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BASELINE EVIDENCE REPORT – ECOLOGY SECTION

Huncoat Garden Village Masterplan and Delivery Strategy - Ecology Section

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Baseline Evidence Report

Huncoat Garden Village Masterplan and Delivery Strategy - Ecology Section

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8 Ecology and Arboriculture

8.1 Preface

This ecological chapter forms part of the evidence base to inform the Huncoat Garden Village Masterplan. The document details a high-level overview of the anticipated ecological constraints on site and provides suitable recommendations on further survey work.

8.2 Baseline Information

8.2.1 Desk Study Methodology

A desk study has been undertaken to identify constraints and opportunities for development of the Masterplan, identifying ecological receptors that have potential to be impacted by development. The desk study reviewed a search area of 2km from the Masterplan Area boundary.

An arboricultural survey was also completed to identify and understand the size of Tree Preservation Orders (TPO), significant individual trees and other individual trees, groups of trees and woodlands within the Masterplan Area boundary. The full survey results can be found in Appendix C, with notable findings included in this section of the report.

To facilitate the description and location of ecological features, the Masterplan Area has been divided into several parcels. The parcels are described below:

- “Built-up area” associated with the village of Huncoat, which comprises a mix of terraced, semi-detached and detached dwellings, a school, and industrial units.
- “RSPCA centre” situated to the north west of the Masterplan Area and includes the buildings and fields associated with Nearer Holker House which are connected to Enfield Road to the south via an unnamed road. This parcel is restricted to the north by the M65 and to the east by Clough Brook. A quarry is located to the west.
- “Clough Brook” and “former Huncoat colliery” situated to the east of the RSPCA centre. This parcel comprises Clough Brook, a watercourse running from south to north through woodland, and a former coal mine (closed in the 1960s). It is a mixture of land in the County Council’s ownership and privately owned, which the public have been able to access and is vegetated with grassland and trees. This parcel is restricted by the M65 to the north, Altham Lane to the east and the Preston to Burnley railway line to the south.
- “Former Huncoat power station” is located to the north east of the Masterplan Area. A now derelict power station which closed in the 1980s and has since been colonised by grassland, woodland and scrub. Altham Lane is located to the west, the Preston to Burnley railway line to the north, the A56 to the east and agricultural land to the south.
- “Woodland north of former Huncoat power station” is a rectangular plot of land occupied by woodland which is restricted by the M65 to the north, Altham Lane to the west, the Preston to Burnley railway line to the south and the A56 to the east.
- “Land north of Altham Lane” comprises four agricultural fields separated by hedgerows. The parcel is restricted by the Preston to Burnley railway line to the north, Altham Lane to the east and south and residential properties to the west.
- “Land north of Burnley Lane” comprises a number of cattle-grazed fields located to the south of the former Huncoat power station. The A56 is located to the east of this parcel, Burnley Lane to the south and residential properties to the west.
- “Land south of Burnley Lane” is located to the south east of the Masterplan Area. This parcel comprises a recreational ground with the Huncoat War Memorial and a series of horse-grazed agricultural fields. Burnley Lane is located to the north, the A56 to the east, the A679 Burnley Road to the south and residential properties to the west.
- “Public open space south of Lynwood Road” is located to the south west of the Masterplan Area and comprises a number of recreational fields with woodland, hedgerows and public footpaths.

Table 8-1 summarises the information utilised in the desk study and the sources from which they were obtained.

Table 8-1 Sources of Information for the Ecology Desk Study

Source	Information Obtained
Multi-agency geographic information centre (MAGIC) - magic.defra.gov.uk	The location of statutory designated sites for nature conservation, habitats registered on the Priority Habitat Inventory1 and registered European Protected Species Licence (EPSL) applications within 2km of the Masterplan Area.
Ordnance Survey mapping and online aerial imagery	Aerial photography published on Google Earth Pro 7.3.2 was studied (historical imagery also viewed dated between 2000 and 2018) to place habitats within the study area in the wider context, to identify potential ecological features that may not be evident on the ground during the field survey and to identify potential barriers to animal movements (such as road networks, built development and major water courses). This approach can be useful in determining if such features are potentially a key part of a wider wildlife corridor or an important feature in an otherwise ecologically poor landscape. It can also identify potentially important habitats for rare/protected fauna (in particular ponds) which could have a bearing on the ecology of the area. As some features are not always apparent on aerial photographs, relevant Ordinance Survey mapping (on magic.defra.gov.uk) was also studied to identify any additional ponds, issues and drains.
Lancashire Environment Record Network (LERN)	Non-statutory designated sites for nature conservation and protected / notable species records within a 2km search radius of the Masterplan Area. The data provided by LERN also includes bat records from North Lancashire Bat Group (NLBG), South Lancashire Bat Group (SLBG) and Merseyside and West Lancashire Bat Group (MWLBG).
Lancashire Ecological Networks Maps	Maps were examined to determine whether any parts of the Masterplan Area formed part of the Lancashire grassland or woodland network.
East Lancashire Waste Technology Park, Environmental Statement (Atkins, 2005)	Records of habitats, fauna and flora recorded during ecology surveys undertaken at the former Huncoat power station. The surveys included a Phase 1 Habitat Survey and protected species surveys for nesting birds, great crested newt and invertebrates.
Proposed Employment Development at the former Huncoat Power Station, Huncoat, Accrington, Environmental Statement (Northern Transport Planning, 2007)	Records of habitats, fauna and flora recorded during ecology surveys undertaken to the south of the former Huncoat power station. The surveys included a Phase 1 Habitat Survey and protected species surveys for nesting birds, bats and badger.

8.2.2 Desk Study Results

[1] Priority Habitats refers to those listed Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (hereafter termed S41 habitats). In England, there are 56 S41 habitats, recognised as being of 'principal importance' for the conservation of biological diversity. Ancient woodland is not a formal designation as such, but a term applied to sites in England and Wales whose documentary history shows them to have been continuously wooded since at least the year 1600, and which are by extension considered likely to have been continuously wooded since the last Ice Age. Only Ancient woodlands greater than 0.25 hectares in size are registered on the Priority Habitat Inventory.

8.2.2.1 Statutory Designated Sites

The desk study identified no statutory designated sites within the 2km of the study area.

The site is situated within one of the Impact Risk Zones (IRZ) of the West Pennine Moors Site of Special Scientific Importance (SSSI). The West Pennine Moors SSSI is located approximately 4.9km south west of the site boundary and is designated for the presence of an extensive mosaic of upland and upland-fringe habitats. IRZs define several buffer zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts depending on the distance to the SSSI. Residential development is not included in the list of development categories which could potentially have an adverse impact on the SSSI at this distance[2].

8.2.2.2 Non-Statutory Designated Sites

The desk study identified a number of non-statutory designated sites for nature conservation within the study area, none of them located within the Masterplan Area boundary. These include 15 Biological Heritage Sites (BHS) and 10 District Wildlife Sites (DWS). The names of the non-statutory designated sites, the reason for their designation and location are described in Table 8-2 below.

Table 8-2 Non-Statutory Designated Sites within 2km of the Masterplan Area

Site Name	Reason for Designation	Distance and Direction from the Masterplan Area Boundary
Castle Clough South and Childers Green BHS	Grassland, habitat mosaics	0.1km east
Altham Clough Wood BHS	Woodland and scrub	0.1km north
Cronker Wood and Plantation BHS and DWS	Woodland and scrub	0.2km south east
Shorten Brook DWS	Grassland, river	0.2km north
Leeds Liverpool Canal DWS	Artificial habitat, ponds and rivers	0.2km north
Castle Clough BHS	Woodland and scrub	0.3km east
Houghton Hey Plantation BHS	Woodland and scrub	0.6km east
Peel Park Heathland BHS	Heathland	0.6km south
Shuttleworth Wood BHS	Woodland and scrub	0.8km north east
Barley Green Plantation DWS	Woodland and scrub	0.8km south east
Hameldon Scout BHS	Artificial habitats, flowering plants and ferns, birds	1km south east
Hameldon Hill / Common DWS	Bog, habitat mosaic	1km south east
Plantation Road BHS	Woodland and scrub, habitat mosaics	1.1km south
Pollard Moor, Hampton Common and Bentley Wood Green BHS	Habitat mosaics	1.2km north east

[2] Developments categories in the IRZ within the site are: airports, helipads and other aviation proposals, livestock and poultry units with floorspace > 500 m², slurry lagoons > 750 m² and manure stores > 3500 t.

Site Name	Reason for Designation	Distance and Direction from the Masterplan Area Boundary
Padiham Power Station DWS	Woodland and scrub	1.4km north
Stone Pollard Moor DWS	Woodland and scrub	1.7km north east
Thornybank Clough BHS	Grassland, habitat mosaics	1.7km south east
Wind Engine Clough BHS	Woodland and scrub	1.7km north
Tag Clough BHS	Woodland and scrub	1.8km south
Brownsills Wood BHS	Woodland and scrub	1.8km north east
Disused Railway Line DWS	Grassland	1.9km north east
Disused Railway Line, Padiham DWS	Grassland	1.9km north east
Spa Wood DWS	Woodland and scrub	1.9km east
Lower Dean Wood BHS	Woodland and scrub	2km north

8.2.2.3 S41 Habitats[3]

Several areas recognised as deciduous woodland S41 priority habitat were located within the Masterplan Area. These areas were located along Clough Brook to the north west, within the former Huncoat power station site to the north east, and within public open spaces to the south.

8.2.2.4 Ancient Woodland

The desk study exercise identified the presence of five areas of Ancient Woodland within the search area. The closest areas are located within Altham Clough Wood BHS (approximately 130 m north) and Shorten Brook DWS (approximately 190 m north).

8.2.2.5 Significant Individual Trees

Throughout the Masterplan Area, there is a limited number of significant individual trees (Figure 8-2 Appendix B) that if lost would significantly impact the local landscape and biodiversity.

8.2.2.6 Tree Preservation Orders

A review of Hyndburn Borough Council's online database has confirmed a number of Tree Preservation Orders (TPO).

- 1952-8 HUNCOAT/PEEL PARK R17.1/06W1 Ash, Sycamore, Beech, Oak, Willow Tree Preservation Order
- 18731978-2 ALTHAM SOUTH R17.7/04A1 Mainly Willow Tree Preservation Order
- 18741978-2 ALTHAM SOUTH R17.7/04W2 Oak, Sycamore, Alder, Hawthorn, Rowan, Willow, Birch Tree Preservation Order
- 18751978-2 ALTHAM SOUTH R17.7/04T6 Ash Tree Preservation Order

8.2.2.7 Ecological Networks

Habitat networks of less than 3km in length have been identified as being most likely to be contributing to the

[3] S41 Habitats – Section 41 Habitats that are listed under the Natural Environment and Rural Communities (NERC) Act 2006 as habitats of principal importance for the conservation of biodiversity in England.

movement of species and individuals. Networks of greater than 3km in length can be used to identify and target conservation activities at areas which could be enhanced to connect 3km networks that are currently isolated from each other[4]

Semi-natural grasslands within the Masterplan Area form part of a grassland network that is greater than 3km in length and connect to a 'core' area of grassland to the east of the A56, between Sellars Fold Farm and Childers Green.

Part of the woodland habitat within the Masterplan Area to the east of the former power station and to the south of the railway line, contributes towards an ecological woodland network of between 250m and 3km in length. These connect to network corridors to the east of the A56 and to a 'core' area of woodland habitat within Castle Clough. The remaining deciduous woodland within the Masterplan Area comprises a 'stepping stone' habitat between corridors of separated woodland network habitat.

8.2.2.8 Protected and Notable Plants

Lancashire Environment Record Network (LERN) provided a large number of protected and notable plant records within the search area. Of these, records of seven species were located within the Masterplan Area boundary. Bee Orchid (*Ophrys apifera*) and Wintergreen (*Pyrola rotundifolia subsp. maritima*) have been recorded within the former Huncoat power station located to the north east of the Masterplan Area. Green-leaved Hawkweed (*Hieracium acuminatum*), Wild Cabbage (*Brassica oleracea*), Bluebell (*Hyacinthoides non-scripta*), Corn Marigold (*Glebionis segetum*) and Strawberry Clover (*Trifolium fragiferum*) have been recorded within the area of public open space south of Lynwood Road to the south west of the Masterplan Area.

8.2.2.9 Invasive Plants

LERN provided a large number of records of invasive plants within the search area. Of these, Indian Balsam (*Impatiens glandulifera*), Japanese Knotweed (*Fallopia japonica*) and Rhododendron (*Rhododendron ponticum*) were located within the Masterplan Area boundary. All three species have been recorded within the area of public open space south of Lynwood Road to the south west of the Masterplan Area. Japanese Knotweed has also been recorded within land at the RSPCA centre, located to the north west of the Masterplan Area.

8.2.2.10 Invertebrates

The desk study identified several records of NERC S41 and notable invertebrate species within the search area. Small Heath (*Coenonympha pamphilus*) and White-letter Hairstreak (*Satyrium w-album*) have been recorded within the Huncoat Colliery site. Speckled wood (*Pararge aegeria*) and chimney sweep (*Odezia atrata*) have been recorded within the area of public open space south of Lynwood Road to the south west of the Masterplan Area.

Atkins undertook invertebrate surveys in 2004 at the former Huncoat power station[5]. No species of conservation concern were recorded. All of the species recorded were of widespread distribution and typical of the habitats within the Masterplan Area.

8.2.2.11 Fish

LERN provided records of five fish species within the search area, the closest of them located within Castle Clough Brook, 1.2km north west of the Masterplan Area boundary. Species included bullhead (*Cottus gobio*), Atlantic salmon (*Salmo salar*), brown / sea trout (*Salmo trutta*), European eel (*Anguilla anguilla*) and grayling (*Thymallus thymallus*). None of the records were within watercourses connected to the Masterplan Area.

8.2.2.12 Amphibians

No records of great crested newt (*Triturus cristatus*) were identified during the desk study exercise and there were no records of granted EPSL applications for great crested newt within the search area. LERN held records of common frog (*Rana temporaria*), smooth newt (*Lissotriton vulgaris*) and common toad (*Bufo bufo*) within the 2km search area. Of these, only common frog has been recorded within the Masterplan Area boundary,

[4] Bloch, P., Bruce, N., Graham, T., Dunlop, D. (Ed). 2015. Lancashire Ecological Network Approach and Analysis (Version I). Lancashire Local Nature Partnership.
[5] Atkins (2005). East Lancashire Waste Technology Park, Environmental Statement.

within the area of public open space south of Lynwood Road to the south west of the Masterplan Area.

Atkins undertook great crested newt surveys in 2004 within pools of water present at the former Huncoat power station (Atkins, 2005). No great crested newts were found.

8.2.2.13 Reptiles

LERN did not hold any records of reptiles within the search area.

8.2.2.14 Birds

Forty bird species have been recorded within the search area. The records include the following notable species within the Masterplan Area boundary: song thrush (*Turdus philomelos*), greylag goose (*Anser anser*), meadow pipit (*Anthus pratensis*), swift (*Apus apus*), mistle thrush (*Turdus viscivorus*), lapwing (*Vanellus vanellus*), skylark (*Alauda arvensis*), reed bunting (*Emberiza schoeniclus*), peregrine falcon (*Falco peregrinus*), redshank (*Tringa totanus*), kestrel (*Falco tinnunculus*), snipe (*Gallinago gallinago*), oystercatcher (*Haematopus ostralegus*), swallow (*Hirundo rustica*), linnet (*Linaria cannabina*), curlew (*Numenius arquata*), house sparrow (*Passer domesticus*), willow warbler (*Phylloscopus trochilus*), dunnock (*Prunella modularis*) and starling (*Sturnus vulgaris*).

Atkins undertook breeding bird surveys in 2004 at the former Huncoat power station (Atkins, 2005). Several notable species were recorded displaying breeding related activity including: lapwing, skylark, common snipe, curlew and little-ringed plover (*Charadrius dubius*). Surveys undertaken within land to the south of the power station (Northern Transport Planning, 2007) recorded singing skylark.

8.2.2.15 Bats

LERN returned records of common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*) and pipistrelle species (Pipistrellus sp.) within the search area. Only one record of common pipistrelle was identified within the Masterplan Area boundary and this was a record of a bat casualty on Bluebell Way to the west of the Masterplan Area. The closest bat roost record to the Masterplan Area was located approximately 1.8km north east.

Bat surveys undertaken within land to the south of the former Huncoat power station (Northern Transport Planning, 2007) recorded very low bat activity from common pipistrelle.

The desk study exercise also identified a granted EPSL application for common pipistrelle situated approximately 1.5km west of the Masterplan Area boundary.

8.2.2.16 Other Mammals

LERN held no records of badger (*Meles meles*), hazel dormouse (*Muscardinus avellanarius*), otter (*Lutra lutra*) or water vole (*Arvicola amphibius*) within the search area. The ecology surveys undertaken within land to the south of the former Huncoat power station[6] found evidence of badger presence.

West European hedgehog (*Erinaceus europaeus*), polecat (*Mustela putorius*) and American mink (*Neovison vison*) have been recorded within the search area. None of these records were located within the Masterplan Area boundary.

8.3 Site Survey

8.3.1 Survey Methodology

8.3.1.1 Phase 1 Habitat Survey

A Phase 1 Habitat Survey of the Masterplan Area was undertaken on the 9th and 10th August 2018. The survey comprised a walkover of the land and habitats present, with a classification of the habitats to Phase 1 Habitat Survey standard. The survey followed the 'Preliminary Ecological Appraisal' methodology as set out in the 'Guidelines for Preliminary Ecological Appraisal'[7], which is a development of the method described in the

[6] Northern Transport Planning (2007). Proposed Employment Development at the former Huncoat Power Station, Huncoat, Accrington, Environmental Statement.
[7] Chartered Institute of Ecology and Environmental Management (2017). Guidelines for Preliminary Ecological Appraisal, 2nd edition. Chartered Institute for Ecology and Environmental Management, Winchester.

'Handbook for Phase 1 Habitat Survey – a technique for environmental audit'[8].

The Phase 1 Habitat Survey provides information on the habitats in the survey area and identifies actual or potential presence of legally protected or otherwise notable species/habitats. The main habitats within the survey area were mapped and are shown at an appropriate scale on the Phase 1 Habitat Survey Plan Figure in 8-1 in Appendix B.

Target Notes have been included where it was felt a more detailed description of a particular area in terms of habitat and/or species composition was needed or to highlight a particular feature. These are provided in Appendix A. The survey does not provide a comprehensive list of all species present. Plant names follow 'New Flora of the British Isles'[9]. The common and scientific name of each of the botanical species is provided when first mentioned in the text, but only the common name is stated thereafter.

8.3.1.2 Assessment and Evaluation

In addition to establishing the baseline ecological interest within the area, the survey intended to identify areas where further surveys may be required, during the appropriate season. The potential of the Masterplan Area's habitats to support legally protected or notable species was assessed from field observations carried out during the walkover and combined with the results of the desk top study. The survey area was inspected for indications of the presence of protected species as follows:

- The presence of nesting habitat for breeding birds (such as mature trees, dense scrub, hedgerows and buildings and/or field margins suitable for ground nesting birds) and evidence of bird nesting including bird song, old nests, faecal marks etc.;
- The presence of features in, and on trees, indicating potential for roosting Bats such as fissures, holes, loose bark and Ivy (*Hedera helix*) and those associated with buildings such as cavities, roof voids, hanging tiles, unenclosed soffits etc.;
- Evidence of European badger, including setts, runs, snuffle holes and hairs;
- Scrub/grassland mosaic and potential hibernation sites for reptiles;
- Suitable habitat for hazel dormice, such as woodland, scrub and dense/species-rich hedgerows, particularly when connected to suitable habitats across the wider landscape;
- Assessment of any ponds that have terrestrial habitat connectivity with the Masterplan Area. Additionally, terrestrial habitats were also assessed for their potential to support great crested newts and other amphibians; and,
- Assessment of water bodies, such as ditches and streams as to their potential to support European water vole and/or Eurasian otter.

The presence or likelihood of occurrence of any legally protected, noteworthy and/or invasive species was assessed from field observations carried out during the field walkover and combined with the results of the desk top study. This was ranked as follows and relies on habitat suitability and an evaluation of existing data:

- Negligible – while presence cannot be absolutely discounted, habitats are very limited or of poor quality for a particular species or species group. There may be no local returns from a data search and the surrounding habitats are considered unlikely to support wider populations of a species/species group. The Masterplan Area may also be outside or peripheral to the known natural range for a species/species group;
- Low – habitats are of poor to moderate quality for a given species/species group. There are few or no returns from the data search, but presence cannot be discounted on the basis of national distribution, the nature of surrounding habitats, habitat fragmentation or recent disturbance, etc.
- Medium – habitats are of moderate quality providing opportunities for a given species/species group. Desk study reveals local occurrence, or the area is within the national distribution and with suitable surrounding habitat. Factors limiting the likelihood of occurrence may include small habitat area, habitat isolation, and/or disturbance;

[8] Joint Nature Conservation Committee (2010). Handbook for Phase 1 Habitat Survey - a Technique for Environmental Audit. Revised print, JNCC, Peterborough.
[9] Stace C.A. (2011). New Flora of the British Isles. 3rd Edition. Cambridge University Press.

- High – habitats are of high quality for a given species/species group. Desk-top study provides evidence of local occurrence. The area is within/peripheral to a national or regional stronghold and/or has good quality surrounding habitat and good connectivity; and,
- Confirmed Presence - presence confirmed from the current survey or by recent, confirmed records.

8.3.2 Survey Results – Phase 1 Habitat Survey

8.3.2.1 Plants and Habitats

The Masterplan Area comprised a wide variety of habitats within the village of Huncoat and surrounding public open spaces, agricultural land, and former industrial land.

Woodland, Trees and Scrub

Woodland, trees and scrub covered a significant proportion of the Masterplan Area. Woodland / tree areas are described from the north west corner of the Masterplan Area in clock-wise direction.

Within the RSPCA centre, there were two sections of dismantled railway (Target Notes 1 and 2) with mature broad-leaved semi-natural woodland and scrub. The dominant tree species in these areas were Pedunculate Oak (*Quercus robur*) and Silver Birch (*Betula pendula*), with Goat Willow (*Salix caprea*), Hawthorn (*Crataegus monogyna*) and Elder (*Sambucus nigra*).

There was also mature broad-leaved semi-natural woodland along the banks of Clough Brook (Target Note 3) which comprised predominantly Pedunculate Oak, Sycamore (*Acer pseudoplatanus*) and Elder, with a scrub layer of Hawthorn and Hazel (*Corylus avellana*). The trees in this area of woodland are protected by a TPO (detailed in Appendix C). To the south of the brook corridor, north of Enfield Road, there was a section of younger plantation woodland which, based on historical aerial photography, appears to have been planted c. 2009. Hawthorn, Elder and Apple (*Malus* sp.) were identified in this section.

Within the former Huncoat colliery site (Target Note 4) and the former Huncoat power station (Target Note 5) several areas have been colonised with young self-seeded woodland and scrub consisting almost exclusively of Silver Birch and Willow (*Salix* sp.).

The land to the north of the former Huncoat power station, on both sides of the Preston to Burnley railway line, supported semi-mature woodland with dominant Grey Willow (*Salix cinerea*) and Silver Birch (Target Note 6). Other less frequent species within this area were Alder (*Alnus glutinosa*), White Poplar (*Populus alba*), Apple (*Malus* sp.), Plum (*Prunus domestica*), Cherry (*Prunus avium*), Hazel, Rowan (*Sorbus aucuparia*), Field Maple (*Acer campestre*), Ash (*Fraxinus excelsior*), Hawthorn, Sycamore, Pedunculate Oak and Wych Elm (*Ulmus glabra*).

To the east of the former Huncoat power station, there were also an area of coniferous plantation woodland with European Larch (*Larix decidua*) and Scots Pine (*Pinus sylvestris*).

Broad-leaved semi-natural woodland with Silver Birch, Rowan and Alder was present to the east, south and west of a recreation ground within land to the south of Burnley Lane.

Within the public open space south of Lynwood Road, vegetated areas were a mix of mature broad-leaved semi-natural woodland along unnamed watercourses (see Target Note 7 for an example) and broad-leaved plantation woodland (see Target Note 8 for an example). A large proportion of the trees in this woodland are protected by a TPO (detailed in Appendix C).

Additional areas of scattered and dense / continuous scrub within the Masterplan Area were found on field margins and watercourses and generally comprised Hawthorn, Elder and Bramble (*Rubus fruticosus agg.*).

Grassland

Improved grasslands occupied the majority of the land within the RSPCA centre, land north of Altham Lane and land south of Burnley Lane. This habitat was also present to the east of land north of Burnley Lane and to the north of land south of Lynwood Road. These grasslands comprised predominantly Perennial Rye-grass (*Lolium perenne*) with occasional White Clover (*Trifolium repens*), Creeping Buttercup (*Ranunculus repens*) and Dandelion (*Taraxacum officinale agg.*).

Species-poor amenity grasslands were found within built-up areas, school grounds and recreation grounds,

and comprised a similar species composition as improved grasslands.

Fields of rank species-poor semi-improved grassland were present within the RSPCA centre and comprised predominately Cock's-foot (*Dactylis glomerata*) and False Oat-grass (*Holcus lanatus*) with Broad-leaved Dock (*Rumex obtusifolius*), Common Hogweed (*Heracleum sphondylium*), Common Nettle (*Urtica dioica*), Great Willowherb (*Epilobium hirsutum*), Common Ragwort (*Senecio jacobaea*) and Spear Thistle (*Cirsium vulgare*). A similar species composition, although with a higher proportion of forbs was present within rank neutral semi-improved grasslands within the public open space south of Lynwood Road.

Heavily cattle-grazed neutral semi-improved grasslands were located to the south east of the former Huncoat power station, and within land to the north of Burnley Lane. The most common species within these areas were Crested Dog's-tail (*Cynosurus cristatus*), Yorkshire-fog, Perennial Rye-grass, Common Bent (*Agrostis capilaris*), Common Couch (*Elytrigia repens*), Cock's-foot and Meadow Foxtail (*Alopecurus pratensis*). Forb species present through the sward included: White Clover, Creeping Thistle (*Cirsium arvense*), Spear Thistle, Meadow Buttercup (*Ranunculus acris*) and Broad-leaved Dock. Common Nettle was occasionally present. Soft-rush (*Juncus effusus*), Compact Rush (*Juncus conglomeratus*), Hairy Sedge (*Carex hirta*) and Tufted Hair-grass (*Deschampia cespitosa*) were locally frequent in water-logged areas.

Within the former Huncoat colliery site and former Huncoat power station there were areas of neutral grassland which, due to the lack of improvement and management have developed a varied flora with a high diversity and proportion of forb species. Grass species included Red Fescue (*Festuca rubra*), Sweet Vernal-grass (*Anthoxanthum odoratum*), Common Bent, Cock's-foot and Tall Fescue (*Festuca arundinacea*). These areas are described in more detail within Target Notes 9, 10 and 11. Based on the limitations of the Phase 1 habitat survey, the grassland in these areas has been categorised as neutral semi-improved within this report; however, further detailed botanical survey is required in future stages of masterplanning to determine their nature conservation value.

Tall Ruderal

Habitats dominated by tall herbs and/or ferns were occasionally present within the study area on field boundaries, along watercourses and within unmanaged fields. These consisted of areas dominated by Great Willowherb, Rosebay Willowherb (*Chamerion angustifolium*) and/or Common Nettle.

Indian (Himalayan) Balsam (*Impatiens glandulifera*) was common and widespread along field boundaries within the RSPCA centre and along the banks of Clough Brook. Small patches of Indian Balsam were identified within a hedgerow to the south of the entrance to Huncoat power station, off Altham Lane.

Several stands of Japanese knotweed (*Fallopia japonica*) were identified within Huncoat power station and next to the entrance to the former Huncoat colliery site off Altham Lane.

Hardstanding, Ephemeral / Short Perennial

Hardstanding within the Masterplan Area was present within built-up areas along roads, pavements and parking/storage areas.

Within the former Huncoat colliery and Huncoat power station sites, there were sparsely vegetated areas on shallow stony soil adjacent to hardstanding which comprised ephemeral / short perennial herbs such as Tall Melilot (*Melilotus altissimus*), Black Medick (*Medicago lupulina*), Colt's-foot (*Tussilago farfara*), Lady's-mantle (*Alchemilla* sp.), Perforate St John's Wort (*Hypericum perforatum*), Curled Dock (*Rumex crispus*) and Smooth Hawk's-beard (*Crepis capillaris*).

Introduced Shrubs

The introduced ornamental shrubs Butterfly-bush (*Buddleja davidii*) and Small-leaved Cotoneaster (*Cotoneaster microphyllus*) were widespread on hardstanding and on the foundations of demolished buildings within the former Huncoat power station.

Open Water

The aquatic habitats present within the Masterplan Area comprised the open water of ponds, ditches and streams with their associated marginal vegetation. Streams and ditches are described below:

- Clough Brook was a slow-flowing, shallow and narrow watercourse which is culverted under Enfield Road and then runs from south to north along broad-leaved woodland on a steep-sided valley (Target Note 12).
- Within the former Huncoat colliery site, there was a drain running through woodland which was dry at the time of the survey. The channel was shaded and grassed over.
- Within the former Huncoat power station, there were two connected ditches (Target Notes 13 and 14).
- Within land south of Burnley Lane, there was a short (c. 70m) section of ditch along a field boundary which was dry at the time of the survey.
- Short sections of stream are located within the public open space south of Lynwood Road (Target Notes 15 and 16).

There were a number of ponds within the Masterplan Area boundary and these are described in Target Notes 11, 17, 18, 19, 20 and 21.

Hedgerows

A small number of species-poor hedgerows comprising predominantly Hawthorn were identified within the Masterplan Area boundary. The majority were defunct hedgerows located on field boundaries. Intact hedgerows were located on both sides of Altham Lane.

Built Structures

The Masterplan Area boundary contained the village of Huncoat, which comprises a mix of terraced, semi-detached and detached dwellings, a school, and industrial units. There are also a small number of farm buildings. Three buildings remain within the former Huncoat power station within the electrical substation.

8.3.2.2 Protected Species

Invertebrates

The majority of the Masterplan Area comprises species-poor and/or heavily managed habitats, likely to be used by a common and widespread assemblage of invertebrates.

The habitats of most importance for invertebrates within the Masterplan Area boundary are considered to be the neutral grasslands within the former Huncoat colliery and Huncoat power station sites due to their high plant species diversity. Although the invertebrate surveys undertaken in 2004 at the former Huncoat power station (Atkins, 2005) found no species of conservation concern, the surveys were undertaken 14 years ago, and the habitats have since changed and potentially developed a more diverse invertebrate species composition.

There is a medium likelihood that habitats within the former Huncoat colliery and Huncoat power station sites support a notable assemblage of invertebrate species.

The likelihood of presence of a notable assemblage of invertebrate species within the remaining areas of the Masterplan Area is considered to be of low to negligible.

Fish

The watercourses within the Masterplan Area were considered unlikely to support any fish species of conservation concern. The likelihood of presence of notable fish species within the Masterplan Area is considered to be negligible.

Amphibians

Five waterbodies (See Appendix D: Target Notes 11, 17, 18, 19 and 20) were identified within the Masterplan Area boundary; all had the potential to support amphibians. Two additional waterbodies were identified in close proximity to the Masterplan Area boundary. These are described in Table 8-3.

Table 8-3 Waterbodies Identified with the Potential to Support Amphibians

National Grid Reference (NGR)	Brief Description	Distance and Direction from the Masterplan Area Boundary
SD78003126	Target Note 11: Area of wetland within the former Huncoat power station with Bulrush (*Typha latifolia*), Great Willowherb, Hard Rush and Common Cottongrass (*Eriophorum angustifolium*). At the time of the survey, this waterbody was very shallow.	Within the Masterplan Area boundary
SD76673105	Target Note 17: Pond located to the north west of the RSPCA centre. The pond was dry at the time of the survey and overgrown with Soft-rush. Present on OS maps and aerial photography.	Within the Masterplan Area boundary
SD77213041	Target Note 18: Pond located within the public open space south of Lynwood Road. Heavily shaded by dense scrub. It held small pools of water at the time of the survey and was overgrown with Tall Fescue, Common Reed (Phragmites australis) and Bulrush. Present on OS maps.	Within the Masterplan Area boundary
SD78403154	Target Note 19: Small pond located within a fenced area adjacent to the former Huncoat power station. Present on OS maps and aerial photography. Not accessible during the survey.	Within the Masterplan Area boundary
SD77963030	Target Note 20: Large ornamental pond located within land south of Burnley Lane. Present on aerial photography, but not on OS maps. Not accessible during the survey.	Within the Masterplan Area boundary
SD76643052	Group of seven ponds located within brickworks. Present on OS maps and aerial photography. Not accessible during the survey.	Adjacent west
SD76633100	Pond located 40m west of Target Note 17. The pond was dry at the time of the survey and overgrown with Soft-rush, Great Willowherb and Common Nettle. Present on aerial photography, but not on OS maps.	40m west

As detailed above, there are a number of waterbodies within and adjacent to the Masterplan Area which have the potential to support amphibians, including great crested newt. Some of the ponds were dry or held little water at the time of the survey, which may indicate they are seasonal and less likely to support breeding amphibians. However, this could be due to the unusually dry conditions in the UK during the summer of 2018. Additionally, more waterbodies with the potential to support amphibians may be present within residential

gardens associated with Huncoat and/or could be located within 500m of the Masterplan Area boundary (which is the approximate distance that great crested newts disperse from a breeding pond).

Based on the lack of records, the likelihood of great crested newt presence within the Masterplan Area is considered to be low. Nevertheless, further surveys are required to confirm absence or determine distribution. Common frog has been confirmed to be present within the Masterplan Area and it is highly likely that other common and widespread amphibians (such as common toad *Bufo bufo*) are also present.

Reptiles

The Masterplan Area largely comprised habitats unsuitable for reptiles, such as intensively grazed and/or managed grasslands. Nevertheless, the former Huncoat colliery and former Huncoat power station contained areas of rank / tussocky grassland and scrub which were suitable for reptiles.

Based on the lack records, the likelihood of reptile presence within the study area is assessed as low. However, further surveys are required to confirm absence or determine distribution.

Birds

The habitats within the study area provided a range of breeding and foraging opportunities for species typical of farmland, woodland and garden type habitats. The Masterplan Area comprised large areas of woodland along Clough Brook, the Preston to Burnley railway line, the public open space south of Lynwood Road and the former Huncoat power station, and these areas are considered to be the most valuable for tree-nesting species. Additionally, a variety of ground nesting bird species have been recorded within the former Huncoat power station, including little-ringed plover which is specially protected under Schedule 1 of the Wildlife and Countryside Act.

Historical records confirm that breeding birds are present within the Masterplan Area. Further surveys are required to confirm the importance and distribution of the species present.

Bats

The Masterplan Area comprised a number of areas of mature woodland / trees and buildings which have the potential to provide suitable roosting features for bats. Due to the size of the Masterplan Area, a thorough search for bat roosting features was not undertaken during the Phase 1 Habitat Survey. However, potentially suitable bat roosting features were identified at:

- Mature woodland / tree lines at Target Note 1 and Target Note 2.
- Mature woodland along Clough Brook.
- Two mature trees within a hedgerow on land north of Altham Lane.
- Mature woodland at Target Note 7.

The Masterplan Area contained multiple features in the form of mature woodland, extensive linear features and species-rich grassland which provide foraging and commuting habitat for bats. The following features have been identified to be of most value:

- Mature woodland / tree lines along dismantled railway lines at Target Note 1 and Target Note 2.
- Mature woodland along Clough Brook.
- Species-rich grassland within the former Huncoat colliery (Target Note 9) and former Huncoat power station (Target Note 10).
- Woodland along the Preston to Burnley railway line.
- Mature woodland and hedgerows within the public open space south of Lynwood Road.
- Historical records confirm the presence of commuting/foraging bats within the Masterplan Area. Due on the abundance of buildings and mature trees within the Masterplan Area, there is also a high likelihood that roosting bats occur.

Badger

No setts were located within the Masterplan Area during the Extended Phase 1 Habitat survey. However, the Lancashire Badger Group identified one badger sett within the study area during a previous site visit. Much of the grassland and woodland within the Masterplan Area represents suitable foraging habitat for badgers.

Otter and Water Vole

None of the watercourses or waterbodies within the Masterplan Area were considered to provide suitable habitat for water voles or otter. Based on the lack of records and habitat suitability for both species, the likelihood of their occurrence is considered to be negligible.

8.3.3 Survey Results – Arboricultural Survey

A full set of survey results are provided in Appendix C.

8.4 Masterplan Consideration

8.4.1 Key Constraints and Mitigation

The potential constraints in regard to future development within the Masterplan Area boundary are identified below:

- There are several areas of mature woodland (some of them recognised as deciduous woodland S41 priority habitat) and tree lines within the Masterplan Area such as Target Notes 1, 2, 3, 7 and the woodland along the Preston to Burnley railway line which likely form wildlife corridors for a range of species. Additionally, the neutral grasslands within the former Huncoat colliery (Target Note 9) and former Huncoat power station (Target Note 10) support a species-rich flora (although further detailed botanical surveys are recommended to fully assess their value in support of planning applications). Development should aim to retain these habitats, or any loss compensated by the creation of replacement habitats.
- The invasive non-native species Indian (Himalayan) Balsam, Japanese Knotweed and Small-leaved Cotoneaster have been recorded within the Masterplan Area. These species are listed on Schedule 9 (part 2, section 14) of the Wildlife and Countryside Act 1981 (as amended). This legislation makes it an offence to 'plant or otherwise cause such species to grow' in the wild. This includes spreading of the species or transferring polluted ground material from one area to another.
- The habitats within the former Huncoat colliery (Target Note 9) and former Huncoat power station (Target Note 10) may support invertebrates of conservation concern. If further surveys (as per section 8.4.3) indicate that these areas are important for invertebrates, development mitigation proposals would need to include retention or re-creation of suitable habitat.
- Waterbodies within the Masterplan Area and terrestrial habitats up to 500m from waterbodies have the potential to support great crested newt. If further surveys indicate that this species is present, development would need to be undertaken in accordance with a Natural England European Protected Species (EPS) mitigation licence, which may include translocation and creation of replacement habitats.
- The habitats within the former Huncoat colliery (Target Note 9) and former Huncoat power station (Target Note 10) may support reptiles. If further surveys indicate presence, development mitigation proposals would need to include translocation and creation of replacement habitats.
- Breeding habitats for birds are widespread within the Masterplan Area boundary. The woodland along Clough Brook (Target Note 3), the Preston to Burnley railway line, the public open space south of Lynwood Road and the former Huncoat power station were considered to be the most important areas for breeding birds. Further surveys should be undertaken in these areas to determine their value. Any removal of suitable breeding bird habitat would require a check for nesting birds.
- Buildings and mature trees within the Masterplan Area have the potential to be used by roosting bats. If development requires the loss of bat roosts, building demolition / tree felling would need to be undertaken under a Natural England EPS mitigation licence, which may include sensitive timing of works, provision of replacement habitats and a precautionary working method. Additionally, species-rich grassland (Target Notes 9 and 10) and woodland / tree lines along dismantled railway lines (Target Notes 1 and 2), Clough Brook (Target Note 3), the Preston to Burnley railway line and the public open space south of Lynwood Road were considered to be the most important areas for foraging / commuting bats. Further surveys should be undertaken in these areas to determine their value as per section 8.4.3 at the appropriate point in the planning application process for the site.

- Badger setts may be present within the grassland and woodland within the Masterplan Area. Development work with the potential to affect badger setts would need to be undertaken under a Natural England licence to permanently / temporarily close the sett(s).

The following considerations were recommended from the arboricultural survey:

- The Masterplan Area has a large amount of tree cover and this can add considerable value to the proposed development in terms of amenity value and other forms of natural capital value.
- Avoidance and mitigation measures should be used to retain trees where possible, (i.e. the alignment of roads to avoid significant trees, however unwarranted retention should be avoided). A BS5837:2012 survey would categorise and identify trees worthy of retention.
- Where possible, trees should be incorporated into the SUDs design to deliver the following benefits:
    - The crown of a large tree is a free-standing anti-flood reservoir.
    - One hundred mature trees capture about 1,137,500 litres of rainwater per year, allowing some to evaporate, drawing up more through the roots and slowly allowing the rest to soak into the ground.
    - For every 5% of tree cover in a community, storm water runoff is reduced by 2%.
    - These trees can add a sense of place to the community, habitat for wildlife. A well-designed tree planting scheme can also increase property prices.
- Where possible – woodlands can be brought into management for recreational use and providing timber / biofuel.
- The Masterplan should consider maximising tree retention and if possible increase tree canopy cover across the area. All retained trees and new mitigation planting should be incorporated into the landscape management plan to ensure they continue to provide benefits to the community.
- For every 10% increase in a city tree canopy, ozone is reduced by between 3-7%. Trees have a positive impact on the incidence of skin cancer, asthma, hypertension and stress related illness by filtering out polluted air, reducing smog formation, providing shade from solar radiation and giving an attractive, calming setting for recreation.

8.4.2 Future-Proofing

In line with supporting the 25 Year Plan for the Environment[10] and the National Planning Policy Framework[11], plans should identify and pursue opportunities for securing measurable net gains for biodiversity and for the wider environment. It should be noted that in the Spring Statement that the Chancellor confirmed that the government will use the forthcoming Environment Bill to mandate “biodiversity net gain”[12].During the planning application process any development within the Masterplan Area will be required to demonstrate biodiversity net gain. This would preferably be achieved onsite, however there are options to deliver these gains offsite and this would be demonstrated via the Defra Biodiversity metric[13].

Enhancement works could include enhancement or recreation of S41 priority habitats (such as woodlands, ponds and hedgerows) and wildlife corridors..

8.4.3 Recommendations

Further surveys are recommended to support future planning applications within the Masterplan Area. The timing for these surveys is presented within Appendix D:

[10] HM Government (2018) ‘*A Green Future: Our 25 Year Plan to Improve the Environment’*, HM Government, London.
[11] MHCLG (2019) National Planning Policy Framework
[12] https://deframedia.blog.gov.uk/2019/03/13/government-to-mandate-biodiversity-net-gain/
[13]Defra Biodiversity Metric - Introduction to the Proposed Updated Metric (BD2020-10) http://publications.naturalengland.org.uk/publication/6020204538888192

- Phase 2 botanical surveys of areas of the semi-improved grasslands that fall within the Lancashire Ecological Grassland Network The surveys should follow standard methodology devised by JNCC's 'National Vegetation Classification (NVC) User's Handbook'[14].
- A hedgerow survey to establish the importance of hedgerows within the Masterplan Area, in the context of the Hedgerow Regulations 1997.
- Invasive plant species surveys to fully identify and map the location of Indian Balsam, Japanese Knotweed and Small-leaved Cotoneaster.
- Invertebrate surveys within the former Huncoat colliery and former Huncoat power station. Invertebrate surveys should follow methods described on 'Surveying Terrestrial and Freshwater Invertebrates for Conservation Evaluation'[15].
- Great crested newt surveys of all waterbodies within the Masterplan Area and those that have terrestrial habitat connectivity with the area and are situated up to 500m from the Masterplan Area boundary. This would initially include a Habitat Suitability Index assessment and, where suitable habitat is present, presence / absence surveys. Presence/absence surveys should either follow the methodology outlined by English Nature[16] or comprise environmental DNA surveys as described by Biggs *et al.*[17]
- Reptile surveys within the former Huncoat colliery and former Huncoat power station. Reptile surveys should be conducted in accordance with good practice guidance, including the 'Herpetofauna Workers' Manual'[18] and reptile survey guidance[19].
- Breeding bird surveys within woodland along Clough Brook, the Preston to Burnley railway line, the public open space south of Lynwood Road and the former Huncoat power station. Breeding bird surveys should be undertaken in accordance with Breeding Bird Survey methodology from the British Trust of Ornithology (BTO).
- Bat roost surveys should be undertaken of all structures and trees likely to be affected by proposed development. This would initially include a preliminary bat roost assessment and, where suitable roosting features are present, emergence / re-entry surveys. Additionally, bat activity surveys should be undertaken within the former Huncoat colliery and former Huncoat power station and of woodland / tree lines along dismantled railway lines, Clough Brook, the Preston to Burnley railway line and the public open space south of Lynwood Road. Survey methodology should follow the Bat Conservation Trust's (BCT) 'Good Practice Guidelines'[20].
- Badger surveys should be undertaken of grassland, field boundaries and woodland within the Masterplan Area. Badger surveys should be undertaken in reference to good practice guidance, namely Surveying Badgers[21] and the National Badger Survey[22].
- The green infrastructure design associated with any application should maximise biodiversity and ecosystem service function.

[14] Rodwell J.S. (2006). National Vegetation Classification: User's Handbook. Joint Nature Conservation Committee. Peterborough.
[15] Natural England (2007). Surveying terrestrial and freshwater invertebrates for conservation evaluation. Natural England Research Report NERR005.
[16] English Nature (2001). Great Crested Newt Mitigation Guidelines. English Nature, Peterborough.
[17] Biggs J, Ewald N, Valentini A, (2014). Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical Advice Note for field and laboratory sampling of great crested newt (*Triturus cristatus*) environmental DNA. Freshwater Habitats Trust, Oxford.
[18] Gent T. and Gibson S. (2003). Herpetofauna Workers Manual. JNCC, Peterborough.
[19] Froglife (1999). Reptile survey; an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10. Froglife, Halesworth.
[20] Collins J. (ed.) (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.
[21] Harris S., Cresswell P. and Jeffries D.J. (1989). Surveying Badgers. Mammal Society, London.
[22] Cresswell P., Harris S., and Jefferies D.J. (1990). The history, distribution, status and habitat requirements of the Badger in Britain. Nature Conservancy Council, Peterborough.

- Habitats within the Masterplan Area should be measured using the Defra biodiversity offsetting metric to establish a baseline against which future mitigation and enhancement proposals can be measured.

8.5 Conclusions

The Masterplan Area comprises a number of built-up areas, grasslands of a range of quality, several areas of woodland, tree lines and open water comprising small ponds, stream and ditches. While these have biodiversity and ecosystem value there is potential for enhancement and removal of non-native invasive species.

There are no statutory or non-statutory designated nature conservation sites within or immediately adjacent to the Masterplan Area. Based on the distance to the Masterplan Area and/or presence of barriers, it is not considered that development within the area would have an impact on any designated sites for nature conservation.

The Masterplan Area is also considered to provide valuable habitat that may be used by a range of protected species and species of conservation concern. This includes suitable habitats for invertebrates, great crested newts, reptiles, breeding birds, bats and badgers.

Further surveys are recommended in the future to confirm presence or absence of protected / notable species, to inform subsequent planning applications and to determine the need for mitigation.

8.6 Limitations

While this assessment is sufficient to support the Masterplan Area allocation decisions, Phase 1 ecological surveys are limited by a variety of factors which affect the presence of flora and fauna (e.g. climatic variation, season and species behaviour). A lack of evidence of a protected species during a survey does not mean that the species is absent; hence the survey also records and assesses the ability of habitats to support such species. The time frame in which the survey is implemented provides a snapshot of activity within the survey area and cannot necessarily detect all evidence of use by a species. The survey was undertaken during the appropriate survey window thus survey timings did not present any issues when classifying habitats.

It should be noted that whilst every effort has been made to provide a comprehensive description of the Masterplan Area, no investigation can ensure the complete characterisation of the natural environment. The Phase 1 Habitat Survey does not constitute a full botanical survey. Plant species may have been under-recorded, unidentifiable or not visible due to the time of year the survey was carried out. This is of particular relevance to woodland flora that flower early in the year.

The protected species assessment provides a preliminary view of the likelihood of protected species occurring within the Masterplan Area. This is based on the suitability of the habitat, known distribution of the species in the local area (provided by data searches and historic survey information) and any direct evidence within the survey area. It should not be taken as providing a full and definitive survey of any protected species group. It is only representative of the time the survey was carried out. Additional surveys may be recommended to support planning applications if, on the basis of the preliminary assessment or during subsequent surveys, it is considered reasonably likely that protected species may be present. Desk study data is not likely to be exhaustive and is not up to date in most cases; it is therefore possible that protected species not identified during the data search do in fact occur within the vicinity of the Masterplan Area.

Appendix A – Target Notes

Ref	Description	Photograph
1	Section of mature broad-leaved semi-natural woodland extending along a dismantled railway. The woodland was located on an earth bund and comprised Goat Willow, Hawthorn and Elder.	
2	Mature tree corridor along dismantled railway on an earth bund. Two parallel lines of mature trees were located on both sides of a public footpath. Species included Hawthorn, Pedunculate Oak, Goat Willow and Silver Birch. A number of trees had features suitable for roosting bats. Himalayan Balsam was present on the banks of the earth bund.	

Ref	Description	Photograph
3	Mature broad-leaved semi-natural woodland located on the banks of Clough Brook. The woodland was located on a steep cutting and included Hawthorn, Hazel, Pedunculate Oak, Elder and Sycamore.	
4	Young self-seeded woodland consisting almost exclusively of Silver Birch and Willow within the former Huncoat colliery site.	

Ref	Description	Photograph
5	Young self-seeded woodland with dominant Silver Birch and Willow, with scattered patches of Japanese Knotweed, was also present within the former Huncoat power station.	
6	Semi-mature woodland with dominant Grey Willow and Silver Birch on land to the north of the former Huncoat power station, on both sides of the Preston to Burnley railway line. Other tree species were identified in lower proportions within this area.	

Ref	Description	Photograph
7	Section of mature broad-leaved semi-natural woodland located along an unnamed watercourse. Species included Beech (*Fagus sylvatica*), Willow, Alder, Pedunculate Oak, Hawthorn, Ash and Sycamore.	
8	Area of young broad-leaved plantation with Cherry, Rowan, Holly (*Ilex aquifolium*), Field Maple (*Acer campestre*), Silver Birch and Lime (*Tilia x europaea*). More mature areas of plantation woodland were present to the west of this area, which also included scattered specimens of Scots pine within the canopy.	

Ref	Description	Photograph
9	Species-rich neutral grassland located within the former Huncoat colliery site. This area comprised a variably dense sward interspersed with young Willow and Silver Birch. Grass species included Red Fescue, Sweet Vernal-grass, Common Bent and Tall Fescue. Forbs were abundant and diverse and included Tall Melilot, Black Medick, Great Willowherb, Spear Thistle, Red Bartsia (*Odontites vernus*), Common Ragwort, Creeping Buttercup, Knapweed (*Centaurea* sp.), Eyebright (*Euphrasia* sp.), Silverweed (*Potentilla anserina*), Tufted Vetch (*Vicia cracca*), Purple-loosestrife (*Lythrum salicaria*) and Yellow Lossestrife (*Lysimachia vulgaris*). Hard Rush (*Juncus inflexus*), Compact Rush and Pendulous Sedge (*Carex pendula*) were also locally present.	
10	Species-rich neutral grassland within drier areas of the former Huncoat power station. Grass species included Red Fescue, Tall Fescue, Sweet Vernal-grass, Common Bent and Cock's-foot. Forbs included Common Hogweed, Common Fleabane (*Pulicaria dysenterica*), Red Clover (*Trifolium pratense*), Common Ragwort, Common Bird's-foot Trefoil (*Lotus corniculatus*), Common Daisy (*Bellis perennis*), Ribwort Plantain (*Plantago lanceolata*), Sneezewort (*Achillea ptarmica*), Knapweed, Hairy Tare (*Vicia hirsuta*) and Common Vetch (*Vicia sativa*). Sparser areas where vegetation was less established supported ephemeral forbs such as Colt's-foot and Perforate St John's Wort.	

Ref	Description	Photograph
11	Area of wetland within the former Huncoat power station with Bulrush, Great Willowherb, Hard Rush and Common Cottongrass. At the time of the survey, this waterbody was very shallow (c. 1cm deep) and covered an area of c. 15m x 10m.	
12	Clough Brook. Slow-moving watercourse with narrow channel (c. 1.5m wide). The banks were either overgrown with Indian Balsam, Rosebay Willowherb and Meadowsweet (*Filipendula ulmaria*), or shaded with broad-leaved woodland.	

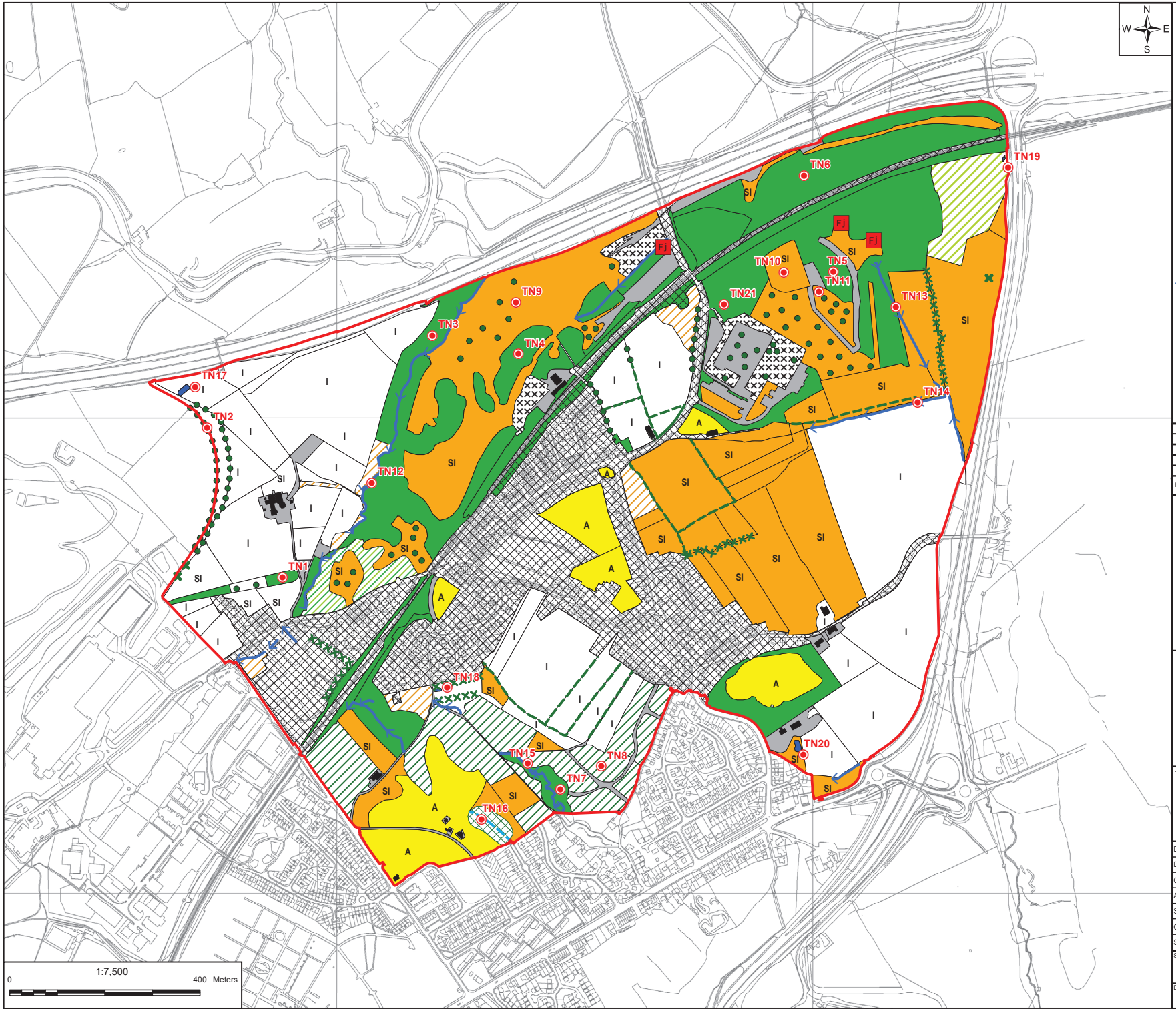
Ref	Description	Photograph
13	Concrete ditch overgrown with Great Willowherb and Soft-rush.	
14	Ditch running along a defunct hedgerow. It was damp but held no standing water at the time of the survey. The banks comprised a similar grassy vegetation as the adjacent fields, with Common Bent and Soft-rush.	

Ref	Description	Photograph
15	Shallow and narrow (c. 1m wide) stream running along broad-leaved woodland. Except for a section crossed by a small bridge, the banks were shaded by woodland vegetation.	
16	Dry ditch completely shaded by dense scrub with Bramble and Hawthorn. Indian Balsam was also present.	

Ref	Description	Photograph
17	Pond overgrown with Soft-rush. The pond was approximately 30m long x 15m wide and appears on OS maps. There was no standing water at the time of the survey, although this may not be indicative of normal conditions as the summer in 2018 was unusually dry.	
18	Pond visible on OS maps, approximately 20m long x 10m wide. At the time of the survey, the pond contained very small pools of shallow water (c. 10cm deep). The pond was heavily shaded by willow and overgrown with Tall Fescue, Common Reed and Bulrush.	
19	Small pond located within a fenced area adjacent to the former Huncoat power station. The pond was visible on OS maps and aerial photography and was not accessible during the survey.	

Ref	Description	Photograph
20	Waterbody shown on aerial photography, but not present on OS maps. The pond was not accessible during the survey.	
21	Waterbody shown on OS maps within the former Huncoat power station. No pond was present within this location. It is thought that the pond was removed as part of the clearance of the site.	

APPENDIX B – Drawings



LEGEND:

- Huncoat Garden Village Boundary
- Target Note
- Built up Area
- Building
- Hardstanding
- Broad-leaved Woodland
- Broad-leaved Plantation Woodland
- Coniferous Plantation Woodland
- Mixed Plantation Woodland
- Dense Scrub
- Scattered Scrub
- Scattered Trees
- I Improved Grassland
- SI Species Poor Semi-improved Grassland
- SI Neutral Semi-improved Grassland
- Tall Ruderal
- Ditch
- Running Water
- Standing Water
- A Amenity
- Ephemeral Short/ Perennial
- Intact Species Poor Hedge
- Defunct Species Poor Hedge
- FJ Stands of Japanese Knotweed (Fallopia japonica)

Rev	Date	Description	Drawn	Check	Approv
01	03/09/2018	INITIAL ISSUE	EP	AH	AC

Client:
HYNDBURN BOROUGH COUNCIL

PROJECT:
Huncoat Garden Village

Site
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Fig. 8-1 Phase 1 Habitat Plan

Designed	A. Cordon	Date 03SEPT18	Signed
Drawn	E.Poppleton	Date 03SEPT18	Signed
Checked	A. Hankinson	Date 03SEPT18	Signed
Approved	A. Cordon	Date 03SEPT18	Signed
Scale:	1:7,500	Datum:	AOD
Original Size:	A3	Grid:	OS
Suitability Code:	S2	Project Number:	10023103

Suitability Description:
For Information

Drawing Number:

Revision: 01

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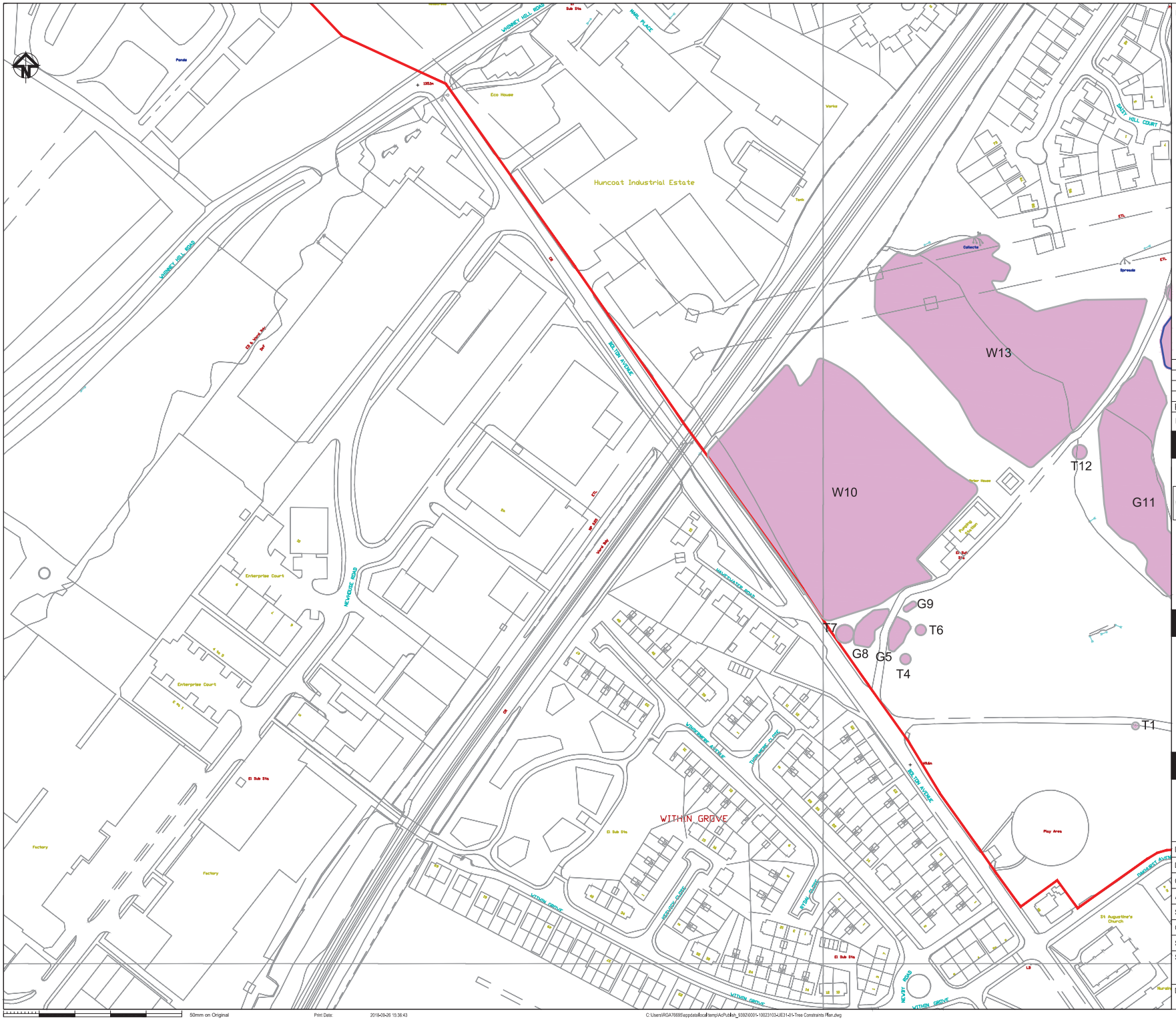
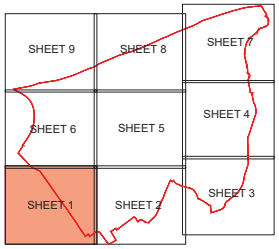


LEGEND

- Proposed Development Site Boundary
- Canopy extent of A Category tree/group
- Canopy extent of B Category tree/group
- Canopy extent of C Category tree/group
- Canopy extent of U Category tree/group
- BS 5837 Root Protection Area

Key Plan



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Client: HYNDBURN BOROUGH COUNCIL.

PROJECT: HUNCOAT GARDEN VILLAGE

Site: Huncoat

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Fig. 8-2 Tree Constraints Plan

(sheet 1 of 9)

Designed	NA	Date: NA	Signed
Drawn	R.GRUBB	Date: 25SEP18	Signed
Checked	M.DILWORTH	Date: 25SEP18	Signed
Approved	M.GIRVAN	Date: 25SEP18	Signed
Scale:	1:500	Datum:	AOD
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Suitability Description: FOR INFORMATION
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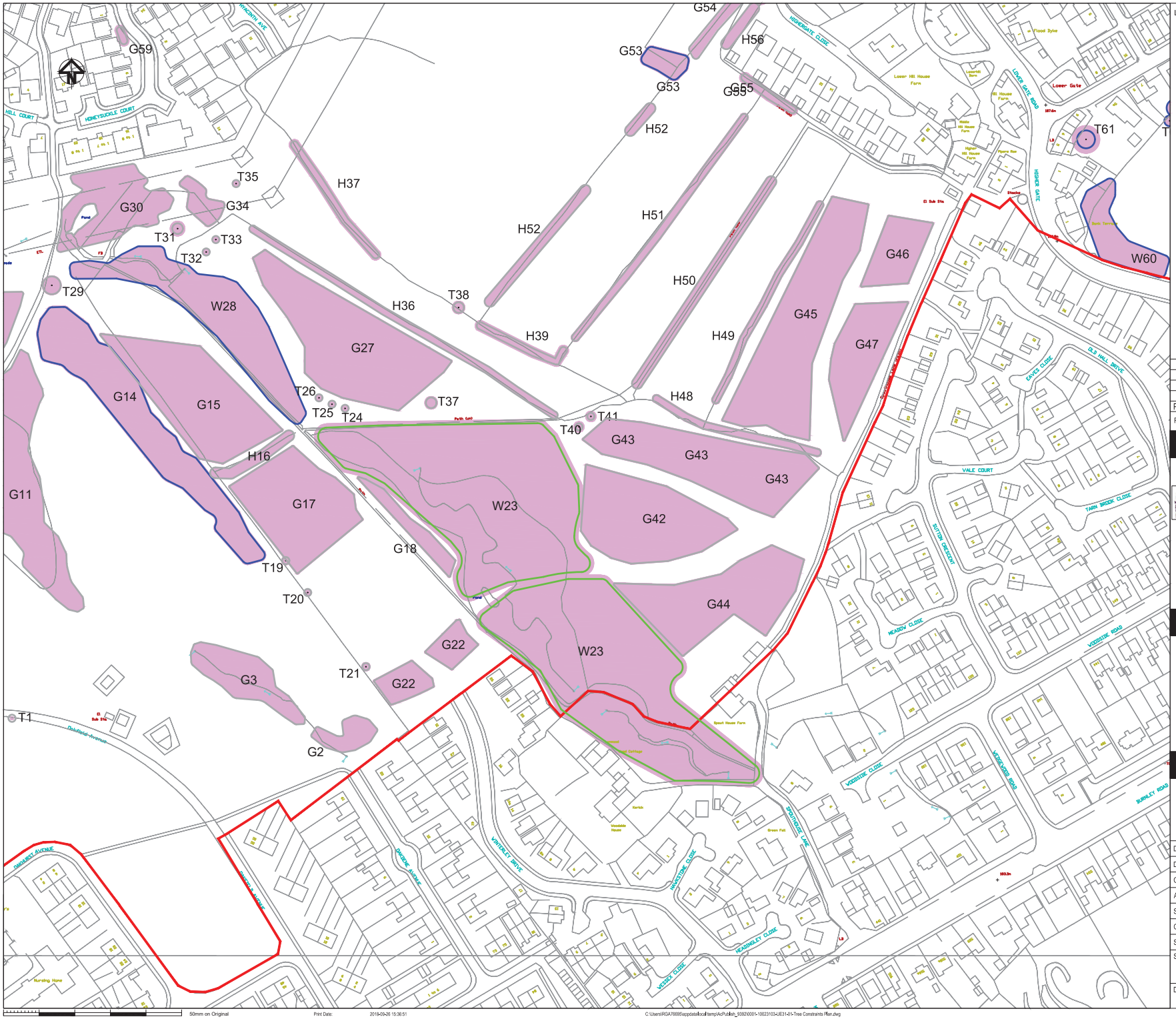

LEGEND

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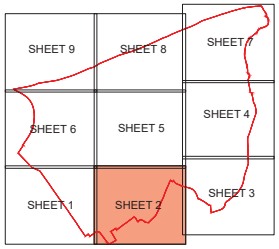
- Canopy extent of U Category tree/group
- BS 5837 Root Protection Area

Key Plan



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Client: HYNDBURN BOROUGH COUNCIL.

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Fig. 8-2 Tree Constraints Plan (sheet 2 of 9)

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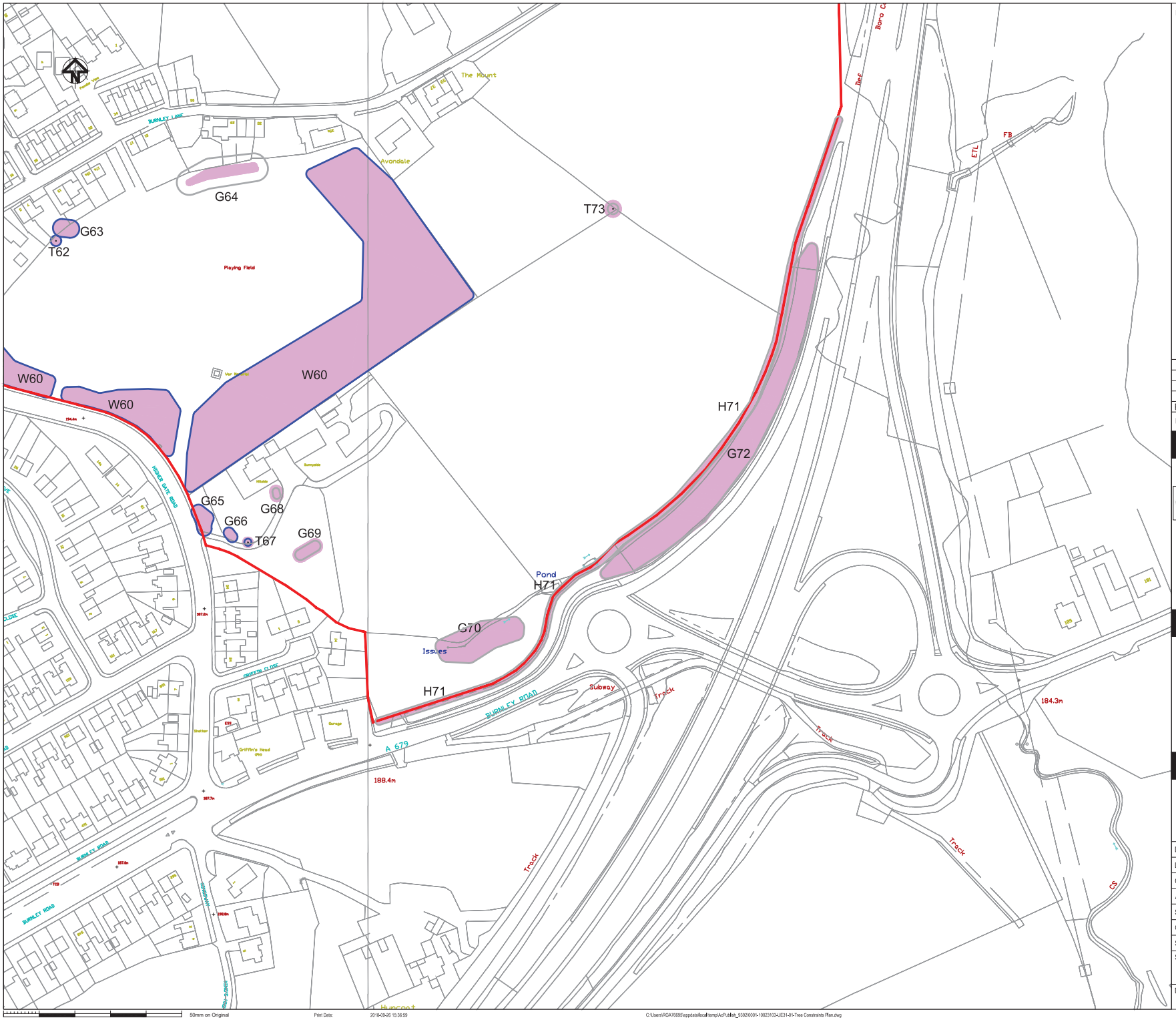

LEGEND

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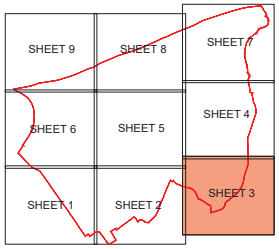

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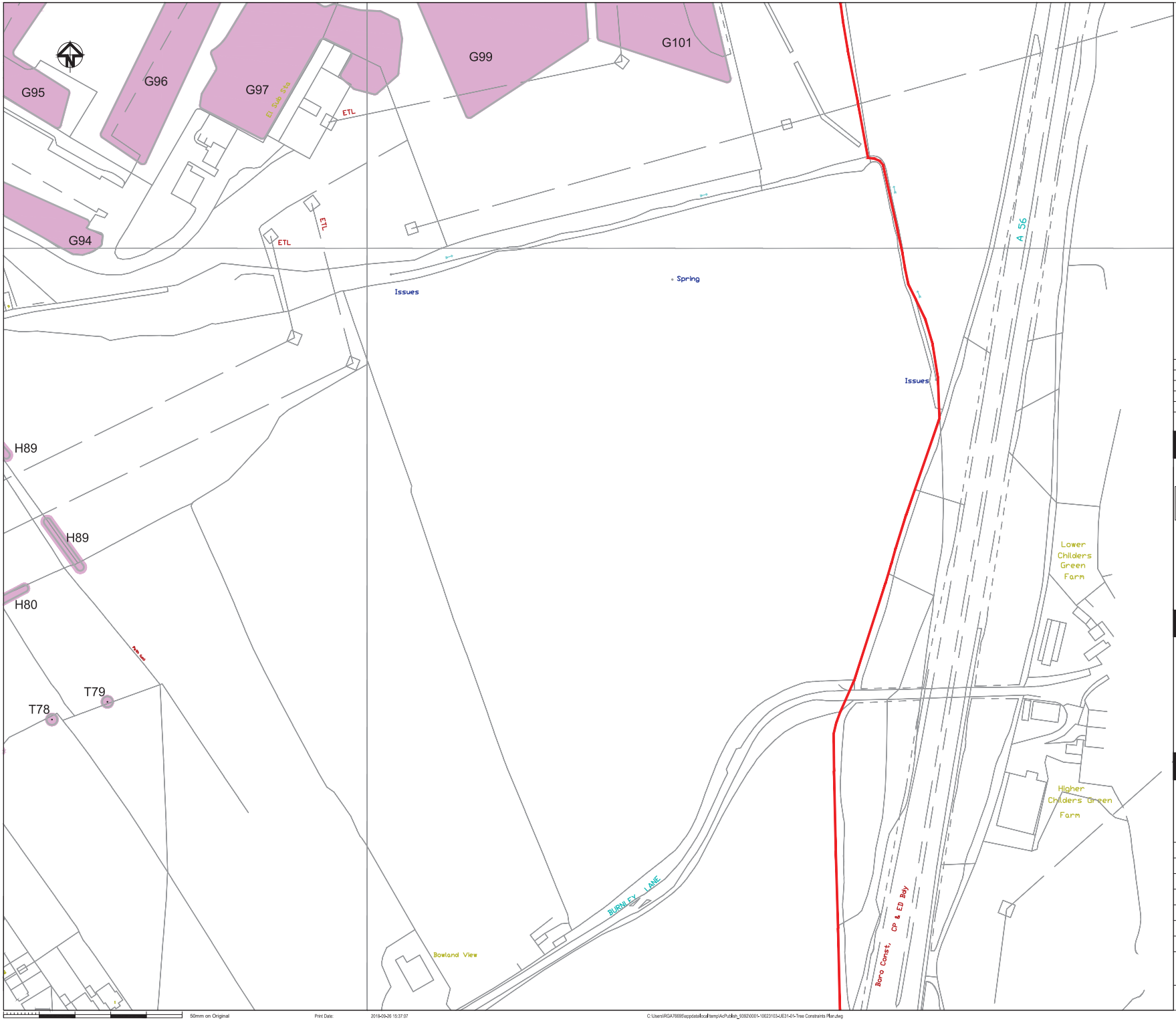

LEGEND

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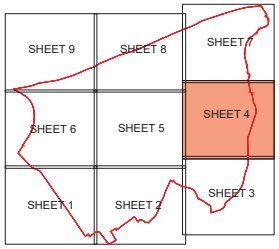

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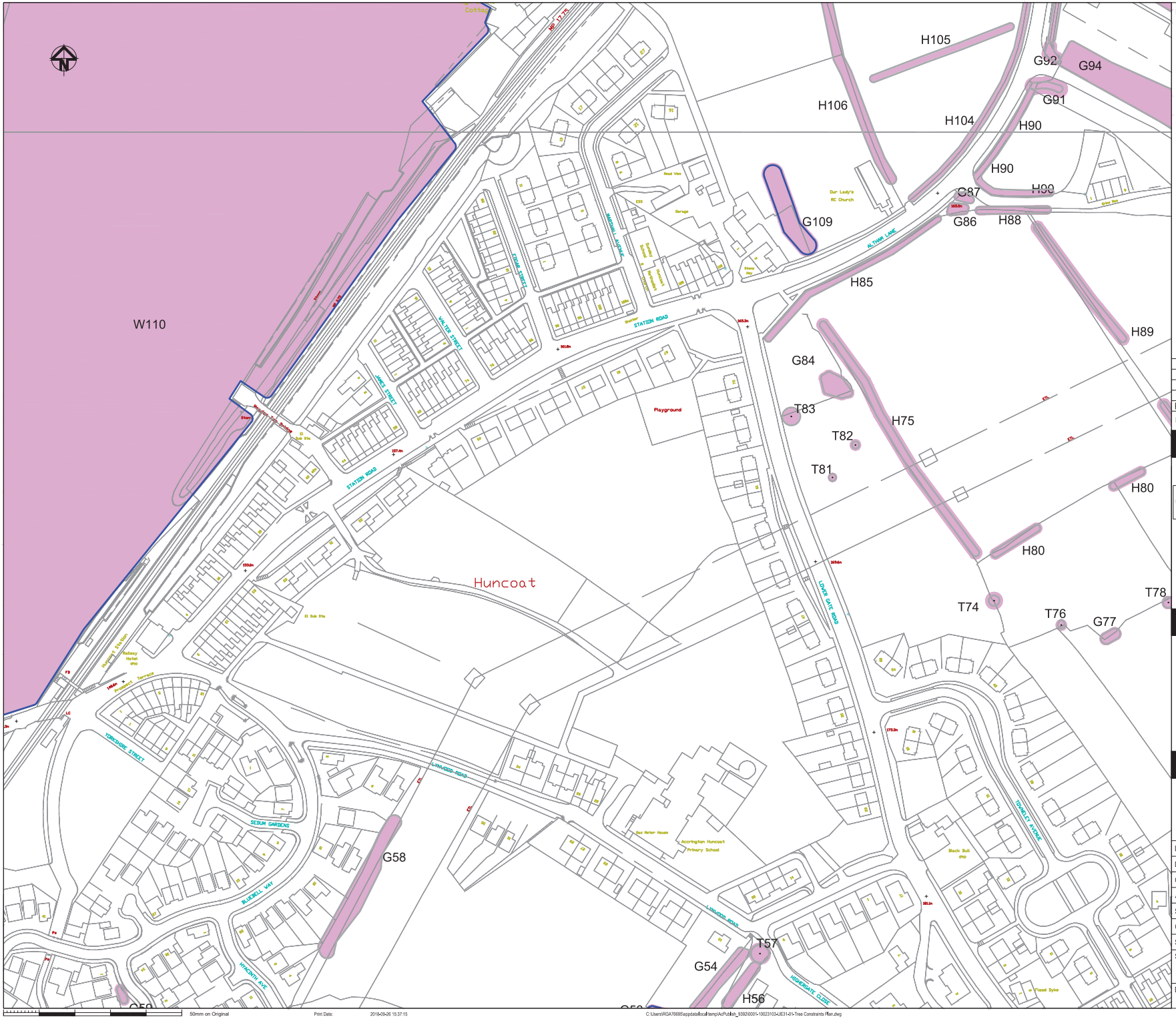

LEGEND

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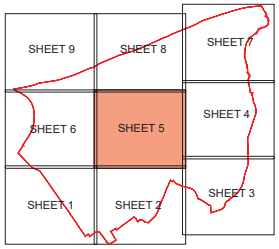

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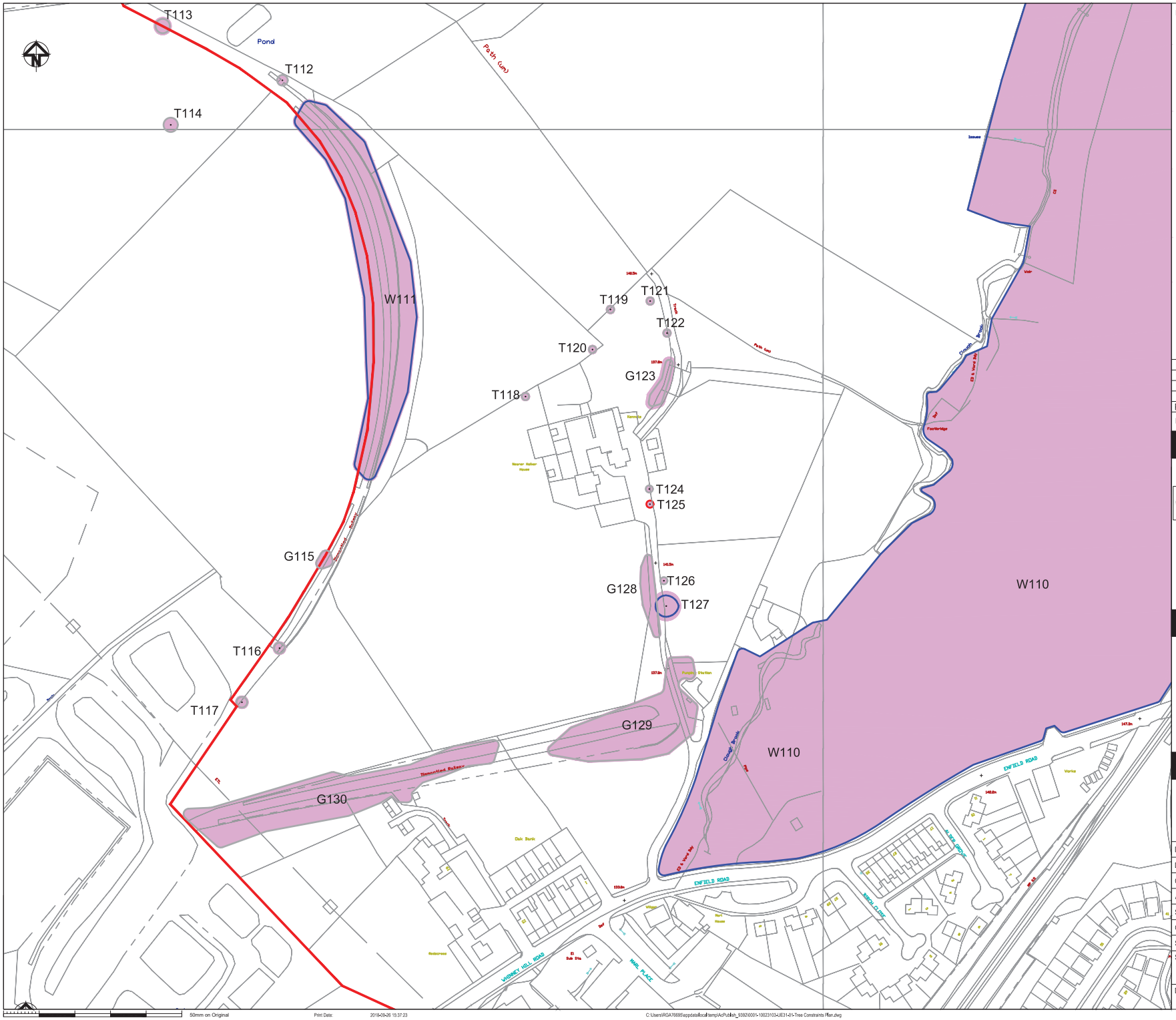

LEGEND

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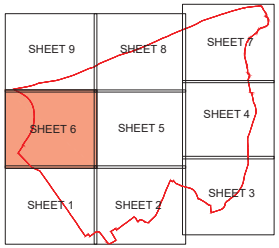

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P01	25SEP18	FOR INFORMATION	RG	MD	MG

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PROJECT: HUNCOAT GARDEN VILLAGE

Site: Huncoat

Client: Hyndburn Borough Council
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Ormerod Street
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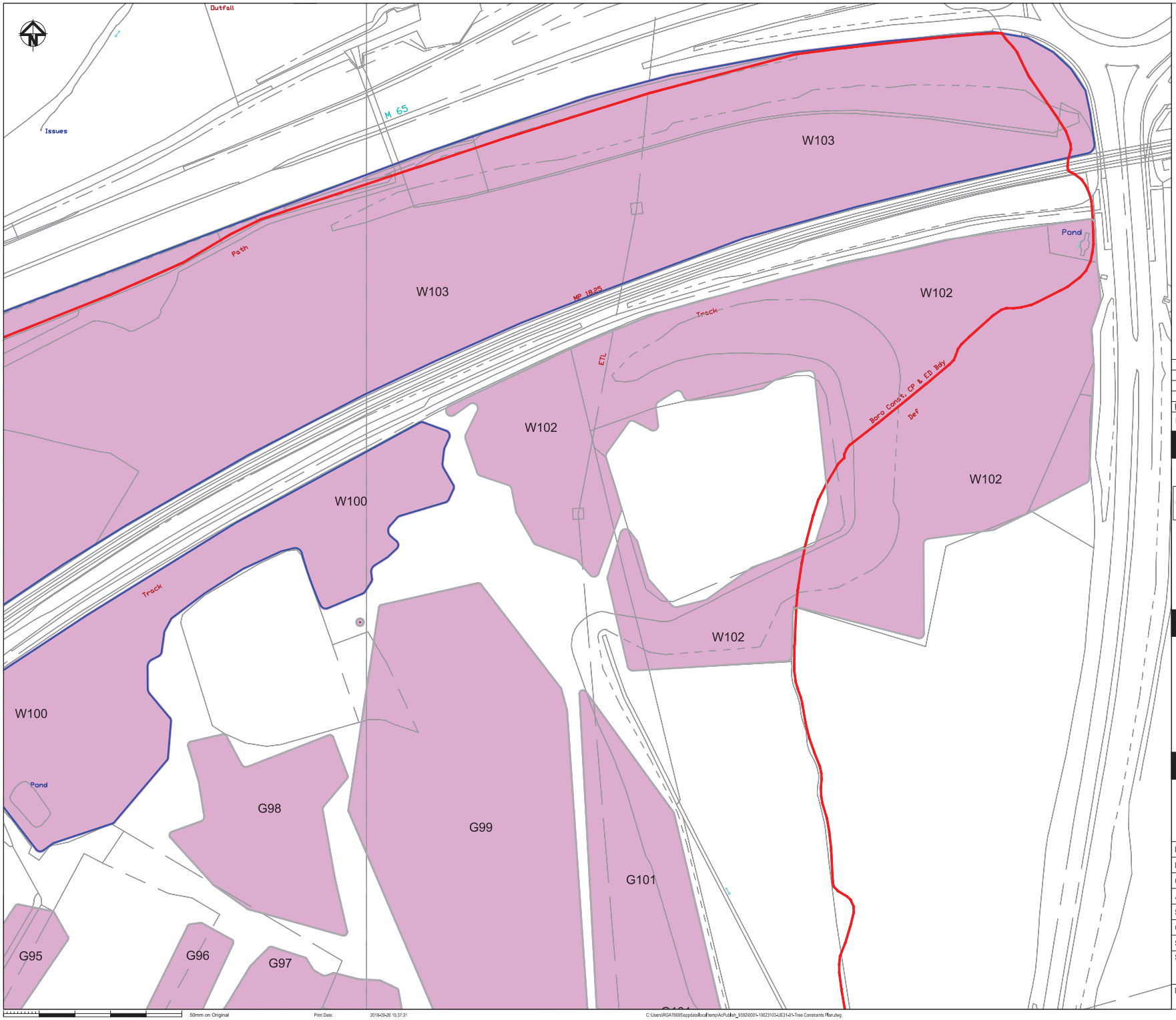

LEGEND

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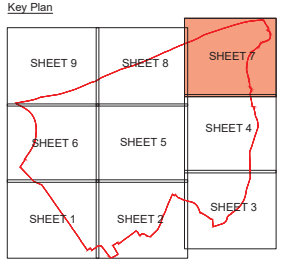

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Fig. 8-2 Tree Constraints Plan (sheet 7 of 9)

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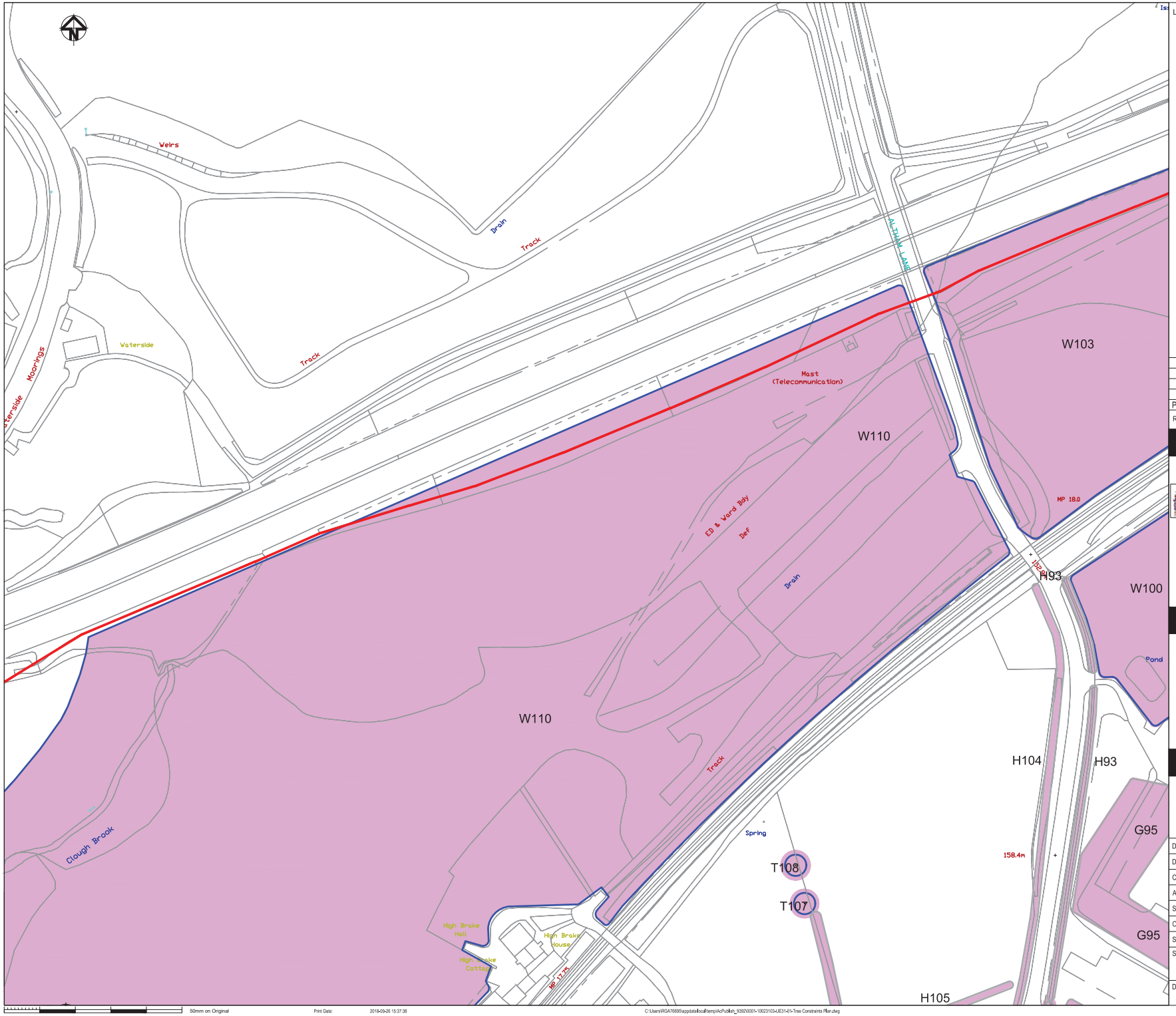

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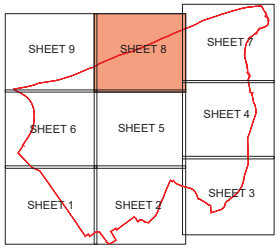

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Fig. 8-2 Tree Constraints Plan (sheet 8 of 9)

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Approved	M.GIRVAN	Date: 25SEP18	Signed
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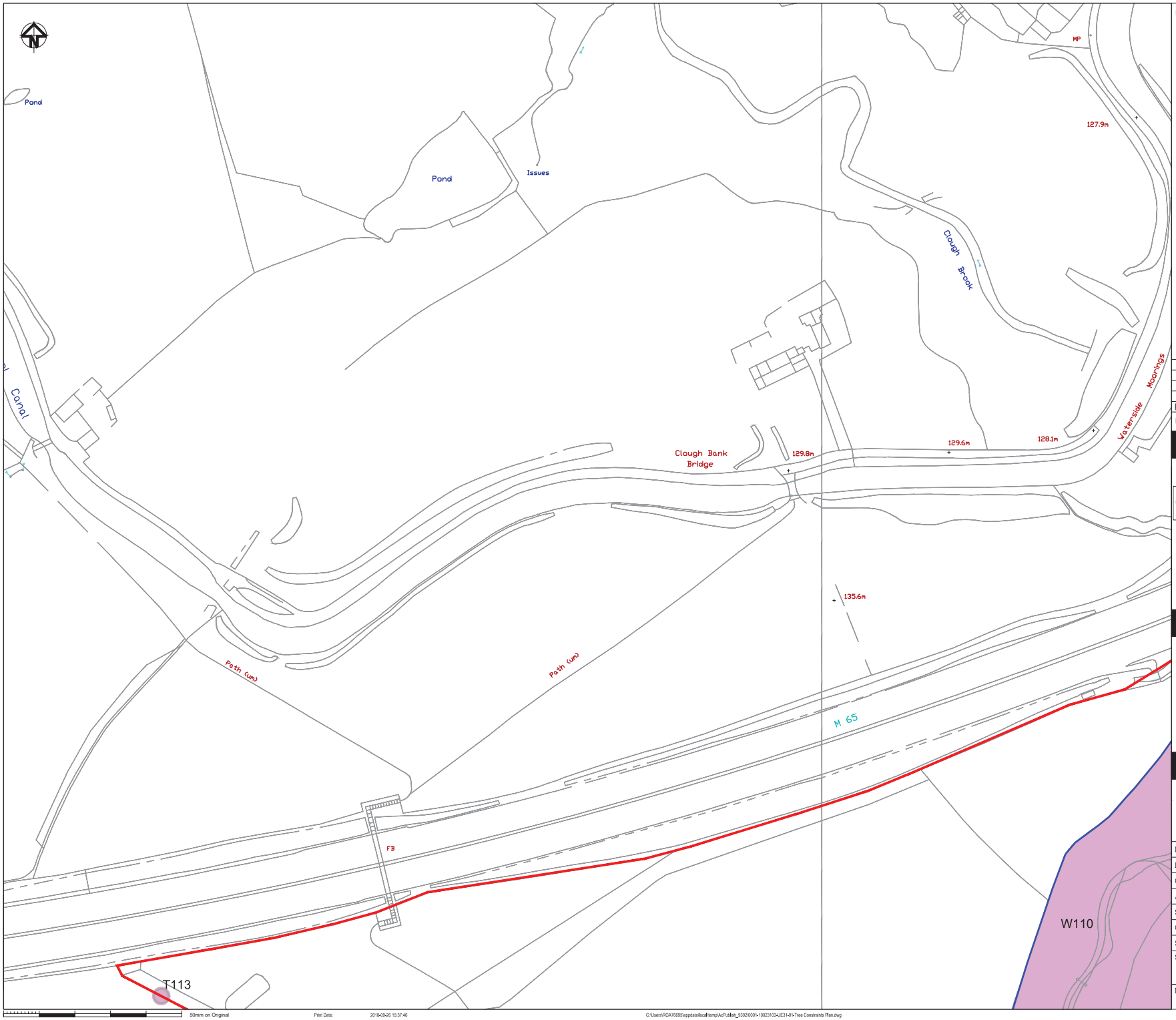

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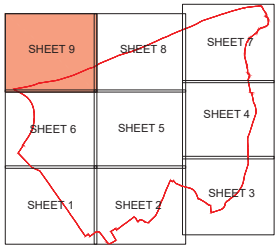

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Fig. 8-2 Tree Constraints Plan (sheet 9 of 9)

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APPENDIX C – Arboricultural Tables

T, G, H, W	Item Number	Category	Species (Common)	Stem Diameter(s)	Group? (1 if group, 0 if tree)	If G, do we have stem positions?	Stem No.	Crown spread (m)				Height (m)	Height Crown Clearance	Age Class	Physiological Condition	Strutural Condition	Comments	Bats	Estimated Age Remaining	Stem Diameters mm										Average Stem Diameter (mm)	RPA Radius TO USE (m)	RPA AREA TO USE
								N	E	S	W									S1	S2	S3	S4	S5	S6	S7	S8	S9	S10			
G	G14	B2	Alder (Alnus glutinosa) × 4, Small-leaved Lime (Tilia cordata) × 12, Wild Cherry (Prunus avium) × 17, Rowan (Sorbus aucuparia) × 11, Oak (Quercus sp.) × 14, Norway Maple (Acer platanoides) × 9, Field Maple (Acer campestre) × 22, Hawthorn (Crataegus monogyna) × 3	Average 300	1			3	3	3	3	8	0	Early-Mature						300										300.00	3.6	N/A
G	G15	C2	Alder (Alnus glutinosa), Lime (Tilia sp.), Wild Cherry (Prunus avium), Oak (Quercus sp.), Hawthorn (Crataegus monogyna), Elm (Ulmus sp.), Dogwood (Cornus sanguinea), Rowan (Sorbus aucuparia), Field Maple (Acer campestre), Birch (Betula sp.)	<75	1			0.5	0.5	0.5	0.5	2	0	Young			Newly planted trees with tree guards, spaced 2m apart			75										75.00	0.9	N/A
H	H16	C2	Hawthorn (Crataegus monogyna), Holly (Ilex aquifolium), Elder (Sambucus nigra)	Average 200	1			3	3	3	3	4	0	Mature			Remnants of an old boundary hedge			200										200.00	2.4	N/A
G	G17	C2	Lime (Tilia sp.), Rowan (Sorbus aucuparia), Oak (Quercus sp.), Hawthorn (Crataegus monogyna), Birch (Betula sp.)	<75	1			0.5	0.5	0.5	0.5	2	0	Young			Newly planted trees spaced 2m apart			75										75.00	0.9	N/A
G	G18	C2	Wild Cherry (Prunus avium), Hawthorn (Crataegus monogyna), Rowan (Sorbus aucuparia), Field Maple (Acer campestre), Scots Pine (Pinus sylvestris)	<75	1			0.5	0.5	0.5	0.5	2	0	Young			Newly planted trees spaced 2m apart			75										75.00	0.9	N/A
T	T19	C1	Hawthorn (Crataegus monogyna)	200	0			2	2	2	2	3	0	Mature			Multi-stemmed			200										200.00	0.0	0.00
T	T20	C1	Hawthorn (Crataegus monogyna)	150, 75	0			2	2	2	2	3	0	Mature			Multi-stemmed			150	75									112.50	0.0	0.00
T	T21	C1	Hawthorn (Crataegus monogyna)	200	0			2	2	2	2	3	0	Mature			Multi-stemmed			200										200.00	0.0	0.00
G	G22	C2	Oak (Quercus sp.), Hawthorn (Crataegus monogyna), Field Maple (Acer campestre), Birch (Betula sp.)	<75	1			0.5	0.5	0.5	0.5	2	0	Young			Newly planted trees spaced 2m apart			75										75.00	0.9	N/A
W	w23	A2	Beech (Fagus sylvatica), Oak (Quercus sp.), Sycamore (Acer pseudoplatanus), Alder (Alnus glutinosa), Hawthorn (Crataegus monogyna), Rowan (Sorbus aucuparia)	Average 600	1			5	5	5	5	16	0	Mature			Mature Beech Sycamore woodland with semi-mature Oak and Lime. Understorey comprised of Hawthorn, Hazel and Horse Chestnut, Bramble and Willowherb.			600										600.00	7.2	N/A
T	T24	C1	Hawthorn (Crataegus monogyna)	150	0			2	2	2	2	3	0	Early-Mature						150										150.00	0.0	0.00
T	T25	C1	Hawthorn (Crataegus monogyna)	100	0			2	2	2	2	3	0	Semi-mature						100										100.00	0.0	0.00
T	T26	C1	Hawthorn (Crataegus monogyna)	150	0			2	2	2	2	3	0	Semi-mature						150										150.00	0.0	0.00
G	G27	C2	Birch (Betula sp.), Oak (Quercus sp.), Wild Cherry (Prunus avium), Hawthorn (Crataegus monogyna), Rowan (Sorbus aucuparia)	<75	1			0.5	0.5	0.5	0.5	2	0	Young						75										75	0.0	N/A
W	W28	B2	Birch (Betula sp.), Hawthorn (Crataegus monogyna), Wild Cherry (Prunus avium), Field Maple (Acer campestre), Elder (Sambucus nigra), Goat Willow (Salix caprea)	250	1			3	3	3	3	8	0	Early-Mature						250										250.00	3.0	N/A
T	T29	C1	Goat Willow (Salix caprea)	250, 350, 450	0			5	5	5	5	6	0	Mature			Multi-stemmed			250	350	450								350.00	0.0	0.00
G	G30	C2	Goat Willow (Salix caprea) × 5, Alder (Alnus glutinosa) × 3	Average 150	1			2	2	2	2	5	0	Semi-mature						150										150.00	0.0	N/A
T	T31	C1	Goat Willow (Salix caprea)	350	0			3	3	3	3	6	0	Mature			Multi-stemmed			350										350.00	0.0	0.00
T	T32	C1	Goat Willow (Salix caprea)	150	0			2	2	2	2	4	0	Young						150										150.00	0.0	0.00
T	T33	C1	Goat Willow (Salix caprea)	150	0			2	2	2	2	4	0	Young						150										150.00	0.0	0.00
G	G34	C2	Goat Willow (Salix caprea) × 4	200	1			2	2	2	2	5	0	Young						200										200.00	0.0	N/A
T	T35	C1	Goat Willow (Salix caprea)	100, 150	0			2	2	2	2	6	0	Semi-mature			Multi-stemmed			100	150									125.00	0.0	0.00
H	H36	C2	Hawthorn (Crataegus monogyna)	150	1			2	2	2	2	3	0	Mature			Unmaintained hedge. Dieback recorded among three of the Hawthorns within the hedge. Recently planted young species recorded within a 30m section of the hedge, which included Field Maple, Oak, Hazel, Blackthorn, Elder, Rowan and Dogwood.			150										150.00	0.0	N/A
H	H37	C2	Hawthorn (Crataegus monogyna), Elder (Sambucus nigra)	250	1			2	2	2	2	4	0	Mature			Remnants of old field boundary within dense Bramble			250										250.00	0.0	N/A
T	T38	C1	Hawthorn (Crataegus monogyna)	300	0			3	3	3	3	4	0	Mature			Remnants of old field boundary within dense Bramble			300										300.00	0.0	0.00
H	H39	C2	Hawthorn (Crataegus monogyna) × 9, Elder (Sambucus nigra) × 2, Ash (Fraxinus excelsior) × 1	250	1			2	2	2	2	3	0	Mature			Remnants of old field boundary within dense Bramble			250										250.00	0.0	N/A
T	T40	C1	Hawthorn (Crataegus monogyna)	250	0			2	2	2	2	3	0	Mature			Multi-stemmed			250										250.00	0.0	0.00
T	T41	C1	Hazel (Corylus avellana)	250	0			2	2	2	2	3	0	Semi-mature			Multi-stemmed			250										250.00	0.0	0.00
G	G42	C2	Beech (Fagus sylvatica), Oak (Quercus sp.), Hawthorn (Crataegus monogyna), Rowan (Sorbus aucuparia), Birch (Betula sp.), Small-leaved Lime (Tilia cordata), Field Maple (Acer campestre), Dogwood (Cornus sanguinea), Hazel (Corylus avellana)	<75	1			0.5	0.5	0.5	0.5	2	0	Young			Newly planted trees			75										75.00	0.0	N/A
G	G43	C2	Beech (Fagus sylvatica), Oak (Quercus sp.), Hawthorn (Crataegus monogyna), Rowan (Sorbus aucuparia), Birch (Betula sp.), Small-leaved Lime (Tilia cordata), Field Maple (Acer campestre), Dogwood (Cornus sanguinea), Hazel (Corylus avellana)	<75	1			0.5	0.5	0.5	0.5	2	0	Young			Newly planted trees			75										75.00	0.0	N/A

T, G, H, W	Item Number	Category	Species (Common)	Stem Diameter(s)	Group? (1 if group, 0 if tree)	If G, do we have stem positions?	Stem No.	Crown spread (m) N	E	S	W	Height (m)	Height Crown Clearance	Age Class	Physiological Condition	Strutural Condition	Comments	Bats	Estimated Age Remaining	Stem Diameters mm S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	Average Stem Diameter (mm)	RPA Radius TO USE (m)	RPA AREA TO USE
G	G44	C2	Beech (Fagus sylvatica), Oak (Quercus sp.), Hawthorn (Crataegus monogyna), Rowan (Sorbus aucuparia), Birch (Betula sp.), Small-leaved Lime (Tilia cordata), Field Maple (Acer campestre), Dogwood (Cornus sanguinea), Hazel (Corylus avellana)	<75	1			0.5	0.5	0.5	0.5	2	0	Young			Newly planted trees			75											75.00	0.0	N/A
G	G45	C2	Beech (Fagus sylvatica), Oak (Quercus sp.), Hawthorn (Crataegus monogyna), Rowan (Sorbus aucuparia), Birch (Betula sp.), Small-leaved Lime (Tilia cordata), Field Maple (Acer campestre), Dogwood (Cornus sanguinea), Hazel (Corylus avellana)	<75	1			0.5	0.5	0.5	0.5	2	0	Young			Newly planted trees			75											75.00	0.0	N/A
G	G46	C2	Beech (Fagus sylvatica), Oak (Quercus sp.), Hawthorn (Crataegus monogyna), Rowan (Sorbus aucuparia), Birch (Betula sp.), Small-leaved Lime (Tilia cordata), Field Maple (Acer campestre), Dogwood (Cornus sanguinea), Hazel (Corylus avellana)	<75	1			0.5	0.5	0.5	0.5	2	0	Young			Newly planted trees			75											75.00	0.0	N/A
G	G47	C2	Beech (Fagus sylvatica), Oak (Quercus sp.), Hawthorn (Crataegus monogyna), Rowan (Sorbus aucuparia), Birch (Betula sp.), Small-leaved Lime (Tilia cordata), Field Maple (Acer campestre), Dogwood (Cornus sanguinea), Hazel (Corylus avellana)	<75	1			0.5	0.5	0.5	0.5	2	0	Young			Newly planted trees			75											75.00	0.0	N/A
H	H48	C2	Hawthorn (Crataegus monogyna), Elder (Sambucus nigra), Ash (Fraxinus excelsior)	200	1			2	2	2	2	4	0	Mature			Remnants of old field boundary hedge			200											200.00	0.0	N/A
H	H49	C2	Hawthorn (Crataegus monogyna), Elder (Sambucus nigra)	200	1			2	2	2	2	3	0	Mature			Remnants of old field boundary hedge. Gaps in hedge			200											200.00	0.0	N/A
H	H50	C2	Hawthorn (Crataegus monogyna)	250	1			3	3	3	3	4	0	Mature			Remnants of old field boundary hedge. Gaps in hedge			250											250.00	0.0	N/A
H	H51	C2	Hawthorn (Crataegus monogyna)	200	1			2	2	2	2	3	0	Mature			Remnants of old field boundary hedge. Gaps in hedge			200											200.00	0.0	N/A
H	H52	C2	Hawthorn (Crataegus monogyna), Elder (Sambucus nigra)	250	1			3	3	3	3	4	0	Mature			Remnants of old field boundary hedge. Gaps in hedge			250											250.00	0.0	N/A
G	G53	B2	Ash (Fraxinus excelsior), Rowan (Sorbus aucuparia), Horse-chesnut (Aesculus hippocastanum)	Average 300	1			3	3	3	3	10	1	Mature						300											300.00	0.0	N/A
G	G54	C2	Hawthorn (Crataegus monogyna), Elder (Sambucus nigra), Privet (Ligustrum sp.)	100	1			2	2	2	2	3		Semi-mature						100											100.00	0.0	N/A
G	G55	C2	Hawthorn (Crataegus monogyna) × 5	250	1			2	2	2	2	3		Early-Mature						250											250.00	0.0	N/A
H	H56	C2	Hawthorn (Crataegus monogyna), Elder (Sambucus nigra)	250	1			3	3	3	3	3		Mature						250											250.00	0.0	N/A
T	T57	C1	Goat Willow (Salix caprea)	220, 250, 300, 500	0			5	5	5	5	6	1	Mature						220	250	300	500								317.50	0.0	0.00
G	G58	C2	Goat Willow (Salix caprea) × 16	300	1			4	4	4	4	5	0	Mature						300											300.00	0.0	N/A
G	G59	C2	Goat Willow (Salix caprea) × 3	250	1			2	2	2	2	3	0	Early-Mature						250											250.00	0.0	N/A
W	60	B2	Sycamore (Acer pseudoplatanus), Holly (Ilex aquifolium), Rowan (Sorbus aucuparia), Birch (Betula sp.), Oak (Quercus sp.), Wild Cherry (Prunus avium), Whitebeam (Sorbus sp.), Ash (Fraxinus excelsior), Hawthorn (Crataegus monogyna)	250	1			3	3	3	3	6	0	Early-Mature						250											250.00	0.0	N/A
T	T61	B1	Sycamore (Acer pseudoplatanus)	650	0			5	5	5	5	15	4	Mature			Located on private land			650											650.00	0.0	0.00
T	T62	B1	Bitch (Betula sp.)	200, 250	0			3	3	3	3	6	1	Early-Mature			Twin-stemmed			200	250										225.00	0.0	0.00
G	G63	B1	Ash (Fraxinus excelsior) × 1, Goat Willow (Salix caprea) × 1	400	1			5	5	5	5	12	0	Mature						400											400.00	0.0	N/A
G	G64	C2	Hawthorn (Crataegus monogyna), Elder (Sambucus nigra)	150	1			7	7	7	7	3	0	Early-Mature						150											150.00	0.0	N/A
G	G65	B1	Sycamore (Acer pseudoplatanus) × 1, Wild Cherry (Prunus avium) × 2	300	1			4	4	4	4	7	0	Early-Mature			Located on private land			300											300.00	0.0	N/A
G	G66	B1	Sycamore (Acer pseudoplatanus) × 1, Wild Cherry (Prunus avium) × 3	250	1			3	3	3	3	7	0	Early-Mature			Located on private land			250											250.00	0.0	N/A
G	67	B1	Monkey-puzzle (Araucaria araucana) × 4		1			2	2	2	2	4	0	Young																		0.0	N/A
G	G68	C1	Sycamore (Acer pseudoplatanus) × 1, Wild Cherry (Prunus avium) × 1, Sitka Spruce (Picea sitchensis) × 1	300	1			2	2	2	2	6	1	Early-Mature						300											300.00	0.0	N/A
G	G69	C2	Goat willow (Salix caprea) × 2	350	1			3	3	3	3	5	0	Mature			Multi-stemmed			350											350.00	0.0	N/A
G	G70	C2	Alder (Alnus glutinosa) × 4, Goat Willow (Salix caprea) × 4	300	1			4	4	4	4	8	0							300											300.00	0.0	N/A
H	H71	C2	Hawthorn (Crataegus monogyna)	100	1			2	2	2	2	3	0	Early-Mature						100											100.00	0.0	N/A
G	G72	C2	Alder (Alnus glutinosa) × 2, Goat Willow (Salix caprea) × 4, Ash (Fraxinus excelsior) × 14	300	1			3	3	3	3	8	0	Semi-mature						300											300.00	0.0	N/A
T	73	C1	Hawthorn (Crataegus monogyna)		0			3	3	3	3	5	0	Mature																		0.0	0.00
T	74	C1	Hawthorn (Crataegus monogyna)	400	0			3	3	3	3	3	0	Mature			Multi-stemmed			400											400.00		0.00
H	75	C2	Hawthorn (Crataegus monogyna)	300	1			2	2	2	2	3	0	Mature			Remnants of old field boundary hedge, major deadwood		10-20														N/A
T	76	C1	Hawthorn (Crataegus monogyna)	250, 200	0			3	2	2	2	4	0	Mature			Twin-stemmed		10-20	250	200												0.00
G	77	C1	Hawthorn (Crataegus monogyna) × 2	300	1			3	3	3	3	4	0	Mature					10-20														N/A
T	78	C1	Hawthorn (Crataegus monogyna)	300	0			3	3	3	3	4	0	Mature					10-20														0.00
T	79	C1	Hawthorn (Crataegus monogyna)	300	0			3	3	3	3	4	0	Mature					10-20														0.00

								Crown spread (m)										Stem Diameters mm												
T, G, H, W	Item Number	Category	Species (Common)	Stem Diameter(s)	Group? (1 if group, 0 if tree)	If G, do we have stem positions?	Stem No.	N	E	S	W	Height (m)	Height Crown Clearance	Age Class	Physiological Condition	Strutural Condition	Comments	Bats	Estimated Age Remaining	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	Average Stem Diameter (mm)	RPA Radius TO USE (m)	RPA AREA TO USE
H	80	C2	Hawthorn (Crataegus monogyna)	250	1			2	2	2	2	4	0	Mature			Remnants of old field boundary hedge		10-20													N/A
T	81	C1	Hawthorn (Crataegus monogyna)	200	0			2	2	2	2	3	0	Mature			Multi-stemmed		10-20													0.00
T	82	C1	Elder (Sambucus nigra)	250	0			2	2	2	2	3	0	Mature					10-20													0.00
T	83	C1	Goat willow (Salix caprea) × 6	350	0			5	5	5	5	4	0	Mature			Multi-stemmed		10-20													0.00
G	84	C2	Hawthorn (Crataegus monogyna) × 3	250	1			2	2	2	2	3	0	Mature			Multi-stemmed		10-20													N/A
H	85	C2	Hawthorn (Crataegus monogyna)	150	1			2	2	2	2	3	0	Mature					10-20													N/A
G	86	C2	Ash (Fraxinus excelsior) × 7, Larch (Larix decidua) × 1	200	1			2	2	2	2	5	1	Semi-mature					10-20													N/A
G	87	C2	Scots pine (Pinus sylvestris) × 2, Silver birch (Betula pendula) × 1, Beech (Fagus sylvatica) × 5, Cherry (Prunus avium) × 1	150	1			2	2	2	2	5	1	Young					10-20													N/A
H	88	C2	Hawthorn (Crataegus monogyna)	200	1			2	2	2	2	4	0	Mature					10-20													N/A
H	89	C2	Hawthorn (Crataegus monogyna)	300	1			2	2	2	2	4	0	Mature					10-20													N/A
H	90	C2	Hawthorn (Crataegus monogyna)	100	1			2	2	2	2	3	0	Early-Mature			Himalayan Balsam within rooting area		10-20													N/A
G	91	C2	Leyland cypress (Cupressus × leylandii)	400	1			2	2	2	2	18	0	Mature					10-20													N/A
G	92	C2	Leyland cypress (Cupressus × leylandii)	300	1			2	2	2	2	18	0	Mature					10-20													N/A
G	93	C2	Hawthorn (Crataegus monogyna)	100	1			2	2	2	2	3	0	Early-Mature					10-20													N/A
G	94	C2	Birch (Betula pendula), Goat willow (Salix caprea)	130	1			2	2	2	2	4	0	Young			Natural regeneration		10-20													N/A
G	95	C2	Birch (Betula pendula), Goat willow (Salix caprea), Alder (Alnus glutinosa)	200	1			2	2	2	2	5	0	Semi-mature			Natural regeneration		10-20													N/A
G	96	C2	Birch (Betula pendula), Goat willow (Salix caprea), Hawthorn (Crataegus monogyna)	200	1			2	2	2	2	5	0	Semi-mature			Natural regeneration		10-20													N/A
G	97	C2	Birch (Betula pendula), Goat willow (Salix caprea), Hawthorn (Crataegus monogyna)	200	1			2	2	2	2	5	0	Semi-mature			Natural regeneration		10-20													N/A
G	98	C2	Birch (Betula pendula), Goat willow (Salix caprea), Hawthorn (Crataegus monogyna)	200	1			2	2	2	2	5	0	Semi-mature			Natural regeneration		10-20											#DIV/0!	#DIV/0!	N/A
G	99	C2	Birch (Betula pendula), Goat willow (Salix caprea), Hawthorn (Crataegus monogyna)	200	1			2	2	2	2	5	0	Semi-mature			Natural regeneration		10-20											#DIV/0!	#DIV/0!	N/A
W	100	B2	Birch (Betula pendula), Goat willow (Salix caprea), Hornbeam (Carpinus betulus), Green alder (Alnus viridis), Hawthorn (Crataegus monogyna)	300	1			3	3	3	3	12	0	Early-Mature			Understorey of Hawthorn with little ground flora alongwith Bramble and Fern		20-40											#DIV/0!	#DIV/0!	N/A
G	101	C2	Birch (Betula pendula), Goat willow (Salix caprea)	200	1			2	2	2	2	5	0	Semi-mature			Natural regeneration		10-20											#DIV/0!	#DIV/0!	N/A
G	102	C2	Birch (Betula pendula), Goat willow (Salix caprea), Hawthorn (Crataegus monogyna), Alder (Alnus glutinosa)	250	1			3	3	3	3	9	0	Semi-mature			Natural regeneration		10-20											#DIV/0!	#DIV/0!	N/A
W	103	B2	Birch (Betula pendula), Goat willow (Salix caprea), Hornbeam (Carpinus betulus), Green alder (Alnus viridis), Hawthorn (Crataegus monogyna)	300	1			3	3	3	3	12	0	Early-Mature			Understorey of Hawthorn with little ground flora alongwith Bramble and Fern		20-40											#DIV/0!	#DIV/0!	N/A
H	104	C2	Hawthorn (Crataegus monogyna)	100	1			2	2	2	2	3	0	Early-Mature					10-20											#DIV/0!	#DIV/0!	N/A
H	105	C2	Hawthorn (Crataegus monogyna)	100	1			2	2	2	2	3	0	Mature			Remnants of old boundary hedge		10-20											#DIV/0!	#DIV/0!	N/A
H	106	C2	Hawthorn (Crataegus monogyna)	200	1			3	3	3	3	4	0	Mature					10-20											#DIV/0!	#DIV/0!	N/A
T	107	B1	Sycamore (Acer pseudoplatanus)	680	0			6	6	6	6	15	2	Mature			Major deadwood		20-40											#DIV/0!	0.0	0.00
T	108	B1	Sycamore (Acer pseudoplatanus)	700	0			6	6	6	6	16	0	Mature					20-40											#DIV/0!	0.0	0.00
G	109	B2	Sycamore (Acer pseudoplatanus) × 4, Goat willow (Salix caprea) × 3	500	1			5	5	5	5	12	0	Mature					20-40											#DIV/0!	#DIV/0!	N/A
W	110	B2	Birch (Betula pendula), Goat willow (Salix caprea), Alder (Alnus glutinosa) Hornbeam (Carpinus betulus), Sycamore (Acer pseudoplatanus), White willow (Salix alba)	250	1			3	3	3	3	13	0	Early-Mature					20-40											#DIV/0!	#DIV/0!	N/A
W	111	B2	Goat willow (Salix caprea) × 65, Oak (Quercus sp.) × 1, Birch (Betula pendula) × 1	400	1			4	4	4	4	12	0	Mature			Himalayan Balsam, recent planting of Oak on old embankment		20-40											#DIV/0!	#DIV/0!	N/A
T	112	C2	Hawthorn (Crataegus monogyna)	250	0			3	3	3	3	4	0	Mature			Multi-stemmed		10-20											#DIV/0!	0.0	0.00
T	113	C1	Goat willow (Salix caprea)	410, 230	0			4	4	4	4	6	0	Mature			Twin-stemmed, major deadwood		10-20	410	230									320.00	0.0	0.00
T	114	C1	Crack willow (Salix fragilis)	300	0			4	4	4	4	5	0	Mature					10-20											#DIV/0!	0.0	0.00
G	115	C1	Oak (Quercus sp.) × 2 , Hawthorn (Crataegus monogyna) × 2	275	1			3	3	3	3	6	0	Early-Mature					10-20											#DIV/0!	#DIV/0!	N/A
	116 ?																														
T	117	C1	Goat willow (Salix caprea)	300	0			3	3	3	3	4	0	Mature			Multi-stemmed		10-20											#DIV/0!	0.0	0.00
T	118	C1	Hawthorn (Crataegus monogyna)	200	0			2	2	2	2	3	0	Mature			Multi-stemmed		10-20											#DIV/0!	0.0	0.00
T	119	C1	Hawthorn (Crataegus monogyna)	200	0			2	2	2	2	3	0	Mature			Multi-stemmed		10-20											#DIV/0!	0.0	0.00
T	120	C1	Hawthorn (Crataegus monogyna)	200	0			2	2	2	2	3	0	Mature			Multi-stemmed		10-20											#DIV/0!	0.0	0.00
T	121	C1	Hawthorn (Crataegus monogyna)	200	0			2	2	2	2	3	0	Mature			Multi-stemmed		10-20											#DIV/0!	0.0	0.00
T	122	C1	Hawthorn (Crataegus monogyna)	200	0			2	2	2	2	3	0	Mature			Multi-stemmed		10-20											#DIV/0!	0.0	0.00
G	123	C2	Hawthorn (Crataegus monogyna) × 6, Elder (Sambucus nigra) × 3	300	1			2	2	2	2	6	0	Mature			Multi-stemmed		10-20											#DIV/0!	#DIV/0!	N/A
T	124	C1	Hawthorn (Crataegus monogyna)	150	0			2	2	2	2	3	0	Mature																#DIV/0!	0.0	0.00
T	125	U	Hawthorn (Crataegus monogyna)	150	0			2	2	2	2	3	0	Mature			Dead		<10											#DIV/0!	0.0	0.00
T	126	C1	Hawthorn (Crataegus monogyna)	150	0			2	2	2	2	3	0	Mature																#DIV/0!	0.0	0.00
T	127	B1	Ash (Fraxinus excelsior)	690	0			6	7	6	6	16	1	Mature			Major deadwood		20-40											#DIV/0!	0.0	0.00
G	128	C1	Hawthorn (Crataegus monogyna) × 7, Elder (Sambucus nigra) × 2	200	1			2	2	2	2	3	0	Mature					10-20											#DIV/0!	#DIV/0!	N/A
G	129	C2	Birch (Betula pendula), Goat willow (Salix caprea), Hawthorn (Crataegus monogyna)	300	1			3	3	3	3	7	0	Mature					10-20											#DIV/0!	#DIV/0!	N/A
G	130	C2	Goat willow (Salix caprea)	250	1			3	3	3	3	6	0	Mature					10-20											#DIV/0!	#DIV/0!	N/A

APPENDIX D – The Ecology Survey Year

THE ECOLOGY SURVEY YEAR

ARCADIS Design & Consultancy for natural and built assets

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Comments and caveats
Woodland													May need to be modified depending on the flowering times of any particular target plant species.
Grassland													May need to be modified depending on the flowering times of any particular target plant species.
Heathland													May need to be modified depending on the flowering times of any particular target plant species.
River corridors													Surveys generally appropriate during summer months but vegetation in lowland rivers can be too dense later in the summer.
Terrestrial invertebrates													Surveys on 3 separate occasions required (1 each in early, mid- and late summer) to take account of seasonal variations in emergence. Species-specific surveys will need to be carried out at the optimum time for the particular taxa (e.g. surveys for marsh fritillary larval food webs are carried out in Sept./Oct.).
Aquatic invertebrates													Surveys on at least two separate occasions required, one in spring the other in autumn. An extra survey in summer may also be required to assess the conservation status of potentially valuable ponds/lakes.
White-clawed crayfish													Surveys inappropriate during early summer for welfare reasons when females carrying/releasing offspring.
Fish													A general guide, but depends on life cycle/migration of species.
Great crested newts													Surveys outside the period mid-March to mid-June can detect presence but cannot determine absence. 4 surveys for presence/absence, 6 surveys for population estimates. eDNA window is mid-April to late-June.
Reptiles													Depends on weather conditions and time of day. 7 visits for presence/absence for common species.
Breeding birds													Several surveys required throughout optimum period specified (a minimum of 3). Survey period may need to be amended for some species e.g. crossbill.
Over-wintering birds													Minimum monthly surveys required throughout peak period specified. Surveys into Oct. and March needed for passage-migrants.
Water voles													Avoid periods of high river flow. 2 visits required 2 months apart, between mid-April –June and between July-Sept.
Dormice (nut search)													Surveys of characteristically-chewed hazel nuts.
Dormice (nest boxes/tubes)													Installation of boxes/tubes in March/April at the latest.
Bats (internal inspection)													Restrictions may be necessary at certain types of roost e.g. when females are close to giving birth.
Bats (emergence counts)													Remote monitoring of winter roosts can also be undertaken under certain circumstances.
Bats (activity)													Repeat visits required. Spread throughout the season; generally between 3 and 7 depending on survey aims.
Badgers (walkover)													Surveys possible in summer, but not ideal due to density of vegetation.
Badgers (bait marking)													Surveys generally need to encompass entire spring period.
Otters													River flow rates are more restrictive than seasonal constraints, so avoid periods of high flow.

	= optimum survey season		= survey appropriate		= surveys possible, but may be inconclusive

= surveys not appropriate (not possible or not advised for welfare reasons)

This table has been produced as an indicative guide to when habitat and protected species surveys may be carried out. Other features, particularly weather conditions, can have a significant bearing on what can actually be achieved on a particular visit.

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