Wildlife and Countryside Act 1981) during the nesting season (March – August) so any works which are likely to impact nesting birds (such as tree felling) should occur outside of the nesting season.

Phase 1 habitat surveys can be conducted all year round and the site survey was carried out in November 2013. However, the optimal time for undertaking these surveys would be between the months of April and September. If surveys are undertaken outside this period, it is quite likely that a follow-up botanical survey will be required. It is therefore recommended because the site has a number of different types of habitats that a follow up flora survey is carried out in the optimal survey period.

To summarise the following surveys are required if the land investigated for contamination is to be removed off site.

4. GCN presence / absence pond survey (March – June).
5. Reptile presence / absence survey (April/May – September).
6. Update flora survey (April – September).

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6 APPENDICES

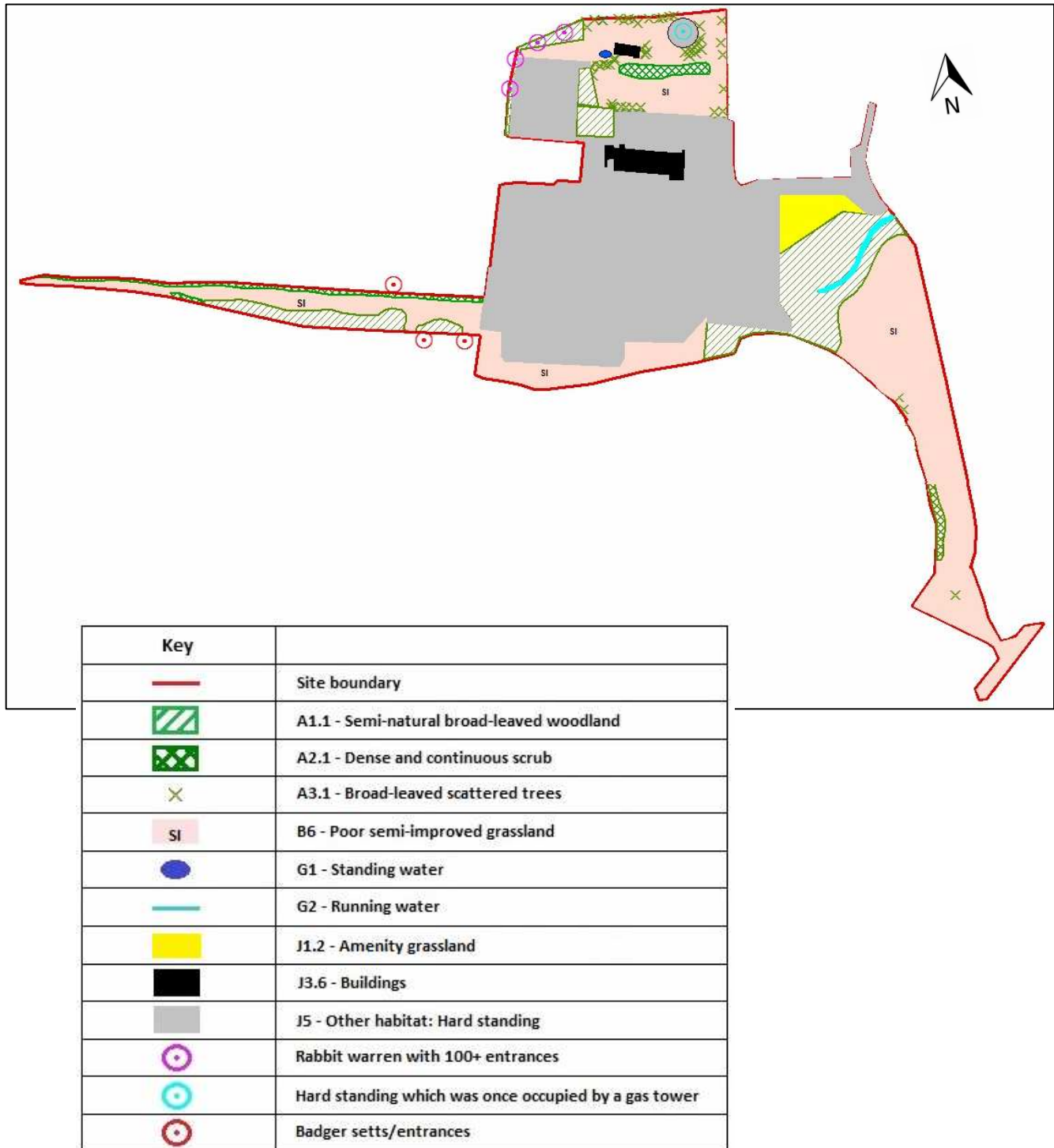
Appendix A: Preliminary Ecological Appraisal (Extended Phase 1 Habitat Map)

Appendix B: Site Plans

Appendix C: Photographic Records

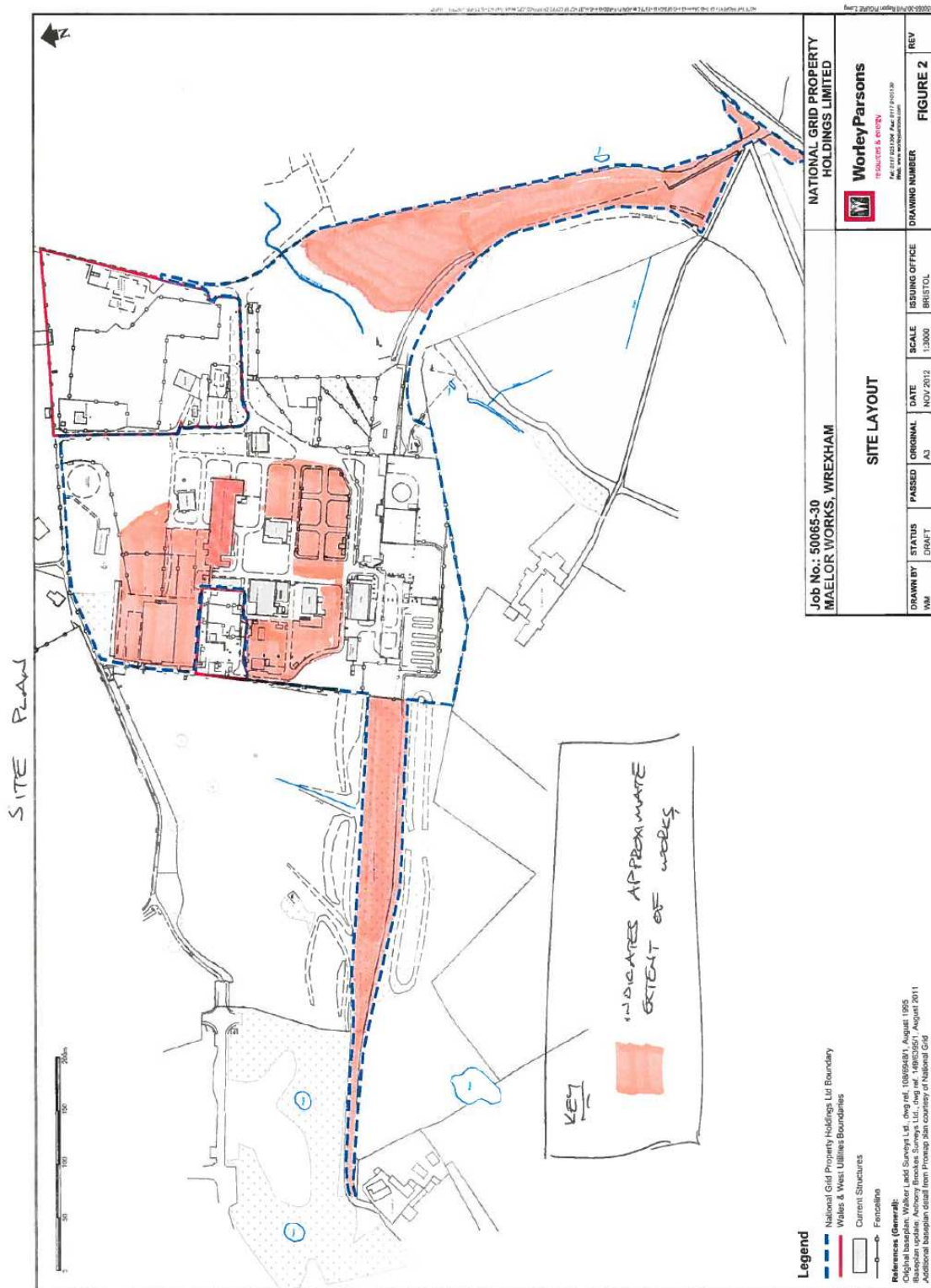
Preliminary Ecological Appraisal

Appendix A: Preliminary Ecological Appraisal (Extended Phase 1 Habitat Map).



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Appendix B: A site plan which shows the approximate extent of the proposed works (trial pits and boreholes). These are indicated in pink.



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Appendix C: Photographic Records

Another view of building 1 (B1) which is proposed to be demolished as a part of the proposed works.



A view of the east side of B1 from a north-eastern viewpoint.



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A view of the northern side of B1 from a north-eastern viewpoint.



A close up of the pond, which has low potential for housing breeding GCN during the optimal survey period.



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The pond located outside the development zone, with the adjacent building in the background. The broken window which may allow bird access is indicated by the red circle.



One of the main areas of hard standing located on site. This particular area is located within the 'proposed works' zone, but the building to the right however, is not.



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This photograph was taken from the entrance point to the western extension. For access reasons, entry to this area was only available via a farm which was located off site to the west.



The semi-improved rough grassland located to the south-east of the site.



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The chain link fence and gate which limited access to the eastern woodland/scrub area.



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7 LIMITING CONDITIONS/DISCLAIMERS (Unless stated otherwise)**1. The Service**

- 1.1 Evolution Ecology Ltd agrees to supply Ecological consulting services of a preliminary nature or a more thorough service as advised or as commissioned.

2. Fees

- 2.1 The client(s) will settle the agreed fee in full, within 30 days of receiving the invoice. Reports will remain the property of Evolution Ecology Ltd until full payment has been received. No liability is accepted for the contents of a report that is not paid in full. Any queries should be notified to Evolution Ecology Ltd within 7 days of the invoice date.
- 2.2 If the client(s) fails to pay within the time specified in 2.1 then Evolution Ecology Ltd shall charge the client(s) interest on the outstanding fee, both before and after any judgment, at the rate of 4% per annum above the HSBC Bank base rate, until payment is made in full (A part of a month being treated as a full month for the purposes of calculating interest).
- 2.3 In the event that it is necessary to recover any outstanding fees from the client(s), the client(s) will fully reimburse any costs and expenses incurred during the recovery period, including court costs. Evolution Ecology Ltd reserves the right to make a charge for every letter sent and telephone/fax call made, in connection with the recovery.

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4. Insurance Cover

- 4.1 All work carried out by Evolution Ecology Ltd is covered by a £1,000,000 professional indemnity insurance.

5. Quality of Craftsmanship

- 5.1 When appointing an Ecologist, please use only suitably qualified and experienced companies (The Local Authority and the Institute of Ecology and Environmental Management may be able to provide a select list of such companies).
- 5.2 Evolution Ecology Ltd will not accept liability for any works undertaken by any other companies, or contractors.