THE ENVIRONMENT PARTNERSHIP

WARRINGTON WATERFRONT

WARRINGTON

TREE SURVEY AND PRELIMINARY IMPACT ASSESSMENT

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Offices in Warrington, Market Harborough, Gateshead, London and Cornwall

Document Title	Tree Survey and Preliminary Impact Assessment
Prepared for	Peel Holdings (Land and Property) Limited
Prepared by	TEP - Warrington
Document Ref	7815.001

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Date	October 2019
Checked	Jonathan Smith
Approved	Jonathan Smith

Amendment History					
Version	Date	Modified by	Check / Approved by	Reason(s) issue	Status
0.1	22/10/19	TDP	JGS	Approval	Draft
1.0	22/10/19	TDP	JGS	Issue	Final

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1.0 Instruction and scope

1.1 TEP has been commissioned by Peel Holdings (Land and Property) Limited to conduct an arboricultural survey and desktop assessment of land at Warrington Waterfront. This report presents the results of a site walkover, detailed tree survey and desktop searches to identify potential constraints to future development.

Tree Population Overview

1.2 A walkover survey of the southern (Moore Nature Reserve) half of the site was undertaken on 19th and 20th March 2018 by the author: Tom Popplewell, an experienced arboriculturist and Professional Member of the Institute of Chartered Foresters with a BSc (hons) in arboriculture.

1.3 During the survey, all areas of Moore Nature Reserve were visited and a visual inspection of the distribution, condition and quality of trees was made. Access to Port Warrington and Arpley Meadows was not possible; a remote visual inspection of trees within these areas was made where possible from within Moore Nature Reserve.

Detailed Tree Survey

1.4 A detailed tree survey in accordance with BS5837:2012 was undertaken during August 2019 by a team of four experienced arboriculturists. The survey method is included at Appendix B.

1.5 The detailed tree survey covered the whole site. Access into some small and localised areas of Moor Nature Reserve was not possible. The principle constraint to access was waterlogged and marshy ground conditions; steep terrain and dense vegetation also limited access in some areas. Islands within waterbodies were also not visited.

Figure 1 Wet ground limited Individual tree inspection but not overall survey coverage

1.6 The weather during the survey was fine and visibility was good. The limitations to access may influence the detail of some records but do not undermine the comprehensiveness of the survey. All areas were sufficiently visible from accessible locations to map and assess the composition of tree cover.

Other information

1.7 A Restoration Landscaping Scheme has been approved for the Arpley Landfill site (*Arpley Landfill Site Extension of Operational Life ES Addendum Figure 6 Restoration Landscaping Scheme*). It is assumed that this scheme will be implemented in full and will therefore replace any existing vegetation. In some areas, it appears that the scheme has commenced and that existing vegetation will therefore be incorporated. An approximate representation of the scheme is shown on Drawing 1.

1.8 The extent of tree and hedgerow cover shown has been digitised from aerial photography, using GPS and National Tree Map data and should be regarded as approximate.

1.9 The survey identifies broad vegetation types based on the categories used in the National Forest Inventory. It should not be regarded as a detailed assessment of tree risk or an assessment of each individual tree except where specified.

1.10 Public records hosted on MAGIC maps and local planning policies were interrogated.

2.0 Site description

Site name

2.1 The site is known as Warrington Waterfront and comprises Port Warrington, Moore Nature Reserve and Arpley Landfill Site (Arpley Meadows). The approximate extents of this combined area is shown in Figure 1.

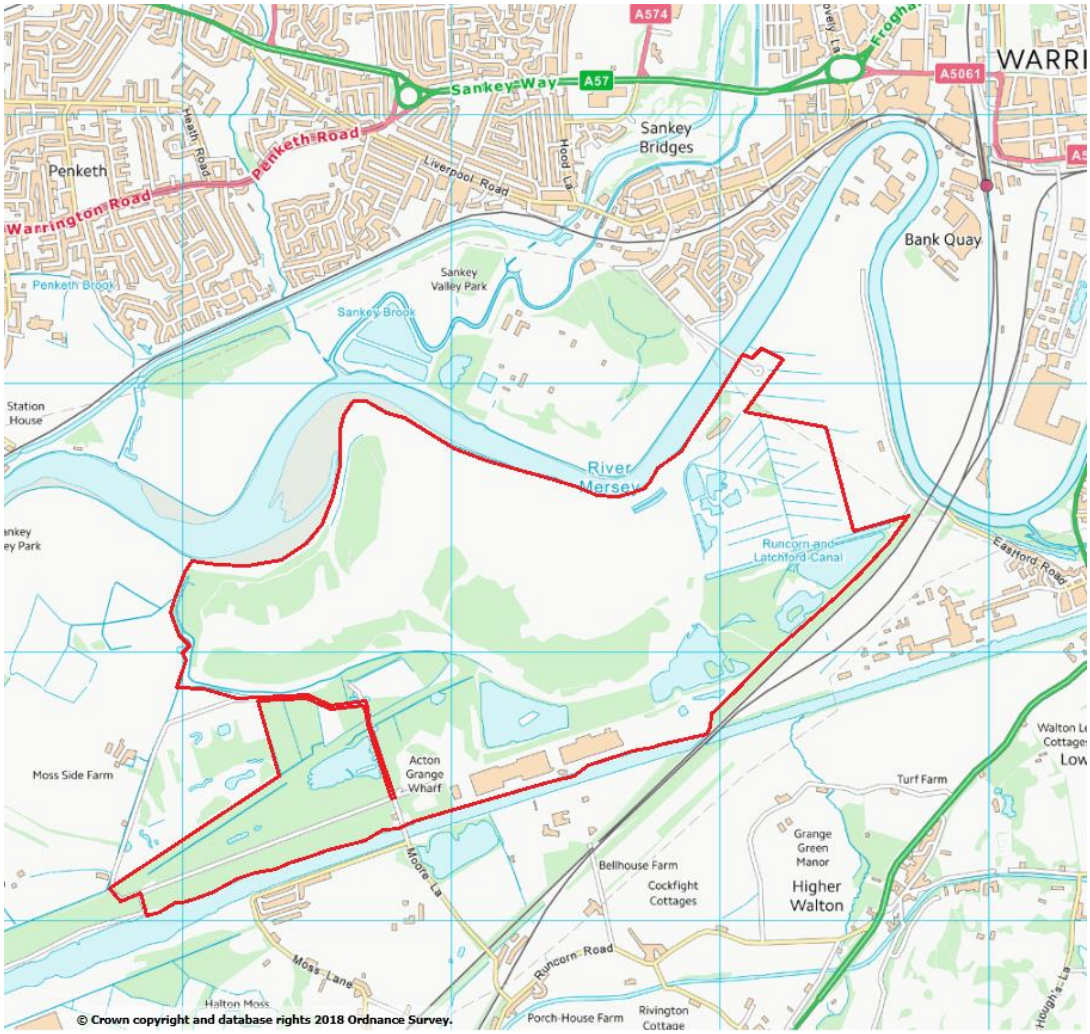

Figure 2 Site location and approximate boundary (OS VectorMap® District Resampled)

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Address/location

2.2 The site is located at the confluence of a number of transport links. The River Mersey forms the northern boundary; the Manchester Ship Canal forms the southern boundary; and the Coppull to Warrington section of the West Coast Mainline forms the eastern boundary.

2.3 The now defunct Runcorn and Latchford Canal runs through the centre of the site from east to west and forms the northern boundary at the western end. Moore Lane, leading to Lapwing Lane forms the main access to the site, running from south to north and then turns west to serve Moss Side Farm.

Approximate area

2.4 The site is approximately 280ha.

Current use

2.5 The site comprises Port Warrington, a distribution and warehousing facility; Moore Nature Reserve, a networks of ponds, wetland and woodland with public access; and Arpley Landfill Site, a recently closed facility pending restoration to a conservation and amenity landscape.

Figure 3 Footpath along disused Runcorn Latchford Canal in the west of Moore Mature Reserve

2.6 Within the site, there is significant variation in the type, management and usage of trees and woodland. The majority of tree cover is within the Nature Reserve, which comprises a complex mosaic of broadleaved woodland, wet woodland, scrub and water bodies. Trees within Port Warrington are largely limited to ornamental and screen planting. Trees in the Arpley Landfill site include large blocks of plantation that form part of or will be incorporated into the approved mitigation planting scheme for that site as well as some trees along boundaries and drainage ditches, particularly in the north and east.

2.7 There is no public access to Port Warrington and Arpley Landfill. Moore Nature Reserve is well-used by the public including Cheshire Wildlife Trust. The Trust runs a programme of community events including bird watching, conservation projects, and children's activities.

Local authority

2.8 The local authority is Warrington Borough Council.

2.9 The local authority's tree officer can be contacted by email at [redacted]

3.0 Statutory protection, designations and guidance

Tree Preservation Orders

3.1 Local authorities can create Tree Preservation Orders (TPO) to protect the amenity of trees, groups of trees, woodland or all the trees within a defined area[1]. Cutting down, lopping (including roots), topping, uprooting, and wilful damage or destruction are prohibited by TPO unless done with the Local Authority's written consent.

3.2 The council's online mapping facility confirmed that there are no TPOs on or adjacent to the site.

Conservation Area

3.3 Trees within Conservation Areas are protected by Section 211 of The Town and Country Planning Act 1990. The local authority must be notified 6 weeks before the any tree[2] in a Conservation Area is removed, uprooted, lopped, topped, wilfully destroyed, or wilfully damaged. During this period the Council may consider serving a Tree Preservation Order to prevent the proposed work from being undertaken.

3.4 The council's online mapping facility confirmed that no part of the site is within a Conservation Area.

Ancient Woodland

3.5 Ancient woodland and ancient or veteran trees are irreplaceable and amongst the most valuable and sensitive habitats. Ancient woodland is any area that has been wooded since at least 1600. Individual trees of exceptional age, size, biodiversity or cultural significance are regarded as 'veterans'. Neither category has legal protection but they have strong protection in planning policy. Any works to veteran or ancient trees and woodland should be undertaken with the utmost sensitivity and under specialist advice.[3]

3.6 The Forestry Commission is a non-statutory consultee for development within 500m of an Ancient Woodland. Natural England and Forestry Commission publishes Standing Advice which reinforces the assumption in NPPF that development within an Ancient Woodland normally requires exceptional circumstances. A minimum buffer of 15m is recommended between any new development and ancient woodland.

3.7 Natural England's ancient woodland inventory[4] shows no ancient woodland within or adjacent to the site. The inventory is provisional and may not show woodland smaller than 2ha. It is therefore possible that smaller or unmapped ancient woodland exists. The current and previous land use is thought to make this unlikely.

[1] Exemptions apply, see https://www.gov.uk/guidance/tree-preservation-orders-and-trees-in-conservation-areas
[2] Exemptions apply, see https://www.gov.uk/guidance/tree-preservation-orders-and-trees-in-conservation-areas
[3] See https://www.forestry.gov.uk/anwpracticeguide for further information
[4] http://www.natureonthemap.naturalengland.org.uk/magicmap.aspx

Veteran Trees

3.8 Veteran trees are regarded as an irreplaceable habitat with similar provisions to ancient woodland. There is a presumption in NPPF against development that would result in loss or deterioration of a veteran tree. It is not possible to replace veteran trees and any such effects must be weighed in the planning balance in consideration of the circumstances of the development.

3.9 There is no comprehensive register of veteran trees. The Woodland Trust maintains a verified register of ancient, veteran and notable trees on behalf of the Ancient Tree Forum. It contains no records on the site.

3.10 Not all mature trees or those of high habitat interest are veterans. Trees with individual or simple assemblages of features typically associated with veteran trees were also noted[5]. Such trees may become veterans but should not be treated as such for the purposes of impact assessment.

3.11 An assessment of each tree was made by a qualified arboriculturist as part of the tree survey. There are 8 veteran trees within the site (T20, T21, T26, T28, T35, T45, T46 and T49). More information on these trees is provided in Section 5.

Figure 4 Veteran tree T20

3.12 To comply with planning policy[6], development must not result in loss or deterioration of ancient and veteran trees unless wholly exceptional reasons and a suitable compensation strategy exist. In practice, harm to such trees would constitute grounds for refusal of the majority of planning applications that are not nationally significant. It is therefore normally necessary to demonstrate no adverse effects would occur.

[5] See Appendix A
[6] NPPF paragraph 175 (c)

3.13 Natural England publishes Standing Advice in collaboration with Forestry Commission on how the effects of development on veteran trees should be assessed[7]. The advice is a material consideration and recommends that a buffer zone of at least 15 times the stem diameter or 5m from the canopy edge (whichever is larger) should be provided.

Felling Licences

3.14 It is an offence under the Forestry Act (1967) to fell trees without a licence unless an exemption applies.

3.15 Pruning; small scale felling; hazard and nuisance abatement; and felling in a domestic garden, orchard, churchyard or designated open space are amongst those works that may be exempt.[8]

3.16 There are no parts of the site that should be considered exempt from felling licence jurisdiction. However, certain operations are exempt and advice should be sought when considering tree works. In the absence of a detailed planning permission, any tree works may require a felling licence.

Hedgerow Regulations

3.17 The Hedgerow Regulations (1997) protect hedgerows that meet certain criteria[9]. This report does not include an assessment to determine which, if any, features would be protected under the Regulations. Hedges less than 20m long, in domestic gardens, or younger than 30 years are less likely to be protected.

3.18 Any removal of a protected hedgerow or a section of a protected hedgerow must only be done with the written consent of the Local Authority.

3.19 The site contains few hedges and those present are species poor. Hedgerow that is mapped on Drawing 2 to 8 is considered unlikely to qualify as 'Important' hedgerow under the Regulations on the grounds of woody species and ecological criteria. It is possible that linear vegetation including scrub and trees that is not mapped as hedgerow might qualify but a full assessment has not been undertaken.

Habitats of Principal Importance

3.20 The Natural Environment and Rural Communities Act 2006 places a duty on public bodies to show regard for biodiversity in the normal discharge of their functions. The Act requires a schedule of Habitats of Principal Importance to be maintained. This schedule (section 41 in England) is used by public bodies as a guide to the interpretation of their duty to conserve biodiversity. The list of habitats is based on the previously published list of Biodiversity Action Plan 'Priority Habitats'. For this reason, mapping tends to follow broad habitat types and requires verification in the field.

3.21 There are a number of habitat types that pertain to trees: *Deciduous Woodland*; *Hedgerows*; *Wood Pasture and Parkland*; and *Traditional Orchards*.

[7] https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences
[8] See https://www.forestry.gov.uk/england-fellinglicences for details
[9] See https://www.gov.uk/guidance/countryside-hedgerows-regulation-and-management for details

3.22 *Deciduous Woodland* is used to represent a range of woodland types that are not mapped individually. Drawing 1 shows approximately 50ha of vegetation that is mapped as *Deciduous Woodland*.

3.23 Mapping of *Deciduous Woodland* is based on remote digital analysis; the walkover survey was therefore used to test the publicly available deciduous woodland data. With the exception of individual trees, hedgerow and scrub, all woody vegetation present is a type of deciduous woodland. The extent of deciduous woodland that was recorded within Moore Nature Reserve and shown on Drawing 1 is approximately 65ha. This does not include proposed woodland within Arpley Meadows, which will increase this figure significantly once new plantation has matured into woodland.

Figure 5 Some plantation is maturing on the northern Arpley site but most is relatively young

3.24 *Hedgerows* are defined as any boundary line of trees or shrubs over 20m long and less than 5m wide, and where any gaps between the trees or shrub species are less that 20m wide. It is likely that the most of the hedgerows on the site would meet the criteria for inclusion in this habitat type. It is possible that other vegetation could be considered to be hedgerow which has been recorded as woodland edges, for example where vehicles pass existing trees and trim growth to a clear edge. Circa 1,900m of hedgerows are shown approximately on Drawing 1.

3.25 *Wood Pasture and Parkland* is a less common and easily overlooked type of woodland habitat in which trees are a principal structural component but within an open and grazed context rather than high woodland. Veteran and ancient trees are often a feature and the presence of deadwood and grazing animals create niche habitats for a range of lichens, insects, fungi and flora that occur exclusively in this habitat. None of the site is mapped as *Wood Pasture and Parkland*. The survey identified nothing to refute this.

3.26 *Traditional Orchard* includes most non-commercial and non-intensive orchards. There are no records of *Traditional Orchards* on or adjacent to the site. The survey identified nothing to refute this

Protected Species

3.27 Several protected species of animals are associated with trees and woodland and may therefore be affected by tree works, if present. The protection comes from a range of statutes and directives including both European and domestic law[10].

3.28 This report does not include an assessment of the presence or absence of any protected species. The protected animal species most associated with woodland are: bats, dormouse, otters, great crested newts, smooth snakes and sand lizards, badgers, and all nesting birds.

3.29 Most trees are a potential habitat for nesting birds. For this reason, tree work should ideally be undertaken outside the bird nesting season (March to August, inclusive). If this is not possible, an inspection of each tree prior to works should be undertaken by a competent person to confirm the absence of nesting birds.

3.30 Trees with cavities, holes, flaking bark, splits and old growth ivy may offer potential habitat for roosting bats. A preliminary ground level appraisal was undertaken by a trained layperson as part of the arboricultural survey.

3.31 It was observed that there is a very high incidence of trees that are likely to offer features of interest to bats, particularly within wet and mature woodland and compartments containing mature trees such as compartments 13, 25, 30, 36, 38 to 44, 53, 61, 64, 68, 74, 71. Large multi-stemmed crack willow, mature alder and mature elder are widespread on the site and typically contain socket cavities, splits, cracks and hollow limbs that can be suitable for use by bats.

3.32 Access to survey trees individually for the presence of bat roots is likely to be difficult, particularly in areas of wet woodland. It may be necessary to undertake climbing inspections from a pontoon or small boat. Furthermore, it is likely that many trees with bat potential could not be climbed safely due to condition.

Community Forest

3.33 The site is within the Mersey Forest community forest. It is also within the recently announced Northern Forest. These may provide a useful vehicle for coordinating, consulting on, planning, funding, or maximising benefits delivered by tree and woodland management. In view of the tree population present, it is suggested that the Mersey Forest should be consulted on proposed development and mitigation options.

3.34 Within the Mersey Forest Plan the site falls within the Lower Mersey Valley (W13) area. The indicative woodland cover target for this area is 40% and the relevant policy is:

[10] Including The Wildlife and Countryside Act 1981 (as amended); Protection of Badgers Act 1992; Conservation of Habitats and Species Regulations 2010

(i) As part of the Forest Park, create a new landscape structure and support woodland planting on Arpley Chord and Landfill site, on tipped and industrial land either side of the River Mersey from Fiddlers Ferry Power Station to Bank Quay, and joining to strategic green links and greenway network of the Transpennine Trail, St.Helens Canal, and the Mersey Valley. Retain and manage the existing mosaic of woodland, grassland and open water on Moore Nature Reserve. Ensure any new planting complements important open grassland habitat for ground-nesting birds in the area and maintains views of the estuary.

Figure 6 Existing mosaic of woodland, grassland and open water on Moore Nature Reserve

Other Designations and Status

3.35 The Moore Nature Reserve is well-used by Cheshire Wildlife Trust and other recreational visitors, particularly for bird watching. It is recommended that consultation with stakeholders should form an essential part of any change in land use.

4.0 Planning Policy

4.1 All trees are a material consideration. All other things being equal, the removal or deterioration of a tree, woodland or hedgerow should be regarded as an adverse effect and may therefore require mitigation to achieve no net loss.

4.2 Mitigation in the form of new planting is unlikely to deliver equivalent functions and benefits to existing trees, particularly where these are mature. Temporal delays in delivery, higher planting ratios, or additional measures may therefore form a necessary part of any mitigation strategy.

National Planning Policy Framework (NPPF)

4.3 The National Planning Policy Framework (NPPF) has an overarching environmental objective. This embeds protection and enhancement of the natural environment and biodiversity in decision making[11].

4.4 Planning policies and decision making should recognise the wider benefits from natural capital and ecosystem services, including those provided by trees and woodland, and minimise impacts on and provide net gains for biodiversity[12].

4.5 Where significant harm to biodiversity cannot be avoided, mitigated, or compensation provided, planning permission should be refused[13]. Loss or fragmentation of trees and woodland may constitute or give rise to significant harm to biodiversity.

4.6 There is a strong policy presumption against loss or deterioration of irreplaceable habitats such as ancient woodland and ancient or veteran trees. Development resulting in the loss of either should be refused unless there are wholly exceptional reasons and a suitable compensation strategy exists[14].

Local Planning Policy

4.7 Warrington Borough Council has a number of adopted policies pertaining to trees and nature conservation in the Core Strategy. They are reproduced hereafter.

Policy QE 3

Green Infrastructure

4.8 The Council will work with partners to develop and adopt an integrated approach to the provision, care and management of the borough's Green Infrastructure. Joint working and the assessment of applications will be focussed on:

(i) protecting existing provision and the functions this performs;

(ii) increasing the functionality of existing and planned provision especially where this helps to mitigate the causes of and addresses the impacts of climate change;

[11] NPPF paragraph 8 (c)
[12] NPPF paragraph 170 (b) (d)
[13] NPPF paragraph 175 (a)
[14] NPPF paragraph 175 (c)

(iii) improving the quality of existing provision, including local networks and corridors, specifically to increase its attractiveness as a sport, leisure and recreation opportunity and its value as a habitat for biodiversity;

(iv) protecting and improving access to and connectivity between existing and planned provision to develop a continuous right of way and greenway network and integrated ecological system;

(v) securing new provision in order to cater for anticipated increases in demand arising from development particularly in areas where there are existing deficiencies assessed against standards set by the Council.

Policy QE 5

Biodiversity and Geodiversity

4.9 The Council will work with partners to protect and where possible enhance sites of recognised nature and geological value. These efforts will be guided by the principles set out in National Planning Policy and those which underpin the strategic approach to the care and management of the borough's Green Infrastructure in its widest sense.

4.10 Sites and areas recognised for their nature and geological value are shown on the Policies Map and include:

(i) European Sites of International Importance

(ii) Sites of Special Scientific Interest

(iii) Regionally Important Geological Sites

(iv) Local Nature Reserves

(v) Local Wildlife Sites

(vi) Wildlife Corridors

4.11 The specific sites covered by the above designations at the time of publication are detailed in Appendix 3. [NB. This includes Moore Nature Reserve].

Figure 7 Moore Nature Reserve

4.12 Proposals for development which may affect European Sites of International Importance will be subject to the most rigorous examination in accordance with the Habitats Directive. Development or land use change not directly connected with or necessary to the management of the site and which is likely to have significant effects on the site (either individually or in combination with other plans or projects) and which would affect the integrity of the site, will not be permitted unless the Council is satisfied that; there is no alternative solution; and there are imperative reasons of over-riding public interest for the development or land use change.

4.13 Proposals for development in or likely to affect Sites of Special Scientific Interest (SSSI) will be subject to special scrutiny. Where such development may have an adverse effect, directly or indirectly, on the SSSI it will not be permitted unless the reasons for the development clearly outweigh the nature conservation value of the site itself and the national policy to safeguard the national network of such sites.

4.14 Proposals for development likely to have an adverse effect on regionally and locally designated sites will not be permitted unless it can be clearly demonstrated that there are reasons for the development which outweigh the need to safeguard the substantive nature conservation value of the site or feature.

4.15 Proposals for development which may adversely affect the integrity or continuity of UK Key habitats or other habitats of local importance, or adversely affect EU Protected Species, UK Priority Species or other species of local importance, or which are the subject of Local Biodiversity Action Plans will only be permitted if it can be shown that the reasons for the development clearly outweigh the need to retain the habitats or species affected and that mitigating measures can be provided which would reinstate the habitats or provide equally viable alternative refuge sites for the species affected.

4.16 All development proposals affecting protected sites, wildlife corridors, key habitats or priority species (as identified in Local Biodiversity Action Plans) should be accompanied by information proportionate to their nature conservation value including;

(i) importance; an assessment of the likely impacts of the proposed development proposals for the protection and management of features identified for retention;

(ii) an assessment of whether the reasons for the development clearly outweigh the nature conservation value of the site, area or species; and

(iii) proposals for compensating for features damaged or destroyed during the development process

4.17 Where development is permitted, the Council will consider the use of conditions or planning obligations to ensure the protection and enhancement of the site's nature conservation interest and/or to provide appropriate compensatory measures.

Policy QE 6

Environment and Amenity Protection

4.18 The Council, in consultation with other Agencies, will only support development which would not lead to an adverse impact on the environment or amenity of future occupiers or those currently occupying adjoining or nearby properties, or does not have an unacceptable impact on the surrounding area. The Council will take into consideration the following:

(i) The integrity and continuity of tidal and fluvial flood defences;

(ii) The quality of water bodies, including canals, rivers, ponds and lakes;

(iii) Groundwater resources in terms of their quantity, quality and the ecological features they support;

(iv) Land quality;

(v) Air quality;

(vi) Noise and vibration levels and times when such disturbances are likely to occur;

(vii) Levels of light pollution and impacts on the night sky;

(viii) Levels of odours, fumes, dust, litter accumulation and refuse collection/storage.

(ix) The need to respect the living conditions of existing neighbouring residential occupiers and future occupiers of new housing schemes in relation to overlooking/loss of privacy, outlook, sunlight, daylight, overshadowing, noise and disturbance;

(x) The effect and timing of traffic movement to, from and within the site and car parking including impacts on highway safety;

(xi) The ability and the effect of using permitted development rights to change use within the same Use Class (as set out in the in the Town and Country Planning (General Permitted Development Order) without the need to obtain planning consent.

4.19 Proposals may be required to submit detailed assessments in relation to any of the above criteria to the Council for approval.

4.20 Where development is permitted which may have an impact on such considerations, the Council will consider the use of conditions or planning obligations to ensure any appropriate mitigation or compensatory measures are secured.

4.21 Development proposals on land that is (or is suspected to be) affected by contamination or ground instability or has a sensitive end use must include an assessment of the extent of the issues and any possible risks. Development will only be permitted where the land is, or is made, suitable for the proposed use.

4.22 Additional guidance to support the implementation of this policy is provided in the Design and Construction and Environmental Protection Supplementary Planning Documents.

Relevance to this site

4.23 The application and relevance of the above policies to any development on this site should be explored within an Arboricultural Impact Assessment. The function of woodland as habitat and in delivering ecosystem services such as storm water interception and air quality should be evaluated in terms of policy compliance and in the context of other conservation objectives. It will be particularly beneficial on this site for ecologists and arboriculturist to work collaboratively.

5.0 Tree Population

5.1 Trees cover a significant proportion of the total site area. The majority of the more mature trees and woodland are located in Moore Nature Reserve, which comprises a diverse and complex mosaic of broadleaved woodland, wet woodland, scrub, mature trees and plantation. The wetter areas of mature woodland in particular are of good quality and include substantial areas of willow, alder, birch and oak dominated woodlands.

5.2 Port Warrington contains limited plantation, ornamental trees, and small pockets of scattered trees and woodland scrub along the southern boundary.

5.3 Arpley Landfill site contains large compartments of plantation woodland, including some very new planting, which form part of the proposed restoration landscaping scheme associated with the decommissioning of the landfill. These tend to be of moderate quality. They have good potential to develop into mixed broadleaved woodland and, over time, their quality will increase. There is also significant natural regeneration, often of low quality, and predominantly comprising willow species, scattered across the Arpley site.

5.4 To the north-east of the landfill site is an area of rough ground with natural regeneration growing along a herringbone pattern of drainage ditches. This area is very dense and access is difficult. Most trees in this area are willow species whose quality is principally as a habitat rather than as specimen trees of within the landscape.

Figure 8 Rough ground and natural regeneration, mainly of willow species

5.5 In terms of quality, particularly arboreal habitats, woodland, and amenity benefits, the tree population in Moore Nature Reserve represents the vast majority of significant trees within the site. It contains some woodland of excellent quality and veteran trees. Those on the northern parts of the site are generally unremarkable; the arboricultural interest in this area is principally in terms of the quantity of tree cover, and its potential to develop.

Walkover survey

5.6 The walkover survey provides an overview of woody vegetation using broad vegetation types based on the categories used by the National Forest Inventory remote assessment method. These are mapped on Drawing 1. The walkover survey confirmed the actual extents of these vegetation types within the southern part of the site and a more accurate representation of the vegetation present is shown on Drawing 2 for comparison. It provides an overview of the type of vegetation, but not necessarily its quality or condition.

Figure 9 Low density woodland as mapped on the National Forest Inventory (see Drawing 1 & 2)

5.7 For the purposes of the walkover survey, existing areas of young plantation woodland within the Arpley Meadows site, were not mapped. Approximately 49ha of broadleaved woodland and 7ha or shrub planting are shown as an approximation of the proposed Restoration Landscape Scheme on Drawing 2 to 8. Compartments 7, 10 and 26 already exist as well as others to the north that could not be surveyed remotely but are counted separately to maintain a distinction between the approved landscaping scheme and other existing vegetation.

5.8 During the walkover survey, locations of candidate veteran trees were mapped approximately for future reference.

5.9 A short description of each surveyed compartment is included in the survey data at Appendix A.

Detailed tree survey

5.10 The full tree survey built upon the initial walkover survey and provides a greater resolution of assessment. Tree survey data for all recorded features is included at Appendix C.

5.11 49 individual trees (T1-T49); 203 groups of trees (G1-G203); 20 woodland compartments (W1-W20); and 9 hedges (H1-H9) were recorded within influencing distance of the application site.

5.12 Feature locations, their quality categories, canopy spreads and root protection areas are shown on Tree Constraints Plans (Drawings 9 to 18). The following table provides the total canopy area for mapped trees and the total length of mapped hedgerow on Drawing 9. In some cases this may be more than the absolute area of cover due to canopy overlap between adjacent features.

Table 1 Existing canopy coverage

Trees	Groups/Woodland	Hedgerow
0.77ha	120.50ha	2.02km

5.13 The above totals account for tree canopy cover (including branch spread) rather than land use at ground level. They also include some parts of woodland, such as glades and wet areas, which may be categorised differently by other assessments. Phase 1 Habitat Assessment mapping in particular regards habitats as mutually exclusive and is therefore likely to report a lower figure for woodland than this assessment.

Veteran Trees

5.14 During the detailed survey, all parts of the site were surveyed for candidate veteran trees. Each of the locations showing a candidate veteran tree on Drawings 2 to 8 was visited to confirm the resource at that location. All candidates were systematically assessed against the definition of 'veteran tree' within NPPF[15].

Figure 10 Veteran birch tree T46

[15] NPPF 2019, Annex 2, Glossary (pg.64)

5.15 The term 'veteran' describes trees that are exceptional in terms of heritage, cultural or biodiversity value. This judgement must be supported by the age, size and condition of the tree. The definition does not include all trees of high or notable value, which would occur within the normal range for any species. The quality of such trees can properly be assessed for planning within the assessment matrix proposed by BS5837.

5.16 Moore Nature Reserve contains a large number of mature trees, including those growing within woodland that is not intensively managed and has a semi-natural composition. It contains a significant assemblage of the features and characteristics that are associated with veteran trees (large size, cavities, aerial dead wood, splits, cracks, epiphytes etc.) However, these are often spread throughout woodland compartments or groups of trees, rather than being present in sufficient number on a single tree for it to quality as a veteran. Most trees individually are not veterans.

Figure 11 Mature hawthorn trees were assessed as high quality but not veterans

5.17 All other parts of the site contain relatively fewer mature trees and no veteran trees. There is no ready prospect of new veteran trees developing on any part of the site except for Moor Nature Reserve, on which such prospects are good.

5.18 The table below describes the location of 8 veteran trees with reference to the reference number for the surrounding Group or Woodland (see Drawing 10 to 18).

Table 2 Veteran trees

Ref	Location	Description
T20	G107: in wet willow dominated area near to footpath and disused canal	Mature, squat alder with large, heavily burred and fluted main stem typical of species in excess of typical age range; main stem in excess of 1m in diameter with two smaller additional stems, very large for species; full canopy with branches to ground level; profuse epicormic growth locally around base and on lower branches; branch stubs from previous failures with shallow decaying cavities; multi stemmed from 1.6m; branch stubs fused with stems in places; bird's nest in upper canopy; large dead wood; minor dead wood throughout; extensive moss covering with browsing evident; hollows between stem flutes and dead wood of varying sizes providing niche habitats; native species of inherent habitat interest, particularly in the context of wet woodland, water, other similar trees and populations of alder
T21	W10: at far western end of reserve, within woodland east of Lapwing Lane	Mature, single stemmed crack willow with large stem diameter, although not unusual for species; total failure of lower stem resulting in split and torn stem still attached at point of failure and fallen within woodland to south-east; tree still remains in good condition despite failure and therefore has particular interest for the sustainable niche habitats created by the structural collapse and subsequent regrowth; large cavities, cracks and hollows within stem associated with failure, vigorous phoenix regeneration from fallen portion of stem with good potential to develop and ultimately replace primary tree carcass in the longer term; significant potential for decay fungi; extensive deadwood habitat within trunk including exposed heartwood; native species of inherent habitat interest, particularly in the context of wet woodland, water, other similar trees and large populations of willow

Ref	Location	Description
T26	G143: by path at northern edge of nature reserve, adjacent to Arpley site	Mature crack willow with multi stemmed union near base; long cracked lower limbs with hazard beam type of failure, two to ground; internal decay pockets at points of failure and extensive splits and narrow delamination cracks; wide spreading canopy and stem diameter well in excess of 1m; large dead wood in localised areas and moderate dead wood throughout lower canopy; good vigour remaining in upper canopy and good prospects to continue to develop and sustain existing niche habitats; ivy on lower stems; native species of inherent habitat interest, particularly in the context of wet woodland, water, other similar trees and large populations of willow
T28	W15: by wet ditch and boardwalk on south-western edge of woodland	Mature and notably large crack willow with stem diameter of c.1.4m; total delamination failure at 2m with tree now lying to the north-west; vigorous phoenix regrowth from along hollow main stem supporting a broad spreading crown; large cavities and exposed heartwood; native species of inherent habitat interest, particularly in the context of wet woodland, water, other similar trees and large populations of willow; numerous cavities, splits and tears; fungal fruiting bodies noted
T35	G194: in old, notable and veteran tree hotspot in wet woodland at north of reserve	Mature crack willow with two main stems (c.0.9m diameter); previously failed with phoenix regrowth from fallen and layered limbs; one remaining limb to north has not failed; extensive cavities, hollowing and decay of fallen limbs; significant associated moss and fern growth; remaining tree has excellent vigour and supports a large canopy from widely spaced points of regrowth along sprawling recumbent structure; cracking and delamination creating habitat interest; unusual form, even for the species; native species of inherent habitat interest, particularly in the context of wet woodland, water, other similar trees and large populations of willow

Ref	Location	Description
T45	G191: Somewhat removed from footpath, north of forest school within woodland	Mature alder common alder with a squat, decayed and hollowing bole of substantial size; basal cavity open to north with exposed heartwood; old and gnarly twin-stemmed form with burring and moss and lichen associations; fused stems, failed leader with broken stem attached and evident decay of both; growing on edge of ditch; dense epicormic growth on stems; decaying smaller side branches; reaction wood bulging on ditch side; large diameter aerial dead wood; large and aged example of native species with inherent habitat interest, still with good prospects for survival; native species of inherent habitat interest, particularly in the context of wet woodland, water, other similar trees and populations of alder
T46	G191: Close to footpath to north of forest school within woodland	Mature and substantial downy birch; unusually large for species with deep fluting of main stem and lower scaffold branches; main stem 1m in diameter suggesting significant age for the species; decay cavities at points of branch loss with habitat interest; large leaning side stem growing out to west from 2m; dieback and large dead stub to east with birch polypore fungal bracket visible; slight thinning of canopy and reduced leaf size; growing as a pair with a slightly smaller and non-veteran mature birch, nonetheless with many similar characteristics and augmenting value of T46 by association; moss and lichen growth; a striking example of the species at an advanced life stage; native species of inherent habitat interest, particularly in the context of woodland, similar trees, water, and large populations of birch

Ref	Location	Description
T49	G194: in old, notable and veteran tree hotspot in wet woodland at north of reserve	Mature white willow of significant height and stem diameter; tree fallen and now hollow with decayed stem lying on the ground; primary stem has regenerated along its length with new growth of c.20m in height; some secondary stems leaning south creating a particularly large and spreading canopy that is visually prominent from the west and has excellent health and vigour; unusual form likely to lead to repeated failures and regrowth and therefore sustainable decaying timber, cavity and delamination crack habitats for invertebrates, fungi and possibly small mammals; adjacent to wet area and with dense vegetation surrounding; main tree difficult to age but evidently relatively old for secondary growth to reach mature size; a notable example of a native species with inherent habitat interest, particularly in the context of wet woodland, water, other similar trees and large populations of willow

5.19 All 8 of the above trees are native species which have inherent habitat interest. In trees surpassing the normal range of age or size for the species this can be expected to be increased. Where trees have additional particular or well-developed features of habitat interest such as associations with epiphytes, decay fungi or niche habitats, these will also tend to augment the value of the tree in terms of biodiversity. For these reasons, all of the trees identified in Table above are veterans because of exceptional biodiversity value.

5.20 All arboricultural information recorded during the survey is presented at Appendix A.

Tree Quality

5.21 Under BS 5837 trees are objectively assigned one of four categories to describe their quality. The table below includes a description of each category and the amount of trees within it. This information is presented by canopy area to allow comparison between features of varying size and maturity. Hedgerows have not be categorised.

Table 3 Summary of BS 5837 quality categorisation[16]

[16] Refer to Appendix B for the full table

Category	Description	Total existing
A	Trees of high quality, typically with a long remaining life expectancy; and with clear and identified merit as specimens, visually, culturally or for conservation.	26.70ha
B	Trees of moderate quality, typically with at least a medium remaining life expectancy; with remediable defects only; or low quality but with collective merit.	68.79ha
C	Trees of low quality, typically with at least a short remaining lift expectancy; unremarkable trees; young or small trees that could be replaced.	25.78ha
U	Trees that cannot realistically be retained in the current land use for 10 years; with serious and irremediable defects, pathogens or decline.	None

5.22 Areas of high quality (Category A) trees are exclusively concentrated within the Moore Nature Reserve Site and are mostly associated with the disused Runcorn and Latchford Canal. Broadly, they are in four distinct areas:

(i) A narrow strip of woodland including W10 and W11 in the west of the site to the south of the Runcorn and Latchford Canal;

(ii) The main central wooded area of Moor Nature Reserve, especially west of Latchford Lane and north of the Runcorn and Latchford Canal (including G143, G152, G155, W15 and W17), and east of Latchford Lane and south the Runcorn and Latchford Canal (including G151, G153, G181, G185, G187, G191, G197, G198 and W20);

(iii) Woodland to the immediate north of Port Warrington (including G170 and W19);

(iv) Woodland in the north-east of the site around the Runcorn and Latchford Canal (including W14 and W18).

Root Protection Areas

5.23 Using the results of the field survey a Root Protection Area (RPA) has been calculated for individual trees in accordance with BS 5837 using the tree's stem diameter at 1.5 metres[17]. The RPA represents the minimum area around each tree that must be left undisturbed to ensure its survival.

5.24 For woodland and groups of trees, the RPA can be inferred from the canopy outline. For the majority of trees, this is a reasonable approximation. For small trees, this approach may be generous.

[17] Refer to Appendix A for RPA area calculations

6.0 Preliminary Assessment of Effects

6.1 Wherever development occurs, there is a potential for effects on trees. This might comprise the removal of trees that would physically prevent the development but also those that are nearby and vulnerable to changes in local conditions that would arise because of construction.

6.2 Trees are a material consideration in the planning process. The removal of a tree would typically constitute an adverse effect in the planning balance, which must be mitigated by an overriding need or benefit to remove planning risk.

6.3 There should be a common sense ambition to limit tree loss to that which is strictly necessary to facilitate the proposal, and to ensure that the condition and safety of all remaining trees would not be compromised by the development. The quality and distribution of trees should also be considered amongst other constraints in the development of the proposed design and may not always have the highest priority.

6.4 The approximate extents of woody vegetation types and relevant designations and status are shown on Drawing 2. This should be used as a basis for masterplanning and feasibility studies but should not be relied upon for detailed layout design.

6.5 The actual extent of tree canopy cover is shown on Drawing 9. This will form the basis of any future impact assessment and the detail of tree removal and retention within a scheme of development. Trees that fall within development parcels are indicated in Drawing 20, these areas represent those within which tree removal would be more likely, although there will be opportunities for detailed design to avoid significant receptors, particularly around the edges of development parcels.

6.6 No detailed assessment of tree removal and retention against any particular layout has been made. However, the type of development that is under consideration would comprise relatively large units with flat and level footprints, within which retention of existing trees would generally be impractical. It is therefore possible to draw broad conclusions about the likely effects of development on the tree population.

6.7 The following text gives an overview of the likely impact of the masterplan proposals on existing trees where these are known or can be estimated. Actual effects will be determined at the detailed design stage. It is assumed that any future design will be broadly similar to the Masterplan (reproduced at Drawing 19) but may be influenced in the emerging design by the constraints and opportunities presented in this report and by other technical disciplines.

Canopy cover

6.8 The proposed development site incorporates approximately 60ha of Moore Nature Reserve, 24ha of agricultural land to the north east of the Reserve and 26.5ha of land containing the operational port or former associated brown field land adjacent to the Manchester Ship Canal.

6.9 The primary tree and woodland losses would occur within Moore Nature Reserve. Based on the tree cover mapped on Drawing 1 an estimated 37.2ha of tree cover would be removed from within the Reserve. The majority of this is a matrix of established mixed age woodland, including wet woodland.

6.10 The agricultural land was not included in the walkover assessment but is known to contain scattered trees, primarily associated with a network of existing drainage ditches but forming dense copses in places. An estimate of tree canopy loss in this area would be in the region of 3ha. It is highly likely that a large component of this loss would comprise smaller growing pioneer species that have colonised less accessible or productive land; their removal is therefore likely to be less significant than that of more established or complex woodland structure.

6.11 A second indirect effect in this location is the preclusion of mitigation tree and shrub planting secured as part of the Arpley landfill site. Approximately 3.9ha of tree and 5.7ha of shrub planting (inclusive of existing vegetation) is indicated on Drawing 1, taken from the Arpley scheme's Environmental Statement. The development of Port Warrington must take into account effects on existing trees and on any future planting secured by extant planning permissions that can no longer be delivered as a result of the proposed development.

6.12 Tree loss across the operational and former port land is anticipated to be in the region of 6.6ha. The majority of this is low-density tree cover comprising occasional stands of small trees, plantation, gorse and scrub.

6.13 It may be possible to retain selected individuals within the proposed development which will be assessed in detail as part of the detailed design work. It is also likely that a number of isolated trees will be present that haven't been included in the canopy loss figures presented above.

Tree Quality

6.14 An assessment of quality has been made in accordance with BS5837:2012. The quality of trees may be used as a proxy for the likely magnitude of adverse effects or requirements for and anticipated difficulty in providing mitigation associated with tree loss in different parts of the site.

6.15 Across the survey area most trees, groups and woodland have moderate quality (Category B). High quality trees are concentrated into four locations, as described at paragraph 5.22.

Figure 12 Moderate quality trees are not without merit and may have good potential

6.16 Of the four concentrations of high quality tree cover, two to the east of the site would be unaffected by development in accordance with the masterplan (Drawing 19). Drawing 20 illustrates the concentrations of high quality trees that would fall within the development footprint to the west of Moore Nature Reserve around the disused canal and Latchford Lane. It is likely that most trees, although not all, within these areas would be removed.

6.17 The development of land within Moore Nature Reserve would give risk to the loss of mature woodland of high quality, including areas of wet woodland dominated by alder and willow, high canopy mixed broadleaved oak woodland, and mosaics of gorse scrub, glades, ponds and rough grassland that are an integral part of the existing woodland in terms of their habitat function and amenity.

Figure 13 Wet woodland within Moore Nature Reserve

6.18 Development of the existing Port Warrington site and the adjacent strip of land to the immediate north of the canal would result in localised losses of low and moderate quality trees, of significance principally for the ornamental, screening, habitat connectivity and collective benefits rather than as notable or high quality specimens.

6.19 Development in any form of the north-eastern corner of the site would likely result in the removal of a significant majority of trees because the existing site is largely impassable and contains a dense matrix of willow regeneration and tall ruderal herbs. There are few trees that would be well-suited to retention within a significantly changed land use. This area should be assessed principally as a habitat; the majority of trees are relatively small and none were recorded as individuals by the tree survey.

Veteran Trees

6.20 The table below describes the consequences of development broadly in accordance with the masterplan for the 8 veteran trees that have been identified.

Table 4 Anticipated impact on veteran trees

Tree	Implication of masterplan
T20	Unaffected: within remaining part of Moore Nature Reserve
T21	Unaffected: beyond western extent of development within woodland
T26	On edge of development; potential to retain within detailed design
T28	Removed: within main development parcel (Unit 6)
T35	On edge of development; potential to retain within detailed design
T45	On edge of development; potential to retain within detailed design
T46	On edge of development; potential to retain within detailed design
T49	On edge of development; potential to retain within detailed design

6.21 The current masterplan implies the removal of one veteran tree, although this would be explored and determined as part of a future planning application. It would be difficult to retain T28 without significantly altering the massing and plot sizes within a future development because it is in an internal position within the centre of the site.

6.22 Most veteran trees are around the peripheries of the site. It is therefore reasonable to assume that they could be retained within a future development. This assumption relies on the capacity of a future detailed layout to accommodate them within appropriate landscaped buffers.

6.23 The capacity of development to cause deterioration of retained veteran trees, such as by changes in the context and prevailing conditions, will be a function of site layout and detailed design and cannot be reliably assessed at this stage. It is likely that the environment and circumstances of at least five of the trees in Table 4 (T26, T35, T45, T46 and T49) would be significantly changed, although this does not unavoidably imply a deterioration.

Biodiversity offsetting

6.24 Peel has committed to no net loss of replaceable habitats within a future development. Approximately 76ha of habitat would be lost to facilitate development, mostly comprising woodland, grassland and wetland. The ambition to deliver no net loss would be demonstrated via biodiversity offsetting.

6.25 For the purposes of the biodiversity offsetting, the extent of woodland cover as mapped by the Phase 1 Habitat Assessment rather than this assessment has been used (see Ecology Assessment report 6929.01.011). This tends to reflect a simpler pattern of aggregated habitats, which are mapped as mutually exclusive (i.e. each part of the site is counted only once). It would not, for example, count overhanging branches above a pond as woodland and waterbody.

6.26 This assessment forms part of the baseline information for the Biodiversity Offsetting Assessment (see 6929.01.32). All areas of woodland defined by the Phase 1 Habitat Assessment were assessed by a team of qualified arboriculturists and categorised in terms of their *condition* as either:

(i) 3 - Good

(ii) 2 - Moderate

(iii) 1 - Poor

6.27 In determining the condition of woodland for biodiversity offsetting, the following factors were considered:

(i) The completeness of canopy cover

(ii) The proportion of native species

(iii) The number and distribution of woody species

(iv) The diversity of age and height structure

(v) The presence of large diameter (>200mm) dead wood

(vi) The naturalness of water courses, where present

(vii) Any damage by browsing, agriculture, or poor management

(viii) The presence of invasive species

(ix) Evidence of nutrient enrichment

(x) The BS5837 quality category of the corresponding survey feature

(xi) The condition of the corresponding compartment in the walkover survey

(xii) The size of the compartment in relation to surrounding woodland

6.28 The resultant information has been fed into the biodiversity offsetting calculations.

7.0 Recommendations

Tree Works

7.1 Whilst the purpose of the walkover and detailed surveys was not to identify tree works, the recommendations in Appendix A and C are based on observations that were made during the surveys and should be considered to prevent future problems.

7.2 All works should be undertaken by a suitably qualified, competent and insured contractor. It is recommended that at least three quotations should be sought for works

Permissions

7.3 Authority to undertake the works recommended in Appendix A or any other routine maintenance works must be sought in advance of commencement.

7.4 The permission of the owner of the land around the base of the tree must be sought. For trees on boundaries, this may be more than one party.

7.5 Any tree works that are required to deliver development that has detailed consent will not normally require additional permissions, unless they are done under licence from Natural England because they would affect a protected species.

7.6 Works affecting any tree within an area covered by an active planning permission may risk breach of that planning permission. Any works to trees in the Arpley Landfill Site (and any other planning application boundary) except those expressly permitted by planning consent should not be undertaken until it has been determined that they are permitted or otherwise acceptable to the relevant consenting authority.

7.7 Based on the results of the desktop survey, tree works will not be subject to TPO or affect trees within a Conservation Area.

7.8 The recommended works may require a felling licence[18] and any other thinning, felling or tree removal works that are not exempted may also require a felling licence. Such licences typically include requirements to replant trees.

7.9 It is considered unlikely that recommended works will affect protected hedgerow because surveyed hedges contain few woody species. It is possible that hedges may be protected for other reasons such as historical or archaeological significance. If in doubt, the Local Authority should be able to provide confirmation.

7.10 Additional consenting mechanisms may apply in certain circumstances including for works affecting protected species; close to overhead lines; in churchyards; close to airports; and for which access is required across or above land owned by third parties (including the Highways and Local Authorities). None are known to apply here.

[18] https://www.forestry.gov.uk/pdf/FellingLicenceApplicationFormEnglandv2.doc/$FILE/FellingLicenceApplicationFormEnglandv2.doc

Detailed Tree Survey

7.11 The detailed tree survey data in this report is in a suitable form to support a future planning application. As the proposed layout and detailed design emerge, it may become desirable to undertake targeted additional survey activities in areas of identified constraint, such as to establish which individual trees within woodland or larger groups can be retained and which must be removed.

Arboricultural Impact Assessment

7.12 An Arboricultural Impact Assessment (AIA) will be required in support of a reserved matter/detailed application. This will identify, evaluate and possibly mitigate the impacts of developing land on the existing tree resource.

7.13 One function of the AIA process will be the consideration of trees alongside other project disciplines (layout, drainage, levels, utilities etc.) in order to minimise future conflict and avoid uncalculated expense or undesirable tree loss.

7.14 The AIA should include a detailed Tree Removal Plan outlining the proposed schedule of tree works. It may also include details of any tree protection measures that would be required during the construction phase. In certain circumstances it may be appropriate to set out a heads of terms for tree protection and defer the detail to a Condition of planning consent.

Mitigation

7.15 The protection of retained trees and measures to reduce or avoid adverse effects during construction should be detailed within an Arboricultural Method Statement. This should include details of temporary measures to be implemented during the construction process, and oversight of compliance and tree condition by an arboriculturist in the form of a watching brief.

Offsetting

7.16 The National Planning Policy Framework (NPPF) is a material consideration in the planning process and promotes a presumption in favour of sustainable development. In terms of the natural environment, development should minimise impacts on biodiversity and provide a net gain in biodiversity where possible. In respect of trees, a sustainable development will be one whereby the total number, value or function provided by trees is maintained or increased or where the long-term prospects of the existing tree stock can be substantially improved.

7.17 In addition to mitigation that may be delivered via the creation of Arpley Meadows Country Park, a commitment has been made by Peel to ensure that there is no net loss of replaceable habitats as a result of any future development within Moore Nature Reserve. A Biodiversity Offsetting Suitability Appraisal (report reference: 6929.01.017) has been prepared to advise on 7 sites where biodiversity offsetting may be undertaken within close proximity to the Reserve. The loss of irreplaceable habitats, namely veteran trees, cannot be offset and must be compensated for (see below), they are therefore excluded from biodiversity offsetting calculations.

7.18 The Appraisal identifies that offsetting carried out to mitigate for the loss of existing habitats on site must seek to replicate the habitats lost. Meaning that primarily, large areas of woodland and wet woodland will need to be created. In addition to this a replacement lake will be required and a number of smaller ponds and ditches will also be needed.

7.19 In concludes that there is land suitable to offset losses at Moore Nature Reserve within the sites assessed. This would however require confirmation of exactly how much land is available to Peel at each. If the required amount of land is not available, Peel will provide monetary compensation which may be through either the purchase of the required amount of credits needed in order to offset any remaining losses or through creation of a fund to create and enhance habitats in the local area.

7.20 Further investigation and clarification of what options are viable will form part of any future planning work and the production of a Biodiversity Offsetting Strategy.

Trees within Biodiversity Offsetting

7.21 The primary means of offsetting adverse effects in terms of tree removal should be via biodiversity offsetting. Within this broader framework, it should be ensured that the proportion of the biodiversity score derived from trees and woodland is not reduced by a proposed development.

7.22 The distinctiveness of woodland should not be diminished but offset by the creation of larger areas of woodland with a lower distinctiveness score within any biodiversity offsetting balance.

Figure 14 Coppice woodland has particular benefits that could be reproduced by management

7.23 Improved management of woodland, particularly on the Arpley site, has the potential to deliver substantial benefits. This would principally be by creating new characteristics and features of interest for biodiversity and amenity, and by accelerating the development of semi-natural woodland composition. It would also be possible to deliver similar benefits within the remaining part of Moore Nature Reserve, although the available improvement is less because the existing resource is of better quality.

7.24 Based on the estimated tree loss, mitigation for the total loss of tree cover could not be delivered within the site boundary. Furthermore, the existing distribution of trees, and the limitations to planting on the landfill site arising in relation to cap integrity, made ground and imported soils means that replacement on a like for like basis would neither constitute adequate mitigation nor be likely to be possible within available space. It is therefore anticipated that off-site planting will be required to deliver net gain in terms of like-for-like woodland habitat types.

7.25 The Arpley Meadows Country Park will not be capable of supporting wet woodland because of the incompatibility between landfill capping and temporary or permanent waterbodies, as well as the topography of the site. Any off-site compensation strategy should therefore include measures to offset the loss this particular type of woodland and associated habitats, benefits and functions.

7.26 New enhancement measures within the remaining part of Moore Nature Reserve, the existing planting on the Arpley site, or within new planting as part of biodiversity offsetting should include measures to enhance woodland biodiversity as well as amenity. Examples could include: dead wood creation or translocation; understorey planting; glade creation and ground flora planting; veteranisation of trees; installation of habitat boxes; creation of hibernacula; removal of invasive species; localised improvements to woodland structure and species composition; creation of ponds, ditches and swales; improvements to woodland margin structure and habitats; woodland thinning; coppicing; monitoring programmes; conservation of introduced or at risk woodland species; creation of no-access reserves; community involvement; improvements to pedestrian infrastructure and signage; woodland classroom provision; creation of other amenity focal points or one-off events. Provision should be made for the long term management and sustainability of any such measures.

Figure 15 Enhancements should replicate and augment existing desirable attributes and structure

7.27 The extent of replacement tree planting proposed within any biodiversity offsetting balance should be evaluated as part of the AIA process. The advice of a qualified Arboricultural Consultant should be sought during planting plan preparation to ensure species and placement suitability. Any new planting should not be viewed principally as an exercise in landscape architecture and aesthetic design but should be strongly informed by conservation and habitat objectives.

Veteran trees compensation strategy

7.28 The masterplan implies that at least 1 veteran tree (T28) would be removed to facilitate development. Other veteran trees are close to the proposed areas for development and their retention would be a matter for detailed design. The current masterplan, without mitigation in the form of tree protection and careful design of landscape buffers, would result in the loss of at least six of the eight veteran trees. However, it is reasonable to assume that all but one of the veteran trees identified by the tree survey could be preserved within a development of the type and broadly in the form illustrated by the masterplan.

7.29 Under NPPF veteran trees alongside ancient woodland are considered to be irreplaceable and it is incumbent on Peel to demonstrate that wholly exceptional reasons (for the development) exist and to provide a 'suitable compensation strategy'.

7.30 Exploring the existence of wholly exceptional reasons is principally a planning exercise that should consider all of the circumstances of the proposed development including the need and the location. This assessment assumes that the existence of such reasons will be established by others.

7.31 What constitutes a suitable compensation strategy for the loss of veteran trees is not defined and will vary depending on the number and nature of the veteran trees being removed. It is therefore not appropriate to set ratios of loss to gain in determining an appropriate level of compensation response.

7.32 The following are the broad principles that will underpin measures to be provided as part of a future veteran tree compensation strategy:

(i) **Translocation:** the movement of veteran trees is not normally possible with any certainly of survival, but where circumstances dictate it should be considered preferable to simply accepting their loss;

(ii) **Soil translocation:** the salvage of soils from around the base of felled veteran trees will provide best opportunity to retain some of the diversity associated with the associated seed and bulb bank, mycorrhiza and other fungi and invertebrates;

(iii) **Replacement planting**: young trees of the same species, genotype and ideally propagated for the same tree as the lost veterans should be planted in the locality with provision for their future management. The number and locations of such trees remains to be determined but they must significantly outnumber those removed;

(iv) **Whole tree carcass retention**: the value of veteran trees is in the complex ecosystems they support, much of which is associated with defective, dead and decaying parts. The retention of felled trees as whole or large parts will allow the natural decomposition process to continue, supporting invertebrate, fungi and plant populations;

(v) **Destructive pruning or veteranisation**: it may be appropriate to artificially accelerate the development of new veteran trees within areas of retained tree cover using methods that recreate conditions of natural deterioration;

(vi) **Artificial ecological enhancement**: the characteristics of veteran trees makes them inherently more likely to provide suitable habitat for certain fauna, including bats. New roosting boxes and other forms of artificial habitat creation should be considered in retained trees and woodland, even where veteran trees are translocated or retained as dead wood; and

(vii) **Woodland creation**: it may be appropriate to deliver some or all of the above measures in the context or new or improved existing woodland. The creation of new woodland, particularly where it connects fragmented habitats including mature or veteran trees may be provided.

7.33 The following table considers the above range of measures in respect of the specific circumstances of T28.

Figure 16 Coronet cuts to create aerial deadwood can accelerate veteranisation in mature trees

Table 5 Compensation strategy for the loss of T28

Measure	Strategy
Translocation of whole tree	The tree has failed and the failed part is suspended at about head height by its branches and the remaining attachment to the parent stem. The supporting branches are rooted into the ground and providing the bulk of the nutrient and water needs of the upper canopy. This makes translocation in the conventional sense impractical because the tree does not have a single point of attachment to the ground. However, crack willow is singularly resilient to disturbance and changes in orientation. **Prior to planning permission:** within the dormant season, the failed upper part of the tree would be severed in two places: above the point of failure (leaving the delamination and split timber attached to the main decaying stem); and at a suitable central point leaving the failed stem in two parts, each with adequate independent rooting. The phoenix regrowth stems would be pollarded at 4m on a triennial cycle. The main parent stem has some limited remaining vitality and epicormic shoots and would be root pruned at a radius of 2m to encourage new fibrous root development within the a smaller primary root ball. The separated sections would also be root pruned at a 2m offset from all points of contact with the ground. The operation and management of the tree will be overseen by a qualified arboriculturist. There are no regulatory or legal restrictions on this management and it can be undertaken without any requirement for formal permission. **Following planning permission:** the tree would be transplanted in three parts to a suitable receptor site that will be identified within the remaining part of Moore Nature Reserve. The receptor site shall be wet, ideally close to standing water; and within woodland, ideally on the woodland edge. A detailed specification for the operation including watching brief and aftercare would be provided as part of a future planning application. The tree need not necessarily be set in the same arrangement as currently but the orientation of each part should be preserved, including in relation to the woodland edge if possible. This operation should not be regarded as a conventional translocation. It is a somewhat destructive process that would nonetheless preserve some of the valuable attributes of the extant tree in a new arrangement and location. Because of the species characteristics, there would be a reasonable prospect of tree survival. However, this could not be guaranteed in any event.

Measure	Strategy
Translocation of associated soils	**Following planning permission:** All natural and semi-natural soils within the buffer zone shown on drawing D7815.002 would be systematically relocated to the receptor site identified for translocation. Where this would cause undue harm to the receptor site, an alternative suitable receptor site for some of the soil may be identified. Heavily waterlogged or submerged soils may be unsuitable for translocation. The uppermost 600mm of soil will be relocated and the orientation of the uppermost horizon preserved. Woody vegetation will be cut to ground level prior to the operation. Measures to conserve soil structure insofar as is reasonably practicable during the operation will be incorporated in the methodology. A detailed specification for the operation including watching brief and aftercare would be provided as part of a future planning application.
Replacement tree planting	**Following planning permission:** The removed upper parts of the tree canopy (see *'Translocation of whole tree'*) would be propagated as cuttings and grown on to produce at least 25 vegetative clones of the parent tree. These would be planted at the same location as the translocated tree and at other suitable locations close to the original tree location within the development layout. A detailed specification for the operation including watching brief and aftercare would be provided as part of a future planning application.
Whole tree carcass retention	**Following planning permission:** the bulk of the tree would be relocated in three parts to a suitable receptor site (as per *'Translocation of whole tree'* above). The operation would be designed to utilise the species' characteristic propensity for regeneration and continue to grow as a living tree in the new location. However, if this process were to fail, the result would at least constitute the retention and relocation of the carcass of the tree, with associated soils and replacement planting of propagated cuttings (see *'Translocation of associated soils*' and *'Replacement tree planting*'). A detailed specification for the operation including watching brief and aftercare would be provided as part of a future planning application.

Measure	Strategy
Destructive pruning or veteranisation	**Following planning permission:** 4 suitable candidate trees would be identified within the remaining part of Moore Nature Reserve and a detailed scheme of veteranisation would be proposed in respect of each. The candidate trees would be crack willow by preference, white willow if there are no suitable specimens, and other willow species as a last resort. Destructive pruning techniques would be designed to replicate or accelerate the natural development of niche habitats associated with the delamination and structural failures of crack willow, including: coronet cutting, destructive pulling, induced delamination failure and hazard beam creation. A detailed specification for the operation including watching brief and aftercare would be provided as part of a future planning application.
Artificial ecological enhancement	**Following planning permission:** 4 standing deadwood monoliths would be created using material from crack willow trees that would be removed for development. They would be located within woodland and would include at least two at suitable locations close to the original location of T28 within the development layout. Monoliths would be a minimum of 3m in height above surrounding ground level and coronet cut, or inverted. Bat boxes will be affixed to each monolith according to ecological advice, or to suitable adjacent trees. A detailed specification for the operation including watching brief and aftercare would be provided as part of a future planning application.
Woodland creation	It may be necessary to plant woodland to ensure the effectiveness of one of the other measures. It should be regarded within this strategy as an enabling measure. For example, woodland would be planted in circumstances requiring a new woodland edge to be created with the correct orientation at a receptor site for translocation. The translocation footprint (of T28 and associated soils) may also require immediate planting to shelter the translocated tree in its new location and recreate a woodland margin context. The scope of woodland as compensation cannot therefore be determined until the final detail of the scheme is established and receptor sites identified. Any new woodland creation and aftercare that is particular to or relied upon as part of the compensation strategy would be detailed as part of a future planning application.

7.34 The final schedule of compensation measures should be refined as part of an Arboricultural Impact Assessment in consideration of the detailed layout, and should address any loss or deterioration of veteran trees. The maintenance and long-term sustainability of compensation measures should ideally be secured as part of the wider package of landscape management activities.

Post Development Management

7.35 As much of the site as possible should receive long-term management. Ideally, this would be through a single management plan to allow a single and coherent approach to inform the management of most areas. The objectives for this management plan should be set following consultation with a range of local and national stakeholders and experts.

7.36 Areas of the site that will be open to public access should be surveyed regularly for developing hazards. Trees are dynamic living organisms whose structure is constantly changing; even those in good condition can suffer from damage or stress. There is no set approach or period for tree inspection and the best approach should be determined when the future usage, management and ownership of the site has been determined.

APPENDIX A: Walkover Survey Data Sheets

APPENDIX A: Walkover Survey Data Sheets

Surveyor Tom Popplewell
Survey date 19th March 2018
Site Moore Nature Reserve/Port Warrington/Arpley Meadows
Town Warrington

Ref	Main woody species	Primary Vegetation Descriptor	Secondary Vegetation Descriptor	Maturity	Quality	Description	Works Recommendations
	(Common name)	NFI	NFI	Young, Middle Age, Mature, Ancient, Young to Middle Age, Middle Age to Mature, Young to Mature	Excellent, Good, Fair, Poor		
Compartments							
C1	Black pine	0		Middle Age	Fair	Scattered individual specimen trees; occasional oak; mostly to around 9m in height	
C2	Downy birch; common alder; grey willow	1	13	Young	Good	Young trees that could be coppiced; mostly birch, alder and willow; dense	
C3	Downy birch; common alder; English oak; sycamore	1		Middle Age	Good	Birch dominated with alder, oak and sycamore; some larger oak trees; plantation woodland on railway embankment; less dense at north eastern end	
C4	Hawthorn; grey willow; downy birch	1		Middle Age	Good	Mixed broadleaved plantation woodland with occasional mature hawthorn and willow	
C5	Downy birch; grey willow; elder	1		Middle Age to Mature	Fair	Birch and willow around valve compound; one dead elder	
C6	Hawthorn; common alder; downy birch; elder; sycamore	0		Mature	Good	Hawthorn, alder, birch and elder; intermittent trees, mostly open grown, by footpath; group includes large dead elder; relatively small trees but mature; one larger sycamore	
C7	Sycamore; downy birch	13		Young	Fair	Scrubby trees along a boundary; sparse group	
C8	Downy birch; common alder; English oak; grey willow	1		Middle Age	Good	Wet woodland comprising birch alder and willow; along defunct canal	
C9	Downy birch; grey willow; hawthorn; English oak; crack willow	1		Middle Age to Mature	Good	Row of birch and willow at bank top between canal and higher ground to north; mature hawthorn adjacent to path; oak and willow adjacent to canal; occasional large sycamore; multistemmed willows having failed into water creating good niche habitats; one large oak by bench has been veteranised	
C10	Sycamore; downy birch; common alder; English oak; grey willow	1		Middle Age	Fair	Stands of sycamore, birch, alder, oak and willow; somewhat scrubby and dense	
C11	Hawthorn; English oak; downy birch; black pine	9		Young to Mature	Good	Mixed broadleaved plantation woodland with pine; on banks of pond	
C12	Grey willow	1		Middle Age	Good	Multistemmed and dense willow wet woodland on islands in pond; no access for survey	

Ref	Main woody species	Primary Vegetation Descriptor	Secondary Vegetation Descriptor	Maturity	Quality	Description	Works Recommendations
	(Common name)	NFI	NFI	Young, Middle Age, Mature, Ancient, Young to Middle Age, Middle Age to Mature, Young to Mature	Excellent, Good, Fair, Poor		
C13	Downy birch; English oak; holly; elder; common alder; grey willow; hawthorn	1		Middle Age to Mature	Excellent	High quality oak and birch woodland; significant assemblages of dead wood including aerial and standing dead; complex and diverse with wet areas, excellent structure and understorey; includes willow, holly, elder, alder and hawthorn	
C14	Common alder	13		Young	Fair	Small stand of young and closely spaced alder	
C15	Downy birch; grey willow; hawthorn	13		Young	Fair	Scrubby trees	

APPENDIX A: Walkover Survey Data Sheets

Ref	Main woody species	Primary Vegetation Descriptor	Secondary Vegetation Descriptor	Maturity	Quality	Description	Works Recommendations
	(Common name)	NFI	NFI	Young, Middle Age, Mature, Ancient, Young to Middle Age, Middle Age to Mature, Young to Mature	Excellent, Good, Fair, Poor		
C16	Downy birch; grey willow	13		Young	Fair	Birch dominated young woodland transitioning to willow dominated woodland on wetter ground to east; generally smaller and less diverse than adjacent woodland 13	
C17	Hawthorn; English oak; downy birch; black pine; Scots pine	9		Middle Age	Good	Mixed broadleaved plantation woodland with pine; on banks of pond next to track	
C18	English oak; downy birch	1		Middle Age to Mature	Good	Small woodland compartment with oak and birch canopy	
C19	English oak; downy birch; common alder; sycamore	1		Middle Age to Mature	Good	Woodland on railway embankment; well-spaced	
C20	Downy birch	1		Middle Age to Mature	Good	Birch dominated group of mature trees; well-spaced	
C21	Sycamore	1		Young to Middle Age	Fair	Sycamore dominated; mostly young to middle aged; close spacing	Thin small sycamore by 20%
C22	Downy birch	13	1	Young	Fair	Birch dominated group around small building; screening function; small trees closely spaced	Thin by 20%
C23	Hawthorn; sycamore; downy birch; common alder	0	1	Middle Age to Mature	Good	Small hawthorn, birch and alder on bank of pond in dense and scrubby woodland; larger and mature sycamore trees on higher part of bank adjacent to footpath	
C24	Sycamore; elder; hawthorn; downy birch	0		Middle Age to Mature	Poor	Short row of trees in variable condition; some failures; sycamore dominated with birch, elder, hawthorn; on rubble and made ground	
C25	Downy birch; holly	1		Young to Mature	Good	Birch dominated; mostly young and middle aged trees but wth stands of older and mature trees pre-dating the surrounding plantation or natural regeneration; compartments has the makings of a high quality woodland; heavy bramble; occasional holly	Fell leaning birch adjacent to hide on safety grounds; thin birch 15%; monitor bramble and consider control if it prevents regeneration of trees
C26	Downy birch; grey willow	1		Middle Age	Fair	Birch and willow dominated plantation woodland; still relatively slender and dense; no access	Review following access and consider thinning regimes to improve structure
C27	Common ash; sycamore; downy birch	0	1	Middle Age to Mature	Good	Woodland edge comprising larger trees than woodland to the south (25); mature ash trees present, unusual for the site; sycamore and occasional birch; good sized trees functionally forming part of the woodland but visually distinct	
C28	Downy birch; grey willow	13		Young	Fair	Dense willow and birch plantation on side of pond	
C29	Sycamore	3		Middle Age	Good	Small stand of sycamore dominated coppice	Maintain in a coppice cycle
C30	Sycamore	1		Middle Age to Mature	Good	Sycamore dominated belt of trees on embankment by track	
C31	Downy birch	1		Middle Age	Good	Birch monoculture on low lying wet islands	

Ref	Main woody species	Primary Vegetation Descriptor	Secondary Vegetation Descriptor	Maturity	Quality	Description	Works Recommendations
	(Common name)	NFI	NFI	Young, Middle Age, Mature, Ancient, Young to Middle Age, Middle Age to Mature, Young to Mature	Excellent, Good, Fair, Poor		
C32	Sycamore	1		Middle Age to Mature	Good	Sycamore dominated mature tree cover with thick ivy on stems and ground	
C33	Downy birch; grey willow	1		Young to Middle Age	Good	Small birch and willow dominated belt of trees by water	
C34	Downy birch; English oak; common ash; sycamore; elder	1		Middle Age to Mature	Good	Birch dominated woodland with oak, ash, sycamore and elder; on embankment	
C35	Common alder; downy birch; grey willow	1		Middle Age	Good	Slender planting by water; alder, birch and willow dominated	
C36	English oak; downy birch; grey willow; elder	1		Young to Mature	Excellent	Large compartment of woodland of high quality; oak and birch with willow and elder; woodland classroom; areas of wet woodland with standing water and silt; many branch and stem failures and structural diversity; numerous very large trees with veteran characteristics; high quality woodland and well-used for recreation	
C37	Grey willow; downy birch; sycamore; common alder; English oak	3		Young to Mature	Good	Willow, birch, sycamore, alder and oak; mostly coppiced for conservation; large log piles; some trees not coppiced but too small to be regarded as standards yet	Maintain in a coppice cycle
C38	Common alder	1		Middle Age to Mature	Good	Mixed broadleaved woodland; alder dominated at eastern end; an important part of the local woodland infrastructure forming the opposite side of an area of low density tree cover and glade/clearing to woodland 36	
C39	Grey willow; hawthorn; common alder	8		Middle Age to Mature	Good	Open structure to tree cover, comprising willow, hawthorn and alder around pond and ditches; an important open space within the woodland structure	
C40	Common alder; grey willow	1		Middle Age to Mature	Good	Alder dominated with mature trees around pond and ditches and willow with slender woodland form; forms the eastern edge of a glade/clearing within woodland 39	
C41	Common alder; hawthorn; grey willow, downy birch	1		Young to Mature	Excellent	Basally multistemmed alder dominated wet woodland, with standing water; good structure; forms southern edge of glade/clearing	
C42	English oak; common alder; downy birch; Scots pine; hawthorn	1		Young to Mature	Excellent	Woodland on western edge of glade/clearing; mixed broadleaved with ponds and wet areas; oak dominated; ivy and significant assemblages of dead wood; stands of alder with birch, Scots pine and hawthorn; excellent age structure; very high quality and includes trees with veteran characteristics	
C43	Downy birch and grey willow	1		Middle Age	Good	Trees with an even age class suggesting plantation; woodland form and relatively dense but good trees with emerging woodland structure; birch and willow dominated	
C44	Common alder; English oak; downy birch	1		Young to Mature	Excellent	Alder dominated woodland with oak and birch; very good quality; trees with veteran characteristics	

Ref	Main woody species	Primary Vegetation Descriptor	Secondary Vegetation Descriptor	Maturity	Quality	Description	Works Recommendations
	(Common name)	NFI	NFI	Young, Middle Age, Mature, Ancient, Young to Middle Age, Middle Age to Mature, Young to Mature	Excellent, Good, Fair, Poor		
C45	Gorse; hawthorn	11		Young to Middle Age	Fair	Gorse scrub with some hawthorn	
C46	Downy birch; hawthorn; English oak	0	8	Middle Age to Mature	Good	Scattered mature trees within dog exercise area adjacent to nature reserve car park; good quality specimens connected to adjacent woodland but with grass ground cover	
C47	Downy birch; hazel; field maple; gorse	1		Middle Age	Good	Mixed group containing dead elm trees; plantation developing into young woodland	
C48	Cherry	0	1	Mature	Fair	Short row of cherry trees within vegetation belt; forming part of wider tree cover but distinct because species is not otherwise common	
C49	Common alder; English oak; hawthorn	0	1	Mature	Good	Row of mature alder, oak and hawthorn including some dead; good quality trees adding structural diversity and mature habitat features to wider tree belt	
C50	Hawthorn	0	8	Mature	Good	Cluster of fully mature open grown hawthorn trees around old workings; typical gnarled and twisting form; substantial for species	
C51	Grey willow	1		Young to Middle Age	Fair	Stand of trees within belt along embankment; mostly multistemmed willow	
C52	Blackthorn	11		Young to Middle Age	Fair	Dense thicket at top of embankment	
C53	Sycamore; downy birch; common ash; English oak	1		Middle Age to Mature	Good	Sycamore dominated woodland with birch, ash and oak; on high ground overlooking wet woodland 36 to the north	
C54	Elder; common alder; field maple; downy birch; gorse; English oak; grey willow	1		Young to Mature	Good	Distinct stands of elder and alder within mixed broadleaved woodland; good quality and varied woodland on raised ground and pondside slopes	
C55	Gorse; downy birch; elder; English oak	11	8	Young to Middle Age	Good	Gorse dominated vegetation with occasional trees, and a more concentrated belt on the southern boundary; low density scrub structure with rough grass and open space; very undulating	
C56	Hawthorn; elder; gorse	13	11	Young to Middle Age	Fair	Smaller trees in clearing around hide/pond viewing area	
C57	Downy birch; English oak; common alder; elder; grey willow; hawthorn	1		Young to Mature	Good	Mixed woodland including dense areas of willow adjacent to small pond; providing macrostructure to and delineating adjacent scrub and gorse	
C58	Crack willow	0	1	Middle Age to Mature	Good	Large trees growing from low lying island/bund in pond; tall stems with little low foliage; c.15 individuals up to 25m	
C59	Downy birch; hawthorn; common alder; grey willow; English oak	1		Young to Mature	Good	Trees growing on islands within large pond; western island dominated by birch, central island by hawthorn, and eastern island is mixed broadleaved with frequent alder and willow	

APPENDIX A: Walkover Survey Data Sheets

Ref	Main woody species	Primary Vegetation Descriptor	Secondary Vegetation Descriptor	Maturity	Quality	Description	Works Recommendations
	(Common name)	NFI	NFI	Young, Middle Age, Mature, Ancient, Young to Middle Age, Middle Age to Mature, Young to Mature	Excellent, Good, Fair, Poor		
C60	Downy birch; common alder; grey willow	1	13	Young to Middle Age	Good	Dense birch, alder and willow immediately adjacent to western edge of water and growing within silted up area that is effectively part of the pond; individuallly small trees but a good quality vegetation type that is not substantially represented elsewhere on the site	
C61	Downy birch; common alder; elder; crack willow	1		Young to Mature	Excellent	Birch, alder and elder woodland with huge sprawling crack willow, many with veteran characteristics; dense and relatively inaccessible area; significant assemblages of dead wood and failed stems creating niche habitats; wet areas and good range of fungi noted; high quality linear woodland protected by surrounding tree cover and topography	
C62	Grey willow	1		Mature	Good	Line of willow along northern edge of defunct canal, following wall; trees have been repeatedly cut and layed to form a low and interwoven single feature, in places akin to espalier, hedge or harp regrowth; interesting feature with cultural merit demonstrating history of management	
C63	Hazel; field maple; common ash; hawthorn; grey willow; downy birch	8		Young to Middle Age	Good	Patchy tree cover and scrubby woodland adjacent to ditches and open ground; stands of hazel, field maple, ash, hawthorn, willow and birch in wider area	
C64	Common alder; elder; hawthorn; grey willow; English oak	1		Young to Mature	Good	Mixed low scrub woodland with mature trees; mostly less than 10m in height; relatively dense; similar to adjacent compartment 63 but with occasional mature and gnarled specimens	
C65	Downy birch	1		Middle Age to Mature	Good	Birch trees along canal footpath; well-spaced and attractive trees; some mature and none young	
C66	Common alder; elder; grey willow	1		Middle Age to Mature	Good	Alder dominated along pond edge, also with elder and willow; mostly with upright woodland form	
C67	English oak; common alder	0	1	Mature	Good	Row of mature oak and alder trees by defunct canal; functionally part of surrounding woodland but visually distinct	
C68	Common alder; downy birch; English oak; grey willow	1		Young to Mature	Excellent	Exceptionally good wet woodland; mature canopy of alder; abundant ferns and mosses; standing water and many areas inaccessible; many trees with socket failures, cavities, aerial dead wood and other veteran characteristics; age structure and complexity of mature and high quality woodland; very high value for habitat and amenity	
C69	Downy birch; English oak; holly; elder; grey willow; sycamore; common alder	1		Young to Mature	Good	Birch and oak woodland with holly, elder, willow, sycamore and alder understorey; row of larger mature trees along southern edge including one standing dead	
C70	Grey willow; common alder	13		Young to Middle Age	Fair	Mostly willow; young trees along bank of pond; dense and slender form; occasional larger alder dating earlier than plantation	
C71	English oak	0	1	Mature	Good	Mature oak trees either side of track; good specimens with irregular form; functionally part of surrounding woodland but visually distinct	

APPENDIX A: Walkover Survey Data Sheets

Ref	Main woody species	Primary Vegetation Descriptor	Secondary Vegetation Descriptor	Maturity	Quality	Description	Works Recommendations
	(Common name)	NFI	NFI	Young, Middle Age, Mature, Ancient, Young to Middle Age, Middle Age to Mature, Young to Mature	Excellent, Good, Fair, Poor		
C72	Common alder	3	1	Young to Middle Age	Fair	Small stand of coppiced or naturally multistemmed trees; relatively small; adjacent to very large and fully mature sycamore	Maintain in a coppice cycle; clear litter
C73	Hawthorn; English oak	1	13	Young to Middle Age	Fair	Hawthorn dominated plantation with oak; close spacing preventing emergence of ground flora; no age structure; some litter	Coppice oak, thin surrounding hawthorn to allow light to regrowth; aim for 20% reduction in stocking density overall; clear litter
C74	English oak; downy birch	1		Middle Age to Mature	Good	Mature woodland; oak dominated with birch; drier ground than surrounding woodland 68 and with somewhat poorer understorey and age structure; good quality trees	
C75	Downy birch; grey willow; crack willow; hawthorn; elder	1		Middle Age to Mature	Good	Birch, dominated with willow, hawthorn and elder along canal and footpath; open spacing with path weaving through trees	
C76	Grey willow	1		Middle Age	Fair	Monoculture of slender willow	
C77	English oak; hawthorn; gorse; black pine; grey willow	1		Young to Middle Age	Fair	Mixed species including gorse forming belts either side of vehicular track; functions as a screen and possibly as a habitat corridor but individual trees with no particular merit	
C78	English oak; cherry; hazel; grey willow; hawthorn; gorse; common alder	1		Young to Mature	Good	Diverse species composition; woodland on drier ground and slopes adjacent to woodland 61 and forms a buffer on the southern side of this high quality but narrow feature along with 77; compartment has merit in its own right; relatively inaccessible in places	
C79	Gorse; common alder; grey willow; downy birch	8		Young to Middle Age	Fair	Open rough grassland with occasional stands of small trees, gorse and scrub at a low density overall	
C80	Common alder; grey willow; elder; Scots pine; English oak	9		Young to Middle Age	Fair	Plantation woodland on boundary with stands of smaller willow	
C81	Downy birch; gorse; sycamore; English oak; hawthorn; black pine	9	13	Young to Middle Age	Fair	Birch dominated plantation with gorse and occasional oak, hawthorn, pine and understorey species	
C82	Leyland cypress; cherry; downy birch; thorn; willow	0		Middle Age to Mature	Fair	Planted ornamental trees around building and providing screening	

APPENDIX B: Detailed Tree Survey Methodology

APPENDIX B: SURVEY METHOD

The survey of trees is conducted from ground level only. The nature of the soils on site is not assessed.

Trees are dynamic living organisms with a constantly changing structure; even trees in good condition can suffer from damage or stress. The information recorded is presented as being correct at the time of survey.

The following features of each tree, group of trees or wood may have been recorded in the Arboricultural Survey Data Sheets at Appendix 1.

Species The common name is given. The Latin name may also be given if further clarification is required.

Height Top height of tree recorded in metres.

Stem Diameter For single-stemmed trees the measurement is taken at 1.5 metres above ground level and recorded in millimetres.
For multi-stemmed trees an average all stems measured at 1.5m above ground level is used.
For tree groups a range from minimum to maximum diameters is provided based on measurements taken using one of the aforementioned methods.

No. of Stems A count of stems arising below a height of 1.5 metres.

Crown Spread The N, S, E and W branch spreads are recorded in metres to provide a representative crown shape.

Height of Lowest Branch
Crown clearance above ground level recorded in metres.

Direction of Lowest Branch
The direction of growth of the first significant branch from the point of attachment.

Maturity

Young	Trees that can reasonably be relocated or replaced like for like, without undue cost;
Middle Age	Trees in the established growth stage of their life with the potential to continue increasing in size;
Mature	Trees that have reached their ultimate size, given their location and surroundings;

Condition **Good, Fair, Poor.** An overall assessment of a tree's physiological and structural state in which factors that may increase its susceptibility to the effects of development are taken into account.

Veteran. Trees that are in such a condition as to significantly increase their biological, cultural or aesthetic value. This is characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.

Comments A brief evaluation and description of the tree with comments on form, vitality, health and any significant defects or symptoms of ill-health.

BS 5837 Tree Quality Assessment
The tree quality assessment is based on Table 1 of BS 5837:2012 (See below). Four categories (A, B, C and U) are used to denote tree quality (A= High, B = Moderate, C = Low, U= Unsuitable for retention). Subcategories (1-3) denote the specific function value of the trees and the reasoning behind the allocation of a specific category (the subcategories may be used in combination but do not accumulate collective weight).

Root Protection Area (RPA)
The RPA is allocated to ensure that a sufficient area is left undisturbed during development. It is provided as an area (m^2) and as the radius of a circle (m) typically plotted from the centre of the stem.

The RPA is calculated using a mathematical equation included in BS 5837:2012 (Section 4.6 and Table D.1) and is based on a trees stem diameter. In some cases the RPA may need to be adapted to best reflect the likely area and position of roots required to ensure survival; this may be based on criteria such as the tree's condition, species, crown spread and any barriers to growth. Any alteration must be justifiable but is made at the Arboricultural Consultants discretion.

Recommendations
Recommendations for arboricultural works, etc. are based on the **current** land use, and take into account the tree or group attributes without bias to the proposed development.

Estimated Remaining Contribution
An estimation of the life expectancy as healthy functioning tree. This will be influenced by species and the condition of the tree at the time of survey.

Long	> 40 years
Medium	20 – 40 years
Short	less than 20 years

APPENDIX B: SURVEY METHOD

Table 1 Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.*			See Table 2
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
Category A **Trees of high quality** with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	See Table 2
Category B **Trees of moderate quality** with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	See Table 2
Category C **Trees of low quality** with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	See Table 2

British Standards Institute (2012) *BS5837:2012 Trees in relation to design, demolition and construction – Recommendations.* p.9

NOTES:

All young trees are assessed as quality category ‘C’ but this does not preclude their retention within a development.

For hedges the height, canopy spread and number of stems is recorded but they are not assigned a quality category.

APPENDIX C: Detailed Tree Survey Data Sheets

APPENDIX C: Detailed Tree Survey Data Sheets

Surveyor HE/ML/AB/SR
Date Aug/Sept 2019
Town Warrington
Site Port Warrington/Moore Nature Reserve/Arpley
Dwg Ref D7815.001

Ref	Species	Height	Stem Dia.	No. of stems/ individuals	Crown Spread North	Crown Spread South	Crown Spread East	Crown Spread West	Height of Lowest Branch	Direction of Lowest Branch	Maturity	Condition	Comments on form, condition, health and significant defects	BS5837 Tree Quality Assess.	Radius of RPA guide circle	BS5837 RPA Area	Management Recommendations	Estimated Remaining Contribution	TPO
		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
Trees																			
T1	Crack willow	9.0	513	8.0	8.0	7.0	6.0	7.0	1.0	N	Middle Age	Fair	Dieback in crown to east; multi stemmed at ground level	C,1,2	6.2	118.9		Medium	
T2	Osier willow	10.0	546	3.0	3.0	8.0	8.0	5.0	0.5	S	Middle Age	Fair	Northernmost stem failed at base and dead; otherwise good health and vigour; uneven crown form; small scale deadwood; remaining stem leaning south	B,1,2	6.6	135.0		Long	
T3	Goat willow	8.0	245	6.0	4.0	4.0	6.0	5.0	0.5	N	Middle Age	Good	Lone tree on riverbank; no access, viewed from distance; looks in good health	C,1	2.9	27.1		Long	
T4	Common alder	8.0	310	1.0	1.0	3.5	2.0	2.0	1.0	S	Middle Age	Good	Adjacent to path; unbalanced canopy; adjacent to white poplar and white willow group; minor necrosis of leaves and some defoliation by alder bark beetle	C,1	3.7	43.5		Long	
T5	White willow	10.0	947	3.0	7.0	7.0	7.0	7.0	1.0	NE	Mature	Fair	Large tree on woodland edge; multi-stemmed form with numerous further bifurcations above 1.5m; numerous included unions; some squirrel damage and broken branches; minor dead wood	B,1	11.4	405.7		Medium	
T6	White willow	9.0	673	4.0	7.0	5.0	8.0	6.0	1.0	NW	Mature	Fair	Main union included; squirrel damage to base and lower limbs; dead limb present; low crown form	B,1	8.1	204.7		Medium	
T7	White willow	10.0	998	5.0	8.0	6.0	8.0	7.0	1.0	SW	Middle Age	Good	Larger willow within G64; multistemmed form; included stem unions; good vigour; no significant defects	B,1,2	12.0	450.4		Long	
T8	White willow	12.0	500	1.0	7.0	7.0	5.0	5.0	1.0	N	Mature	Good	Single largest tree in G75; good vigour; assumed to be a single tree; limited access for inspection due to dense vegetation	B,1,2	6.0	113.1		Long	
T9	Goat willow	4.0	285	10.0	2.5	2.5	3.0	3.0	1.0	E	Middle Age	Good	Multistemmed tree from base; adjacent to track	C,3	3.4	36.6		Long	
T10	Italian alder	5.0	125	2.0	1.0	1.0	1.5	1.5	0.0	S	Middle Age	Fair	Lone tree with reduced vigour; large at base with twin stems	C,1	1.5	7.1		Medium	
T11	Goat willow	4.0	234	10.0	2.5	2.5	2.5	2.5	0.0	W	Middle Age	Good	Multistemmed individual adjacent to track; good rounded canopy form	C,1	2.8	24.8		Long	

APPENDIX C: Detailed Tree Survey Data Sheets

Ref	Species	Height	Stem Dia.	No. of stems/ individuals	Crown Spread North	Crown Spread South	Crown Spread East	Crown Spread West	Height of Lowest Branch	Direction of Lowest Branch	Maturity	Condition	Comments on form, condition, health and significant defects	BS5837 Tree Quality Assess.	Radius of RPA guide circle	BS5837 RPA Area	Management Recommendations	Estimated Remaining Contribution	TPO
		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
T12	Goat willow	8.0	379	10.0	6.0	6.0	6.0	6.0	0.5	N	Middle Age	Good	Viewed from road, only partially visible (upper portion/canopy); assumed multistemmed at base due to species and form; estimated dimensions, unable to access area	C,1	4.6	65.1		Long	
T13	Sycamore	13.0	1010	1.0	11.0	11.0	11.0	8.0	2.5	E	Mature	Good	Large stem diameter, mature tree; prominent on western boundary; good health; occluded wounds; minor branch cavities; most unions well formed; lower limb to east with included union	A,1,2	12.1	461.5		Long	
T14	Common alder	4.0	219	2.0	3.0	2.0	1.5	1.0	2.5	N	Middle Age	Poor	Extensive dieback and dead wood on northern stem; large pruning stub to south adjacent to path; southern main stem over path; growing within ditch	C,3	2.6	21.8		Short	
T15	Silver birch	12.0	840	1.0	5.0	8.0	7.0	5.0	3.0	E	Mature	Good	Large, mature prominent tree next to road at western boundary; bifurcate at 2m with well formed union; broad spreading crown with open canopy; occasional broken branches and stubs	A,1,2	10.1	319.2		Medium	
T16	Silver birch	10.0	350	1.0	2.5	3.5	2.5	4.0	1.5	W	Middle Age	Good	Growing out of bank of sunken wetland; leans to south; good form and health	B,1	4.2	55.4		Long	
T17	Crack willow	15.0	906	2.0	5.0	8.0	8.0	5.0	4.0	S	Mature	Good	Notable large tree within W9 to south of path next to wall; typical condition; broken hanging branches; bifurcate at ground level with good union; subordinate stem leaning 30° north east; good vigour	B,1,2	10.9	371.0		Long	
T18	Sycamore	14.0	1096	8.0	7.0	8.5	7.0	9.0	1.5	W	Mature	Good	Multistemmed at base, tight unions, fused stems; large broken hanging branches; overgrown base due to ash regeneration; stems leaning in various directions; minor to moderate defoliation throughout crown; growing on bund between quarry and reserve	B,1	13.2	543.4		Long	

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Ref	Species	Height	Stem Dia.	No. of stems/ individuals	Crown Spread North	Crown Spread South	Crown Spread East	Crown Spread West	Height of Lowest Branch	Direction of Lowest Branch	Maturity	Condition	Comments on form, condition, health and significant defects	BS5837 Tree Quality Assess.	Radius of RPA guide circle	BS5837 RPA Area	Management Recommendations	Estimated Remaining Contribution	TPO
		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
T19	Sycamore	14.0	970	9.0	7.0	8.5	8.5	8.0	0.5	W	Mature	Good	Multistemmed at base with tight and included unions, fusing stems; minor to moderate shade deadwood; growing near bund base; limb occluding into stem to east; spreading balanced crown	B,1	11.6	425.7		Long	
T20	Common alder	10.0	1254	3.0	7.0	5.0	7.0	7.0	0.0	W	Mature	Veteran	Large specimen on small slope adjacent to wet area; large main stem with 2 smaller side stems at base west side; branching to ground level; some leaf defoliation in lower canopy; profusive epicormic growth in places around base and on lower branches; branch stubs from previous failures with shallow decaying cavities; multistemmed at 1.6m; branch stubs fused with stems in places; bird's nest in upper canopy; localised moderate to major dead wood in canopy; minor dead wood throughout; profusive stem burring; Japanese knotweed and Himalayan balsam adjacent to tree	A,1,3	15.1	707.0		Long	
T21	Crack willow	5.0	870	1.0	1.0	1.0	1.0	1.0	1.0	NE	Mature	Veteran	Stem failure at 2m, fallen to south-east; typical failure behaviour with split and torn stem still attached at point of failure; cavities and hollows; vigorous phoenix regeneration	A,1,3	10.4	342.4		Long	

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Ref	Species	Height	Stem Dia.	No. of stems/ individuals	Crown Spread North	Crown Spread South	Crown Spread East	Crown Spread West	Height of Lowest Branch	Direction of Lowest Branch	Maturity	Condition	Comments on form, condition, health and significant defects	BS5837 Tree Quality Assess.	Radius of RPA guide circle	BS5837 RPA Area	Management Recommendations	Estimated Remaining Contribution	TPO
		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
T22	Pedunculate oak	12.0	820	1.0	10.0	9.0	8.0	10.0	2.5	W	Mature	Poor	Large tree adjacent to path and bench; bifurcate at 2.5m, further bifurcation in canopy; occluding cavities evident; cavity on north side of stem has exudate evident above and below; failed stem within eastern canopy; subsiding large branches; phototropic growth of stems due to adjacent tree to north; prolific epicormic growth throughout; moderate dead wood; necrotic patches on foliage; some tip dieback; bat potential assumed in cavities and failures	B,3	9.8	304.2		Medium	
T23	Pedunculate oak	14.0	1165	3.0	10.5	11.0	11.5	9.0	2.0	SW	Mature	Good	Small Ganoderma bracket in buttress on north side and old bracket (possibly also Ganoderma) in buttress on south side, both at base; large spreading tree on edge of canal bank from stone wall; trifurcation at 1.1m; some previously failed dead wood limbs; further bifurcation in canopy; moderate dead wood throughout canopy; bird box on stem; rounded canopy form; overall good health and vigour	A,1	14.0	614.4		Long	
T24	Pedunculate oak	10.0	710	1.0	8.0	7.0	8.0	7.0	1.0	E	Middle Age	Good	Large tree growing in hollow; good domed canopy; broken branches and stubs; major and minor dead wood; some epicormics; no major defects noted	A,1,2	8.5	228.0		Long	
T25	Crack willow	13.0	612	5.0	10.0	6.0	6.0	5.0	0.0	N	Mature	Poor	Two large failed cracked stems: one at base to east resting on ground, one previously upright resting on northern stem weighing this down then also resting on ground; remaining stems tall narrow forms; good health and vigour; growing out to vertical from ditch bank	B,3	7.3	169.6	Reduce stem weighted down to north over path back to fused union with failed stem	Medium	

Ref	Species	Height	Stem Dia.	No. of stems/ individuals	Crown Spread North	Crown Spread South	Crown Spread East	Crown Spread West	Height of Lowest Branch	Direction of Lowest Branch	Maturity	Condition	Comments on form, condition, health and significant defects	BS5837 Tree Quality Assess.	Radius of RPA guide circle	BS5837 RPA Area	Management Recommendations	Estimated Remaining Contribution	TPO
		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
T26	Crack willow	14.0	1129	4.0	7.0	10.0	8.5	7.5	0.5	E	Mature	Veteran	Wide spreading canopy from multi stemmed union near base with long cracked lower stems, two to ground; major localised dead wood from stem over path to south; moderate dead wood throughout lower canopy; upper canopy good vigour; large main stem c. 900mm; ivy on lower stems; good habitat value; cracked stems and cavities where inner stems decayed, likely bat potential	A,3	13.5	576.4		Long	
T27	Sycamore	15.0	813	4.0	6.0	8.0	8.0	6.0	4.0	E	Mature	Good	Large tree next to track; multi-stemmed form with tight but good unions; dense ivy into crown; minor dead wood; good vigour overall and no significant defects	A,1,2	9.8	298.8		Long	
T28	Crack willow	9.0	1400	1.0	10.0	1.5	3.0	2.0	1.0	NW	Mature	Veteran	Large willow with total failure at 2m and significant vigorous phoenix regeneration; hollow main stem; crown heavily biased to north-west; ivy on main stem; fungal fruiting bodies present; large area of canopy cover; waterlogged at base	A,1,3	16.8	707.0		Long	
T29	Common alder	9.0	434	3.0	6.0	4.0	5.0	5.0	3.0	N	Middle Age	Fair	Multi-stemmed tree in area of wet ground, pruning wounds and stubs, minor dead wood in Crown, gnarled and twisted main stem	B,1,3	5.2	85.1		Long	
T30	Pedunculate oak	8.0	320	1.0	4.0	6.0	6.0	5.0	2.5	S	Middle Age	Fair	Broken branch at north canopy; slightly suppressed at north; lower dead branch to south east; branch wounds from squirrel damage; minor epicormics on stem; removed lower branches with wounds occluded; otherwise good health and vigour; memorial tree	B,1,3	3.8	46.3		Long	
T31	Pedunculate oak	9.0	520	1.0	4.0	4.0	5.0	5.0	3.0	S	Middle Age	Fair	Large cavity to north-west side of main stem with hollowing likely; dead wood in crown including some pieces up to 200mm diameter; some minor dieback noted but overall good vigour; waterlogged at base and unable to access	B,1,3	6.2	122.3		Long	

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Ref	Species	Height	Stem Dia.	No. of stems/ individuals	Crown Spread North	Crown Spread South	Crown Spread East	Crown Spread West	Height of Lowest Branch	Direction of Lowest Branch	Maturity	Condition	Comments on form, condition, health and significant defects	BS5837 Tree Quality Assess.	Radius of RPA guide circle	BS5837 RPA Area	Management Recommendations	Estimated Remaining Contribution	TPO
		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
T32	Prunus sp.	7.0	320	1.0	4.0	4.0	5.0	5.0	2.5		Middle Age	Fair	Ornamental specimen tree in inaccessible location within Port Warrington; no access for survey and all dimensions estimated; growing in grass verge	C,1	3.8	46.3		Long	
T33	Common ash	13.0	1100	1.0	10.0	6.0	9.0	5.0	4.0	W	Mature	Poor	Large decay cavity to south; bottle butt type bulging stem at base; large dead lower stems and dieback at ends of branches; fence to north, no access to stem	B,1,2,3	13.2	547.4	Full risk assessment and monitoring of tree annually; tree is over path and likely to decline due to ash dieback	Medium	
T34	Pedunculate oak	12.0	1070	1.0	6.0	7.0	6.0	7.0	2.5	E	Mature	Fair	Large dead decaying branches in lower canopy with likely bat potential; upper canopy in good health; growing on ditch edge with stem lean to east	B,1,3	12.8	517.9		Long	
T35	Crack willow	8.0	937	3.0	12.0	12.0	12.0	6.0	0.0	E	Mature	Veteran	Previously failed/broken large limbs to ground, layered and retreated; excellent health and vigour in new growth from wide spaced branch ends to south and east resting on ground; northern spreading limb in a similar arrangement but this hasn't failed; extensive cracking, hollowing and decay in failed stems	A,3	11.2	396.8		Long	
T36	Turkey oak	16.0	888	3.0	10.0	10.0	8.0	7.0	1.8	N	Mature	Fair	Large specimen within woodland; trifurcate at base with a very tight stem union between the two largest stems; further bifurcation in canopy; dead wood up to 100mm in diameter; some epicormic growth; canopy is a little sparse in places	B,1,2	10.7	356.8		Long	
T37	Sycamore	14.0	880	1.0	10.0	10.0	10.0	10.0	3.5	N	Mature	Good	Cavities in decaying old wounds where branches lost/removed with likely bat potential; excellent canopy form and vigour; multistemmed at c.2m	A,1,3	10.6	350.3		Long	
T38	Pedunculate oak	12.0	650	1.0	8.0	8.0	8.0	8.0	2.0	N	Middle Age	Good	Large spreading oak adjacent path; no major visible defects	A,1	7.8	191.1		Long	

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Ref	Species	Height	Stem Dia.	No. of stems/ individuals	Crown Spread North	Crown Spread South	Crown Spread East	Crown Spread West	Height of Lowest Branch	Direction of Lowest Branch	Maturity	Condition	Comments on form, condition, health and significant defects	BS5837 Tree Quality Assess.	Radius of RPA guide circle	BS5837 RPA Area	Management Recommendations	Estimated Remaining Contribution	TPO
		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
T39	Lawson's cypress	17.0	617	10.0	2.5	2.5	2.5	2.5	0.0	W	Mature	Good	Third party tree; tall multistemmed specimen in prominent position adjacent to Port Warrington, access road and at end of row of poplar and beech; excellent health and vigour	B,1,2	7.4	172.0		Long	
T40	Sycamore	16.0	1020	1.0	5.0	8.0	10.0	10.0	3.0	W	Mature	Good	Large mature specimen between track and woodland footpath on small incline; bifurcate at 2.5m; stem union showing a little necrotic bark on northside and further bifurcation in canopy; some canopy suppression to north due to adjacent trees; minor dead wood; phototropic growth of some smaller limbs; occluded wounds from lower limb removals	A,1,2	12.2	470.7		Long	
T41	Sycamore	14.0	710	1.0	5.0	8.0	8.0	5.0	3.5	E	Middle Age	Poor	Bifurcate tree at 0.5m but has extremely tight union with stems fusing and severely rubbing; fusion is also occurring above where the stems cross again; bark necrosis around union point with decay evident; stem diameter measured as one as unable to get tape through gap; tree leans to east over path; several black bleeds on east side of lower stem; canopy is fairly healthy but tree is structurally poor	C,1	8.5	228.0	Fell	Short	
T42	Sycamore	14.0	1000	1.0	10.0	6.5	7.0	7.0	2.5	W	Mature	Good	Leans slightly to south east; trifurcate at 1.7m and 2m; one tight stem union with a small amount of fusion with adjacent stem; occluded pruning wounds; minor dead wood	A,1,2	12.0	452.4		Long	

Ref	Species	Height	Stem Dia.	No. of stems/ individuals	Crown Spread North	Crown Spread South	Crown Spread East	Crown Spread West	Height of Lowest Branch	Direction of Lowest Branch	Maturity	Condition	Comments on form, condition, health and significant defects	BS5837 Tree Quality Assess.	Radius of RPA guide circle	BS5837 RPA Area	Management Recommendations	Estimated Remaining Contribution	TPO
		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
T43	Silver birch	14.0	570	1.0	4.5	3.0	9.0	2.5	2.5	NE	Mature	Poor	Between track and woodland path; large basal wound on north side at base; epicormic growth throughout canopy; leans to south east parallel to path; dead wood up to 60mm diameter; stem hollowing with decay evident; some occlusion of wounds; stem burring	C,3	6.8	147.0	Reduce tree to a 3m monolith	Short	
T44	Pedunculate oak	15.0	1060	1.0	10.0	14.0	4.0	12.0	1.5	E	Mature	Good	Large prominent tree at entrance to car park with large leaning stem to east from c.1.8m; suppression by trees to west, leading to imbalanced canopy; broken branch with wounded stub to north; minor dead wood throughout crown with slightly larger pieces localised but otherwise no significant defects; excellent health and vigour	A,1,2	12.7	508.3		Long	
T45	Common alder	13.0	806	2.0	7.0	4.0	5.0	5.0	1.0	N	Mature	Veteran	Large decayed cavity with extensive internal decay at base to north; fused twin stems; broken failed leader with broken stem attached to this with decay on both; on edge of ditch; epicormic growth on stems; decaying smaller side branches; reaction wood bulging on ditch side and some stem burring	A,1,3	9.7	294.0		Long	
T46	Downy birch	12.0	1010	1.0	7.5	8.0	12.0	10.0	1.5	W	Mature	Veteran	Large mature specimen with pronounced fluting on stem; decay cavities at lost branches with likely bat potential; large leaning stem to west from c.2m; dieback and large dead stub to east with birch polypore fungal bracket visible; slight thinning of canopy and reduced leaf size; most prominent of pair of mature birch	A,1,3	12.1	461.5		Long	
T47	Hybrid black poplar	18.0	900	1.0	11.0	12.0	10.0	10.0	4.0	N	Mature	Good	Large prominent tree on edge of nature reserve adjacent to wetland area; leaning main stem (to north) bifurcate at c.4m; large twin stems; wide spreading canopy; good health and vigour; no major visible defects; overgrown vegetation around base of stem	A,1,2	10.8	366.4		Long	

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		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
T48	White willow	15.0	1042	4.0	5.0	7.0	8.0	8.0	2.5	W	Mature	Fair	Fallen stem regeneration at western end with tall, large and leaning stems; healthy spreading canopy; hollow and decayed and open sided fallen and twisted stem at west	B,1,3	12.5	490.8		Long	
T49	White willow	20.0	1410	7.0	8.0	12.0	10.0	10.0	2.0	S	Mature	Veteran	Fallen and now hollow and decayed stem which has regenerated along its length with very tall stems; some leaning south creating a large spreading canopy with excellent health and vigour; prominent from elsewhere in the site to the west; growing adjacent wet area; overgrown vegetation surrounding tree	A,1,3	16.9	707.0		Long	
Groups																			
G1	Goat willow, hawthorn, apple, elder, crack willow	2 to 5	50 to 150						0.0		Middle Age	Good	Shrubby trees around roundabout; some Himalayan balsam; overgrown	C,1,2	Refer to Drawing	n/a		Long	
G2	Crack willow, goat willow, silver birch, osier willow	4 to 8	20 to 260						0.0		Young to Middle Age	Fair	Small self seeded group; some broken branches in larger willows.	C,2	Refer to Drawing	n/a		Long	
G3	Goat willow, apple, hawthorn, birch	2 to 5	50 to 100	15.0					0.0		Middle Age	Good	Sporadic small self set trees between road and river	C,2	Refer to Drawing	n/a		Long	
G4	White poplar, pedunculate oak, white willow, hybrid black poplar, common ash, aspen	6 to 17	75 to 350						1.0		Young to Middle Age	Good	Some chlorotic leaves with some necrotic patches; alder with one standing dead stem; tall poplars and willlows with smaller trees beneath	B,2	Refer to Drawing	n/a		Long	
G5	Downy birch, grey willow	2 to 7	75 to 100								Young	Fair	Dense plantation on slope down to side of pond	C,1,2	Refer to Drawing	n/a		Long	
G6	Alder species, common ash, crack willow, goat willow, pedunculate oak	3 to 8	60 to 100						1.0		Young to Middle Age	Fair	Powdery mildew at west adjacent to road; linear group along south of path; heavily overgrown in places; small amount of Himalayan balsam; Alder leaf beetle, minor to moderate defoliation throughout group; mostly multistemmed	C,2	Refer to Drawing	n/a		Long	
G7	Grey willow, elder	6 to 8	50 to 140						0.0		Middle Age	Good	Two self set multistemmed trees adjacent to bridge and river; Himalayan balsam on river bank	C,2	Refer to Drawing	n/a		Long	

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		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G8	Crack willow	9 to 11	150 to 250						0.0		Middle Age	Good	Riverside trees with some landscape value on bank; leaning multistems; good health and vigour; Himalayan balsam; canopies restricting view of stems	B,2	Refer to Drawing	n/a		Long	
G9	Crack willow, elder, hawthorn, apple, goat willow	3.5 to 5	50 to 140						0.0		Young to Middle Age	Good	Group of shrubby self set with sporadic similar trees west of path; Himalayan balsam throughout; includes small apple trees south of path; two open grown trees to south-west of access	C,2	Refer to Drawing	n/a		Long	
G10	Crack willow	7 to 13	100 to 350						0.0		Middle Age	Good	Riverside trees with good health and vigour; on bank; mostly multistemmed; witches broom in canopy; Himalayan balsam throughout	B,2	Refer to Drawing	n/a		Long	
G11	Hybrid black poplar, crack willow, goat willow, aspen, sycamore, silver birch, elder, cherry laurel, hawthorn, willow leaved pear, dogwood	5 to 15	100 to 400						1.0		Middle Age	Good	Mixed sizes; single and multistemmed; cherry laurel understorey; group around compound; good health and vigour; trees slightly smaller and a few topped adjacent to car park and office around dogwood understorey	B,1,2	Refer to Drawing	n/a		Long	
G12	Goat willow, grey willow, downy birch, hazel, common alder, hawthorn	3 to 6	50 to 350						0.0		Young to Middle Age	Good	Large area of self set multistemmed trees; mostly willow; occasional larger individuals	C,2	Refer to Drawing	n/a		Long	
G13	White willow, goat willow, grey willow, elder, crack willow, osier willow, hawthorn	5 to 9	75 to 350						0.0		Young to Middle Age	Good	Very large group of well established trees along western boundary; mainly willow; multistemmed; some failed willow stems	B,2	Refer to Drawing	n/a		Long	
G14	Grey willow, goat willow, osier willow, crack willow	3 to 7	50 to 160						0.0		Young	Good	Scattered smaller trees between tracks; screening to western boundary	C,2	Refer to Drawing	n/a		Long	
G15	Goat willow, elder	3 to 6	50 to 150						0.0		Young to Middle Age	Fair	Sporadic patches of mostly willow, multistemmed form	C,2	Refer to Drawing	n/a		Long	

APPENDIX C: Detailed Tree Survey Data Sheets

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		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G16	Swedish whitebeam	5.0	160 to 230						0.5		Middle Age	Good	Three trees on small amenity grass mound; planted specimens on bank at base; minor leaf necrosis; minor strimmer wounds	B,1,2	Refer to Drawing	n/a		Long	
G17	Lombardy poplar, hybrid black poplar, balsam poplar, goat willow, rowan, birch, alder	5 to 17	75 to 400								Middle Age	Good	Tall Lombardy poplar with typical form; balsam and hybrid black poplars dominate with smaller goat willow and occasional birch, alder and rowan; minor regeneration beneath poplars; single and multistemmed form; some stakes left at bases from planting; occasional leaning stems; Himalayan balsam at west/riverside edge; some lower canopy and shade deadwood; south-westernmost poplar adjacent to road has dense lower canopy; rough desire line through group	B,1,2	Refer to Drawing	n/a		Long	
G18	Goat willow, common ash, sycamore, common alder, pedunculate oak, aspen, silver birch, elder, dogwood	7 to 10	100 to 400						0.0		Middle Age	Fair	Large area of plantation; mixed species; ash dieback symptoms, unknown cause of dieback in sycamore; limited undersorey; close spacing	B,2	Refer to Drawing	n/a		Long	
G19	White willow, grey willow, goat willow, osier willow, dogwood	3 to 6	75 to 350	20.0					0.0		Middle Age	Fair	Dispersed group of mainly willow; some multistemmed form	C,2	Refer to Drawing	n/a		Long	
G20	Goat willow, hybrid black poplar, rowan, crack willow, pedunculate oak, aspen	5 to 8	50 to 220						0.0		Middle Age	Good	Roadside group of mostly self-set trees; poplars may be planted; dense close growing stems with young poplar regeneration beneath; single and multistemmed; path through near road to discharge point	C,2	Refer to Drawing	n/a		Long	
G21	Goat willow, crack willow, alder, elder	4 to 7	50 to 200						0.0		Middle Age	Good	Sporadic individual and clusters of small self-set trees along boundary at compound fence line; mostly multistemmed; fair to good health; Himalayan balsam	C,2	Refer to Drawing	n/a		Long	

Ref	Species	Height	Stem Dia.	No. of stems/ individuals	Crown Spread North	Crown Spread South	Crown Spread East	Crown Spread West	Height of Lowest Branch	Direction of Lowest Branch	Maturity	Condition	Comments on form, condition, health and significant defects	BS5837 Tree Quality Assess.	Radius of RPA guide circle	BS5837 RPA Area	Management Recommendations	Estimated Remaining Contribution	TPO
		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G22	Crack willow, goat willow	5 to 7	210 to 300	3.0					0.0		Middle Age	Fair	Small group of trees next to track; multistemmed form; good vigour; poor structure, narrow range of sizes; pruning to clear track	C,2	Refer to Drawing	n/a		Long	
G23	Goat willow, Italian alder, downy birch, aspen, cotoneaster, crack willow, willow sp., holly, common hazel, false acacia, aspen	4.5 to 8	50 to 320						1.0		Middle Age	Fair	Dense regeneration understorey in places; Japanese knotweed; lower stem wounds and pruning stubs; dense close growing stems; Himalayan balsam	B,2	Refer to Drawing	n/a		Long	
G24	Goat willow	3.5 to 4	10 to 100						0.0		Middle Age	Good	Two self-set trees adjacent to waterlogged newly planted area on riverside edge; typical rounded multistemmed form and typical vigour for species	C,3	Refer to Drawing	n/a		Long	
G25	Goat willow, alder	3.5 to 7	75 to 250						0.0		Middle Age	Good	Sporadic self-set trees either side of path; good health and vigour; multistemmed form; three alder trees at south-east with minor to moderate defoliation, adjacent to multistemmed goat willow	C,2	Refer to Drawing	n/a		Long	
G26	White poplar, pedunculate oak, alder, sweet chestnut, field maple, cotoneaster	6 to 14	75 to 450						1.0		Middle Age	Good	Pedunculate oak and alder with necrotic spots on foliage; tall mostly single stemmed trees; some multistemmed trees; dominated by white poplar and white willow along north of track	B,1,2	Refer to Drawing	n/a		Long	
G27	Osier willow	2 to 6	50 to								Young to Middle Age	Fair	Scattered willows within area of open vegetation to south of river; c.20% tree canopy cover within area; mainly multistemmed form and self-set trees	C,2	Refer to Drawing	n/a		Long	
G28	Goat willow, Silver birch, grey willow, hawthorn, crack willow	3 to 12	50 to 400						0.0		Middle Age	Good	Dense group of mostly multistemmed trees on heavily overgrown ground associated with ditch network; occasional dead trees	B,2	Refer to Drawing	n/a		Long	
G29	Goat willow	3 to 5	50 to 150						0.0		Middle Age	Good	Sporadic small self set trees within heavily overgrown open field; generally multistemmed form	C,3	Refer to Drawing	n/a		Long	
G30	Goat willow, hawthorn	3 to 6.5	50 to 100						0.0		Middle Age	Good	Linear feature with gap in middle; multistemmed form; in overgrown field	C,2	Refer to Drawing	n/a		Long	

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		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G31	Goat willow, white willow	4 to 16	100 to 500						0.0		Middle Age	Good	Linear group of mostly goat willow and some white willow; two larger white willow; mostly multistemmed; in overgrown field; typical form; good health and vigour	B,1,2	Refer to Drawing	n/a		Long	
G32	Goat willow, elder, white willow	4 to 8	50 to 300						0.0		Middle Age	Good	Linear group of mostly goat willow; one tall white willow in overgrown field along ditch	B,2	Refer to Drawing	n/a		Long	
G33	Goat willow, elder, crack willow, pedunculate oak	4 to 6.5	50 to 150	10.0					0.0		Middle Age	Good	Small group of self-set trees in overgrown field between linear groups	C,2	Refer to Drawing	n/a		Long	
G34	Goat willow, white willow, common hawthorn, crack willow, elder	4 to 14	50 to 300						0.0		Middle Age	Good	Linear group of mostly goat willow with two tall white willow; some leaf chlorosis of goat willow; mostly typical multistemmed form; northern white willow with leaning/collapsed stems	B,2	Refer to Drawing	n/a		Long	
G35	Goat willow, elder, downy birch	4 to 8.5	50 to 250						0.0		Middle Age to Mature	Good	Meandering linear roadside feature at western edge of overgrown area; typical multistemmed rounded form of goat willow; some large at base and more mature	B,2	Refer to Drawing	n/a		Long	
G36	Elder, grey willow	4 to 8	75 to 200						0.0		Middle Age	Fair	Dispersed group with dense low hanging crowns; mainly multistemmed elder with occasional larger willows	C,2	Refer to Drawing	n/a		Long	
G37	Goat willow, grey willow, silver birch, hawthorn	3 to 7	50 to 140						0.0		Young to Middle Age	Good	Linear group south of river bank; mostly willow; some closely spaced, others dispersed; generally multistemmed form; good health	C,2	Refer to Drawing	n/a		Long	
G38	Goat willow, grey willow, osier willow, hawthorn	3 to 9	75 to 360						0.0		Young to Middle Age	Good	Dense group of larger willows on southern river bank; some multistemmed form; congested crowns; good vigour	C,2	Refer to Drawing	n/a		Long	
G39	Grey willow, goat willow, elder, silver birch	4 to 7	50 to 250						0.0		Young to Middle Age	Fair	Large open area of vegetation with dispersed tree cover; mainly willow; scrubby, multistemmed form; self seeded regeneration	C,2	Refer to Drawing	n/a		Long	
G40	Goat willow, grey willow, white willow	6 to 10	50 to 350						0.0		Young to Middle Age	Fair	Linear group of mixed willows to north of drainage ditch; unable to access are, limited inspection; multistemmed form, typical for species; numerous dead branches; squirrel damage	C,2	Refer to Drawing	n/a		Long	

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		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G41	Grey willow, goat willow, elder, common ash, pedunculate oak	5 to 9	75 to 220						1.0		Young to Middle Age	Fair	Linear group north of W1; large diameter pipe parallel to southern boundary; ash dieback symptoms; dieback in willows; oak powdery mildew throughout; some multistemmed form	C,2	Refer to Drawing	n/a		Long	
G42	Goat willow, crack willow	4 to 8	50 to 200						0.0		Middle Age	Good	Self set multistemmed form; close growing throughout ditch and within overgrown field	C,2	Refer to Drawing	n/a		Long	
G43	White willow	7 to 11	110 to 410	12.0					0.0		Mixed Age	Good	Dispersed willows within open area; good vigour; multi multistemmed form; no significant defects	B,1,2	Refer to Drawing	n/a		Long	
G44	Elder, goat willow, silver birch, common hawthorn	4 to 5.5	50 to 100						0.0		Young to Middle Age	Good	Sporadic self-set individual and clustered trees; typical rounded multistemmed form for species; within overgrown field	C,3	Refer to Drawing	n/a		Long	
G45	White willow, goat willow, grey willow, crack willow, downy birch	5 to 14	100 to 300						0.0		Middle Age	Good	Himalayan balsam; small group of wetland habitat; close growing willow of different species; around pond	B,2	Refer to Drawing	n/a		Long	
G46	Goat willow, grey willow, white willow	5 to 7	120 to 250						0.0		Middle Age	Good	Defined linear feature; multistemmed form; dense cohesive crowns; no apparent defects	C,2	Refer to Drawing	n/a		Long	
G47	Grey willow, white willow, goat willow, hawthorn	3 to 8	100 to 280						0.0		Middle Age	Fair	Dispersed trees on slope; dense low crowns; multistemmed form	C,2	Refer to Drawing	n/a		Long	
G48	White willow, grey willow	5 to 7	120 to 180	3.0					0.0		Middle Age	Good	Small group of mixed willows next to track; dense low crowns; typical multistemmed form	C,2	Refer to Drawing	n/a		Long	
G49	Crack willow, white willow, grey willow	3 to 15	50 to 250						0.0		Young to Middle Age	Good	Himalayan balsam; large group of wetland habitat; close growing willow of different species; good height structure; around pond; dead stems within on south-western section between pond and road	B,2	Refer to Drawing	n/a		Long	
G50	Grey willow, crack willow, osier willow, goat willow	4 to 8	75 to 410						0.0		Middle Age	Fair	Linear group at bottom of steep bank; largely multistemmed; track and pipe within group; minor dead wood throughout	C,2	Refer to Drawing	n/a		Long	

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		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G51	Goat willow, pedunculate oak, rowan, grey willow, elder	3 to 6	50 to 200						0.0		Young to Middle Age	Fair	Small linear group of young multistemmed trees at foot of steep bank	C,2	Refer to Drawing	n/a		Long	
G52	Goat willow, white willow, downy birch	3 to 9	50 to 200						0.0		Middle Age	Good	Large densely populated group, mostly of goat willow with crack willow and occasional white willow; goat willow with typical rounded form an mostly multistemmed; trees in overgrown field/wet area; one multistemmed downy birch one multistemmed goat willow with tight, fusing and included unions and associated rubbing wounds adjacent to track at south; hung up broken stems	B,2	Refer to Drawing	n/a		Long	
G53	Goat willow, crack willow	3 to 8	50 to 200						0.0		Middle Age	Good	Group mostly of densely growing goat willow with crack willow; mostly multistemmed with rounded form; in wetland overgrown field adjacent to quarry track	C,2	Refer to Drawing	n/a		Long	
G54	Grey willow, osier willow, goat willow, elder	3 to 7	75 to 150						0.0		Young to Middle Age	Good	Scattered trees within open area of capped landfill; dense low crowns; typical multistemmed forms	C,2	Refer to Drawing	n/a		Long	
G55	White willow, goat willow	4 to 12	50 to 300	15.0					0.0		Middle Age	Good	Short linear dense group of white willow and goat willow with some outlying smaller individuals; typical rounded multistemmed form on goat willow with one taller white willow	B,1,2	Refer to Drawing	n/a		Long	
G56	Grey willow	2 to 5	50 to 120						0.0		Young	Good	Scattered small willows; dense crowns and multistemmed forms	C,2	Refer to Drawing	n/a		Long	
G57	White willow, goat willow, downy birch, crack willow	3 to 9	50 to 200						0.0		Young to Middle Age	Good	Sprawling group, mostly of white willow with area of goat willow at east and patches of crack willow and goat willow throughout; occasional collapsing stems and failed limbs; Himalayan balsam in area; between ponds, overgrown field and quarry access tracks	B,2	Refer to Drawing	n/a		Long	
G58	Goat willow	2.5 to 4.5	50 to 120	7.0					0.0		Middle Age	Good	Individuals between larger groups	C,3	Refer to Drawing	n/a		Long	

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		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G59	Goat willow	3 to 7	50 to 150						0.0		Middle Age	Good	Linear group of dense multistemmed trees with rounded form; in overgrown field	C,2	Refer to Drawing	n/a		Long	
G60	Crack willow	4 to 13	50 to 430						0.0		Middle Age	Fair	Linear group adjacent to quarry perimeter track at west; densely populated with both single an multistemmed trees; somw trees with narrow woodland form; some collapsing stems and failing limbs throughout; smaller trees at east; mixed height structure along length with smaller to tall specimens throughout; landscape and screening value	B,2	Refer to Drawing	n/a		Long	
G61	Grey willow, goat willow, osier willow, elder, silver birch	3 to 7	75 to 150						0.0		Young to Middle Age	Good	Scattered small trees; dense crowns; mainly multistemmed form; typical for species	C,2	Refer to Drawing	n/a		Long	
G62	Silver birch, hawthorn, rowan, pedunculate oak, grey willow, wild cherry	2 to 6	50 to 100						0.0		Young	Good	Small trees in plantation; good vigour; some minor damage to branches	C,2	Refer to Drawing	n/a		Long	
G63	Goat willow	4 to 9	50 to 200						0.0		Middle Age	Fair	Linear group with trees removed; gap between one western tree and remainder to east; multistemmed form; previously typical rounded form for species but with some stems removed	C,2	Refer to Drawing	n/a		Long	
G64	Grey willow, pedunculate oak, rowan, hawthorn, wild cherry, goat willow, silver birch	2 to 8	75 to 250						0.0		Young to Middle Age	Good	Scattered self-set trees and small plantation; some well established; multistemmed form	C,2	Refer to Drawing	n/a		Long	
G65	White willow, goat willow, grey willow, downy birch	2 to 6	75 to 150								Young to Middle Age	Fair	Area of regeneration along ditch lines; many below 75mm in diameter; at east end of quarry	C,3	Refer to Drawing	n/a		Long	
G66	Goat willow, sycamore	3 to 7	50 to 140	13.0					0.0		Young to Middle Age	Good	Sporadic individuals along bund at eastern edge of quarry	C,3	Refer to Drawing	n/a		Long	

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		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G67	Common hawthorn, sycamore, elder	3 to 10	50 to 400	15.0					0.0		Middle Age	Fair	Smaller elder and hawthorn to east; hawthorn in fair condition; on steep bund on boundary between nature reserve and quarry; Himalayan balsam on bund; some smaller sycamore within nature reserve	C,2	Refer to Drawing	n/a		Long	
G68	Downy birch, rowan, sycamore, elder, common alder, goat willow, pedunculate oak	3 to 10	100 to 250						1.0		Middle Age	Good	Pedunculate oak with some powdery mildew; multistemmed willows in group, some with collapsing stems and limbs but group overall in good condition; planted linear group along top of bund on boundary between quarry and nature reserve; some remaining stakes and loose open ties; moderate spread of Himalayan balsam	B,1,2	Refer to Drawing	n/a		Long	
G69	White willow, goat willow, crack willow, elder, buddleia	2.5 to 11	50 to 200	20.0					0.0		Middle Age	Good	Groups of willow varying height structure; mostly multistemmed with typical form for the species; patches of buddleia on edge of quarry at west	C,2	Refer to Drawing	n/a		Long	
G70	Goat willow, crack willow	3 to 6.5	50 to 130	4.0					0.0		Young to Middle Age	Good	A few multistemmed trees with rounded form; adjacent to road and tank	C,2,3	Refer to Drawing	n/a		Long	
G71	White willow, goat willow, balsam poplar	4 to 13	50 to 350						0.0		Middle Age	Good	Screening group around boundary of compound of waterworks; dieback in some white will canopies	B,1,2	Refer to Drawing	n/a		Long	
G72	Goat willow, dogwood	3 to 5	50 to 75	15.0					0.0		Young to Middle Age	Fair	Multistemmed form; no significant defects	C,2	Refer to Drawing	n/a		Long	
G73	Goat willow, grey willow , hawthorn, elder, dogwood	3 to 6	50 to 175						0.0		Middle Age	Good	Disparate groups, mostly of willow to south of W1; dense cohesive canopies; in good overall health, although some with reduced vitality; multistemmed form; no significant defects	C,2	Refer to Drawing	n/a		Long	
G74	Grey willow, osier willow, goat willow, dogwood	4 to 6.5	75 to 180						0.0		Middle Age	Good	Small linear group of willows adjacent to track; multistemmed form; good vigour	C,2	Refer to Drawing	n/a		Long	
G75	White willow, osier willow, grey willow	3 to 10	120 to 300	15.0					0.0		Middle Age	Good	Small group of willows within open area of vegetation; multistemmed form; good vigour; limited access for inspection due to density of vegetation	C,2	Refer to Drawing	n/a		Long	

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		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G76	White willow, goat willow	6 to 9	75 to 300	10.0					0.0		Middle Age	Fair	Small group, mostly of white willow; multistemmed form; some stem failures and fallen deadwood; some trees with possible subsiding stems; good vigour	B,1,2	Refer to Drawing	n/a		Long	
G77	Goat willow, Italian alder, white willow, pedunculate oak, downy birch	4 to 13	100 to 400						0.0		Middle Age	Good	Group of mixed broadleaves; mostly single stemmed but with some multistemmed goat willow; on sloping ground to north of nature reserve; Japanese knotweed to south between small goat willow and group; brambles and fencing at perimeter within canopies of trees on edge	B,1,2	Refer to Drawing	n/a		Long	
G78	Goat willow, grey willow, elder, osier willow, white willow	3 to 8	75 to 220						0.0		Young to Middle Age	Good	Scattered trees along track and within area of open ground; dense crowns and multistemmed form	C,2	Refer to Drawing	n/a		Long	
G79	White willow, sycamore, downy birch, purging buckthorn, common alder	6 to 10	100 to 250	20.0					0.0		Middle Age	Good	Purging buckthorn understorey at south; common alder at south with reduced vigour, leaf necrosis and dieback; small mixed broadleafed group of close growing single and multistemmed trees; failing willow stems within	B,2	Refer to Drawing	n/a		Long	
G80	Grey willow, osier willow, goat willow	3 to 7	75 to 150						0.0		Young to Middle Age	Good	Clustered trees in open area; dense low hanging crowns; multistemmed form	C,2	Refer to Drawing	n/a		Long	
G81	Grey willow, goat willow, purple plum	3 to 6	75 to 120	10.0					0.0		Middle Age	Good	Scattered trees along edge of track; dense low hanging crowns; typical multistemmed form	C,2	Refer to Drawing	n/a		Long	
G82	Goat willow	5 to 6.5	50 to 100	2.0					0.0		Middle Age	Good	Two self-set multistemmed trees with tight unions adjacent to track	C,3	Refer to Drawing	n/a		Long	
G83	Common alder	2 to 6.5	20 to 140	6.0					0.0		Young to Middle Age	Fair	Small group of close growing trees with regen and one collapsed stem by track; moderate defoliation	C,3	Refer to Drawing	n/a		Medium	
G84	Silver birch	8 to 9.5	150 to 500	3.0					0.0		Middle Age	Good	Three trees growing close together; end weighted limb failing on western tree	B,1	Refer to Drawing	n/a		Long	

Ref	Species	Height	Stem Dia.	No. of stems/ individuals	Crown Spread North	Crown Spread South	Crown Spread East	Crown Spread West	Height of Lowest Branch	Direction of Lowest Branch	Maturity	Condition	Comments on form, condition, health and significant defects	BS5837 Tree Quality Assess.	Radius of RPA guide circle	BS5837 RPA Area	Management Recommendations	Estimated Remaining Contribution	TPO
		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G85	Grey willow, crack willow, goat willow, osier willow, hawthorn, common ash, pedunculate oak	5 to 10	80 to 300						0.0		Middle Age	Fair	Linear group along southern boundary of landfill area; dense low hanging crowns; habitat connectivity; ash dieback observed; generally good vigour	B,3	Refer to Drawing	n/a		Long	
G86	Goat willow, silver birch, aspen, crack willow	4 to 9	20 to 150	10.0					0.0		Young to Middle Age	Good	Lone goat willow at east with extensive squirrel/bark damage; individuals and clusters along track of single and multistemmed trees; one tall sparse aspen	C,2	Refer to Drawing	n/a		Long	
G87	Goat willow, sycamore	4.5 to 7	60 to 100	6.0					0.0		Middle Age	Good	Adjacent to track; individual multistemmed trees; chlorotic foliage on sycamore	C,3	Refer to Drawing	n/a		Long	
G88	Grey willow, goat willow, crack willow	5 to 10	75 to 290						0.0		Middle Age	Fair	Linear group of willows; many multistemmed; broken branches and some limb failures; habitat connectivity	C,2	Refer to Drawing	n/a		Long	
G89	Goat willow, crack willow, silver birch	4 to 6.5	50 to 130	12.0					0.0		Middle Age	Good	Multistemmed forms except for single stem birch; adjacent to track on bank; failed stem on westernmost tree	C,2	Refer to Drawing	n/a		Long	
G90	Grey willow	3 to 5	50 to 100	5.0					0.0		Young to Middle Age	Good	Dispersed outlying willows to southern boundary of landfill site; multistemmed form; good vigour	C,2	Refer to Drawing	n/a		Long	
G91	Goat willow, white willow	3 to 5.5	50 to 100	7.0					0.0		Middle Age	Good	Row of willows in wet depression; good health and vigour	C,3	Refer to Drawing	n/a		Long	
G92	Grey willow	3 to 5	40 to 75	10.0					0.0		Young	Good	Small linear group of willow adjacent to track; multistemmed form; good health	C,2	Refer to Drawing	n/a		Long	
G93	Silver birch	1 to 4	20 to 75						0.0		Young	Good	Numerous dispersed birch in open area of non-woody vegetation; less than 75mm stem diameter therefore outside scope of BS5837 but will develop relatively quickly and increase in size; recorded for completeness	C,3	Refer to Drawing	n/a		Long	
G94	White willow	5.5 to 6	50 to 100	2.0					0.0		Middle Age	Good	Two individual trees on slope; multistemmed form	C,1	Refer to Drawing	n/a		Long	
G95	Common ash, silver birch, goat willow, pedunculate oak	6 to 12	75 to 250						0.0		Middle Age	Fair	Dieback of ash evident in upper canopies of some trees; group of broad leaved trees adjacent to woodland	B,1,2	Refer to Drawing	n/a		Medium	

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		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G96	Goat willow, downy birch	3 to 5	75 to 120	4.0							Young to Middle Age	Fair	Unable to view all of area; aerial photographs suggest clusters and individual trees; generally small, with some some below 75mm stem diameter	C,3	Refer to Drawing	n/a		Long	
G97	Goat willow, crack willow	8 to 9.5	50 to 180	5.0					0.0		Middle Age	Good	Three multistemmed goat willow and smaller crack willow adjacent to path at junction with road; crack willow leaning over path; included unions and typical rounded form on goat willow; good health and vigour; overgrown vegetation beneath	B,2	Refer to Drawing	n/a	Cut back crack willow stems overhanging path	Long	
G98	Goat willow, crack will, silver birch, common alder	3 to 11	10 to 180	8.0					0.0		Young to Middle Age	Good	Alder with major defoliation; linear group with gaps of small scrubby multistemmed crack willow and goat willow; one large twin-stemmed silver birch; good health and vigour	C,1,3	Refer to Drawing	n/a		Long	
G99	Goat willow, crack willow, silver birch, hybrid black poplar, elder, hawthorn	3 to 9.5	50 to 200						0.0		Middle Age	Good	Mostly multistemmed form with occasional single stemmed trees; between two paths where they converge; overgrown understorey; dead elder at south adjacent to path	C,1,2	Refer to Drawing	n/a		Long	
G100	Crack willow	7 to 15	100 to 300	10.0					0.5		Middle Age	Good	Tall narrow form with some leaning stems; multistemmed and single stemmed form; no major visible defects noted	B,1,2	Refer to Drawing	n/a		Long	
G101	Common hawthorn, elder	3 to 5	50 to 150	2.0					0.5		Middle Age	Good	Three trees adjacent to path; multistemmed form with rubbing stems; canopies partially overgrown with bramble and bindweed	C,1	Refer to Drawing	n/a		Long	
G102	Common hawthorn, elder	2.5 to 7	50 to 150	10.0					0.0		Middle Age	Fair	Adjacent to path on either side; clumps of hawthorn; multistemmed form; overgrown canopies; standing dead stem and branches on hawthorn and elder in centre of group; overgrown understorey of bramble	C,2	Refer to Drawing	n/a		Long	
G103	Grey willow, elder	2 to 5	75 to 500						0.0		Middle Age	Fair	Narrow linear group along northern boundary; numerous failed stems with vigorous regrowth; occasional larger trees; standing dead	C,2	Refer to Drawing	n/a		Long	
G104	Grey willow, elder	3 to 6	50 to 250						0.0		Middle Age	Fair	Linear group of multistemmed willow to north of footpath; appears historically to have been a layed hedge; stem failures; typical for species	C,2,3	Refer to Drawing	n/a		Long	

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		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G105	Common hawthorn, goat willow	4 to 6.5	10 to 150	5.0					0.5		Middle Age	Fair	Much of group suppressed by large sycamore; multistemmed form; base of trees to east overgrown; standing dead stem	C,2	Refer to Drawing	n/a		Long	
G106	Goat willow, crack willow, silver birch, alder, common hawthorn	2 to 9	50 to 200						0.0		Middle Age	Good	Large linear group between path and waterbody; multistemmed form; densely populated group	C,2	Refer to Drawing	n/a		Long	
G107	Goat willow, crack willow, common alder, silver birch	4 to 8.5	50 to 340						0.0		Middle Age	Good	Group surrounding sunken area of wetland and along adjacent path; multistemmed form; leaning stem; likely bat potential, crack with cavity observed in goat willow stem adjacent to path	B,2,3	Refer to Drawing	n/a		Long	
G108	Common hazel, downy birch, hawthorn	5 to 7	75 to 200						0.0		Middle Age	Good	Third party group of trees to north of boundary; appear to be in good health; no access, for survey; limited inspection from within boundary	B,2	Refer to Drawing	n/a		Long	
G109	Common hazel, pedunculate oak, grey willow, downy birch	4 to 6	75 to 200						0.0		Middle Age	Good	Third party group north of boundary; limited access for survey; inspected from within boundary; good health; dense, low canopies; multistemmed form	B,2	Refer to Drawing	n/a		Long	
G110	Silver birch, pedunculate oak, common hawthorn	5 to 10	75 to 425						0.5		Middle Age	Good	Small group on higher ground within wet woodland; predominantly oak and birch with sporadic large hawthorn; tall narrow form; closely spaced; good health; some dieback in upper crowns	B,2,3	Refer to Drawing	n/a		Long	
G111	Common hawthorn	7 to 8	220 to 450	2.0					1.0		Mature	Good	Two closely spaced large hawthorn; good example of species at maturity; multistemmed form; fusing stems with acute unions; good health; small diameter deadwood throughout; typical dense, congested crowns; no significant defects	B,1	Refer to Drawing	n/a		Long	
G112	Pedunculate oak, silver birch, hawthorn, Turkey oak, gorse, blackthorn	3 to 9	75 to 475						0.5		Middle Age	Good	Linear group of larger trees at the top of steep bank and adjacent to path; some multistemmed form; minor dead wood throughout; dense understorey in places, mainly of gorse	B,1,2	Refer to Drawing	n/a		Long	

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		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G113	Silver birch, downy birch, gorse, hawthorn	3 to 8	75 to 120						0.5		Young to Middle Age	Good	Large area of open canopy with dispersed trees to centre and denser cover to side embankments; mostly small stem diameter birch and gorse; Himalayan balsam; generally with good vigour	C,2	Refer to Drawing	n/a		Long	
G114	Goat willow, Turkey oak, pedunculate oak, elder, silver birch, hawthorn, sycamore	3 to 16	50 to 720						0.5		Middle Age to Mature	Good	Bank to south of path; group is a linear pedestrian avenue of good landscape character and value; some failed and dead stems of hawthorn; mostly multistemmed form with some single stem; leaning stems; occasional failed stems and limbs; Himalayan balsam within group; overgrown in places; some fusing sycamore stems; some larger trees within group	A,2,3	Refer to Drawing	n/a		Long	
G115	Goat willow, silver birch, common alder	3 to 11	50 to 200						0.0		Young to Middle Age	Good	Some larger goat willow at northwestern corner; mostly planted trees adjacent to fence and access track; Himalayan balsam in places; densely populated group with many small diameter stems; mostly single stem form	C,2	Refer to Drawing	n/a		Long	
G116	White willow, elder, dogwood, common alder, pedunculate oak, hawthorn, common alder	2.5 to 9	50 to 420						0.0		Middle Age	Good	Small alders at narrow centre of group have minor to moderate defoliation; linear group along boundary fence adjacent to access track; some larger trees within; overgrown in places; some multistemmed form	C,1,2	Refer to Drawing	n/a		Long	
G117	Goat willow, silver birch, grey alder, common alder, pedunculate oak	2 to 10	50 to 250						0.0		Young to Middle Age	Fair	Young silver birch and grey alder have necrotic foliage; densely populated group around edge of waterbody; overgrown in places; one larger common alder has chlorotic foliage	C,2	Refer to Drawing	n/a		Long	
G118	Field maple, hawthorn, pedunculate oak, cotoneaster, blackthorn, sycamore, guelder rose, gorse	3 to 6	75 to 220						0.0		Middle Age	Fair	Linear group along road; dieback noted in sycamore; dense undergrowth; habitat connectivity; some multistemmed form	C,2	Refer to Drawing	n/a		Long	

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		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G119	Scots pine	2.5 to 7	100 to 250						0.5		Middle Age	Good	Scattered individuals within open field/wildlife area; no public access; adjacent to pond to northeast; planted trees	B,1,2	Refer to Drawing	n/a		Long	
G120	Purging buckthorn, English elm, blackthorn, grey willow, silver birch, hawthorn	4 to 8	75 to 280						1.0		Middle Age	Fair	Small linear group at top of steep bank; several dead elms; some multistemmed form	C,2	Refer to Drawing	n/a		Long	
G121	Downy birch, pedunculate oak, Turkey oak, goat willow, sycamore	3 to 16	75 to 400						0.0		Middle Age	Fair	Large patch of Japanese knotweed at west extent of group; linear group on side of railway bund; off-site group with limited access for survey; closely spaced; located on south of path adjacent railway; tall narrow birch; leaning stems; Himalayan balsam adjacent to path; occasional individual oaks (pedunculate and Turkey); also goat willow and sycamore	B,2	Refer to Drawing	n/a		Long	
G122	Bird cherry, common hawthorn, hazel, sycamore, field maple, silver birch	4 to 8	75 to 300						0.5		Middle Age	Fair	Linear group along road; dense in places; cherries consistently showing signs of dieback; some multistemmed form	C,2	Refer to Drawing	n/a		Long	
G123	Goat willow, common alder	3 to 15	50 to 430						2.0		Middle Age	Good	Densely populated and closely spaced group; located to north of path south of pond/wetland; some trees located on island; narrow forms; standing stems; fusing and leaning stems; failed stems and limbs; phototropic growth of some stems within group; stem wounds; alder limb failing over footpath resting on and weighting down adjacent small tree	B,2	Refer to Drawing	n/a		Long	

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		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G124	Goat willow, white willow, alder, rowan, sycamore, aspen, hawthorn, pedunculate oak	4 to 15	50 to 400						1.0		Middle Age	Good	Linear group between path and wetland pond with protruding section at western end leading to raised hide; densely populated and closely spaced multistemmed trees; overgrown vegetation beneath; dead stems at southwest of group; occasional failed limbs; shade dead wood; smaller trees at east with mixed height structure, except where multistemmed goat willows dominate around ponds/wet depressions	B,2	Refer to Drawing	n/a		Long	
G125	Silver birch, grey alder, common alder, common ash, pedunculate oak, grey willow, goat willow, Scots pine, common hawthorn, blackthorn, rowan, damson, osier willow, elder, white willow	3 to 12	75 to 400						0.0		Young to Middle Age	Good	Japanese knotweed; dense group of many species along south side of road and into adjacent field; good health; multistemmed form; habitat connectivity; screening function to road	B,2,3	Refer to Drawing	n/a		Long	
G126	Crack willow	10 to 16	150 to 400	10.0					3.5		Middle Age	Good	Within wet area close to paths; some stems leaning heavily in various directions; mostly tall narrow multistemmed form; no major visible defects	B,2	Refer to Drawing	n/a		Long	
G127	Common hawthorn, common ash, guelder rose, bird cherry, purging buckthorn	5 to 7	75 to 200						0.0		Middle Age	Good	Japanese knotweed; short linear group to north of canal; mostly hawthorn with ash; generally good health with some ash dieback symptoms; dense, low canopies	C,2	Refer to Drawing	n/a		Long	

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		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G128	Grey willow, goat willow, osier willow	3 to 6	75 to 150						0.0		Middle Age	Good	Dispersed willows in small clusters throughout wet field; generally multistemmed	C,2	Refer to Drawing	n/a		Long	
G129	Silver birch, pedunculate oak, goat willow, common hazel, common hawthorn	3 to 13	50 to 400						0.0		Middle Age	Good	Standing dead birch, birch polypore fungi noted; Himalayan balsam growing in group and particularly opening to south of group; leaning and kinked stems; mix of single and multistemmed forms; young regen within understorey; walls of canal within group; understorey overgrown; leaning goat willow stems on ground; powdery mildew on oak foliage; occasional fallen and failed stems	B,2,3	Refer to Drawing	n/a		Long	
G130	Silver birch, grey willow, pedunculate oak, common ash, privet	3 to 10	75 to 250						0.0		Young to Middle Age	Good	Linear roadside group, screening from adjacent field; good health; predominantly birch with multistemmed willows; dense, low and cohesive canopy	B,2	Refer to Drawing	n/a		Long	
G131	Silver birch, grey alder, common alder, common ash, pedunculate oak, grey willow, goat willow, Scots pine, common hawthorn, blackthorn, rowan, damson, osier willow, elder, white willow	3 to 12	75 to 400						0.0		Young to Middle Age	Good	Japanese knotweed; dense group of many species along south side of road and into adjacent field; good health; multistemmed form; habitat connectivity; screening function to road	B,2,3	Refer to Drawing	n/a		Long	
G132	Grey willow, osier willow, white willow, goat willow, aspen	3 to 10	75 to 350						0.0		Young to Middle Age	Good	Large group of mixed willow to north of canal; good health; good habitat connectivity; dense, low, cohesive canopies; multistemmed form, typical for species	B,2,3	Refer to Drawing	n/a		Long	
G133	Grey willow, goat willow, aspen, elder, osier willow	3 to 10	75 to 150						0.0		Young to Middle Age	Good	Dispersed group of small trees; scrubby in places; multistemmed form; concentrated along canal edge	C,2	Refer to Drawing	n/a		Long	
G134	Pedunculate oak, silver birch, grey willow, goat willow, osier willow	3 to 6	75 to 140								Young to Middle Age	Good	Screening group of small trees; some multistemmed form	C,2	Refer to Drawing	n/a		Long	

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		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G135	Common hazel, hawthorn, guelder rose, elder	3 to 5	75 to 150	5.0							Young to Middle Age	Good	Small screening group with multistemmed form; dense crowns	C,2	Refer to Drawing	n/a		Long	
G136	Pedunculate oak, aspen, grey willow, field maple, hawthorn, goat willow, common alder, elder, silver birch, hazel	5 to 11	75 to 320								Young to Middle Age	Fair	Oak dominated group on slope and small rise; some dense undergrowth; broken branches, pruning wounds and stubs; bark wounds; dead wood throughout	B,2	Refer to Drawing	n/a		Long	
G137	White willow, grey willow, common alder	5 to 12	120 to 500								Middle Age to Mature	Good	Trees growing on islands in lake; low hanging crowns; some multistemmed form; no defects observed	B,2,3	Refer to Drawing	n/a		Long	
G138	Pedunculate oak, grey willow, hawthorn, silver birch, elder, purging buckthorn, hazel, rowan	3 to 8	75 to 420								Middle Age	Good	Oak dominated group along ridge top; some multistemmed form; steep slope to north; footpath through centre; broken branches and stubs throughout; minor dead wood in crowns	B,2	Refer to Drawing	n/a		Long	
G139	White willow, grey willow	6 to 20	75 to 450								Middle Age	Fair	Very tall white willows growing in water at base of slope; smaller grey willow understorey; multi-stemmed form but tall and narrow; no major defects noted	B,2,3	Refer to Drawing	n/a		Long	
G140	Crack willow, common alder, elder, pedunculate oak, grey willow, hazel, osier	3 to 13	75 to 520								Middle Age	Fair	Linear group along Lapwing Lane; larger crack willow and alder to southern end; some major willow failures; some multistemmed form; broken branches and dead wood throughout; some large well decayed stubs; dense undergrowth makes access difficult; good habitat value	B,2,3	Refer to Drawing	n/a		Long	
G141	Crack willow, osier, hawthorn, elder, grey willow	2 to 7	75 to 200								Middle Age	Fair	Dense group of smaller trees next to lake; generally multistemmed form	C,2	Refer to Drawing	n/a		Long	

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		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G142	Grey willow, apple, crack willow, osier willow, hawthorn, hazel, common alder, pedunculate oak	3 to 8	75 to 200								Middle Age	Fair	Dense group next to lake; generally multistemmed form	C,2	Refer to Drawing	n/a		Long	
G143	Pedunculate oak, silver birch, common lime, common hawthorn, hazel	3 to 14	50 to 660								Middle Age to Mature	Good	Mostly single stemmed tall middle aged oak and silver birch trees in good condition; west of curving path between stream/ditch and fence along path side; with several multistemmed crack willows at north by path junction; pond within large oaks and birch at south adjacent to track; hide at north; ivy and wounds on stems; notable individuals picked out separately; east of path smaller single and multistemmed lime, hawthorn and hazel (the latter two an outgrown hedgeline)	A,1,2,3	Refer to Drawing	n/a		Long	
G144	Crack willow, common alder, sycamore, elder, hawthorn, field maple, damson	2 to 15	110 to 500								Young to Middle Age	Fair	Larger trees between Lapwing Lane and lake; some multi-stemmed form; mostly growing on bank; dense ivy in places; occasional broken branches and stubs; dead wood throughout	B,2,3	Refer to Drawing	n/a		Long	
G145	Common alder, silver birch, hawthorn, pedunculate oak, alder	4.5 to 13	50 to 300								Middle Age	Good	Scattered wetland and grassland; silver birch, hawthorn, oak and stunted alder with small young scattered trees to east; beehives at west, near access gate; Himalayan balsam at southwest edge; larger oaks at northwest corner	B,1,2	Refer to Drawing	n/a		Long	
G146	Pedunculate oak, hawthorn, white willow, elder, common alder, downy birch	4 to 14	50 to 810								Middle Age	Good	Mostly tall narrow form goat willow; both single and multistemmed; occassional squat oaks south of path; dense vegetation in understorey including brambles; small amount of Himalayan balsam within group; one large, vigorous and tall white willow in excellent health; old knarly oaks, hawthorn and alder at east (not veteran trees)	B,2,3	Refer to Drawing	n/a		Long	

Ref	Species	Height	Stem Dia.	No. of stems/ individuals	Crown Spread North	Crown Spread South	Crown Spread East	Crown Spread West	Height of Lowest Branch	Direction of Lowest Branch	Maturity	Condition	Comments on form, condition, health and significant defects	BS5837 Tree Quality Assess.	Radius of RPA guide circle	BS5837 RPA Area	Management Recommendations	Estimated Remaining Contribution	TPO
		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G147	Goat willow, silver birch, pedunculate oak, common alder	4 to 12	50 to 350								Young to Middle Age	Good	Dense group of multistemmed goat willow with occasional alder, pedunculate oak and silver birch to southeast	B,2	Refer to Drawing	n/a		Long	
G148	Crack willow, silver birch, elder, goat willow, common alder, pedunculate oak	5 to 16	110 to 360								Middle Age	Good	Linear group next to lake; generally tall and narrow form, some multistemmed; minor dead wood throughout	B,2,3	Refer to Drawing	n/a		Long	
G149	Crack willow, alder, pedunculate oak, goat willow	6 to 10	100 to 400								Middle Age	Good	Mixed height structure; close growing trees, and trees around edge of pond; overall good health and vigour	B,2	Refer to Drawing	n/a		Long	
G150	Silver birch, grey willow, pedunculate oak, common ash, privet	3 to 10	75 to 250								Young to Middle Age	Good	Linear roadside group, screening from adjacent field; good health; predominantly birch with multistemmed willows; dense, low and cohesive canopy	B,2	Refer to Drawing	n/a		Long	
G151	Pedunculate oak, hawthorn, goat willow	5 to 11	50 to 650	20.0							Middle Age to Mature	Fair	Large oaks along north of footpath; extensive ivy cover on stems, potentially hiding cracks and cavities that could offer bat potential; branches reduced and failed; twisted forms; smaller understorey trees between	A,1,2,3	Refer to Drawing	n/a		Long	
G152	Pedunculate oak	7 to 12	120 to 700	16.0							Middle Age to Mature	Good	Small to large oak trees either side of road; larger specimens with large dead wood in lower canopy and some lost limbs with decayed wounds; cracks and cavities offering likely bat potential; good health and vigour in upper canopies; an informal avenue type arrangement along track	A,1,2,3	Refer to Drawing	n/a		Long	
G153	Common alder, pedunculate oak, hazel, field maple, hawthorn, wild cherry, sycamore	6 to 14	50 to 550								Middle Age to Mature	Mixed	Continuation of W20 to the north of canal path; mixed height structure with some coppiced hazel; occasional dead stems and failed stems with likely bat potential; seasonally wet in some areas; some ivy clad stems; varying sizes of deadwood including above access road; dense in places; forms woodland edge to clearing to north with scattered trees and rough grass and low vegetation; memorial tree T30 within compartment close to path; Himalayan balsam present	A,2,3	Refer to Drawing	n/a		Long	

APPENDIX C: Detailed Tree Survey Data Sheets

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		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G154	Common alder, common elder	4 to 12	75 to 200								Middle Age	Fair	Closely spaced alder with occasional understorey of elder; tall narrow form; some standing dead trees; access prohibited	C,2	Refer to Drawing	n/a		Long	
G155	Common alder, grey willow, silver birch, pedunculate oak, crack willow, hawthorn	5 to 12	100 to 600								Middle Age	Fair	Alder dominated woodland; generally wet underfoot; some standing dead wood; broken branches and stubs; dense undergrowth; some areas willow dominated; failed stem from decaying alder but with healthy stem end growth above decaying cavities; habitat value but not veteran southeast end of group	A,2,3	Refer to Drawing	n/a		Long	
G156	Crack willow, pedunculate oak, dogwood, common alder, hawthorn, Scots pine, downy birch, hybrid black poplar, goat willow, silver birch	2.5 to 6	50 to 180								Middle Age	Good	Screening group adjacent to track; on bank; closely spaced	C,2	Refer to Drawing	n/a		Long	
G157	White willow, crack willow, goat willow, common alder, hawthorn, poplar	2.5 to 12	50 to 300								Middle Age	Good	Screening group adjacent to pond and landfill track; densely populated and closely spaced, overgrown in places	B,2	Refer to Drawing	n/a		Long	
G158	White willow, crack willow, goat willow	2 to 6.5	20 to 150								Young to Middle Age	Good	Dense area of trees on island in middle of pond; surveyed from vantage point; appears to have occasional failed limbs	C,2	Refer to Drawing	n/a		Long	
G159	Crack willow, pedunculate oak, dogwood, common alder, hawthorn, Scots pine, downy birch, hybrid black poplar, goat willow, silver birch	2.5 to 6	50 to 180								Middle Age	Good	Screening group on bank; closely spaced adjacent to pond	C,2	Refer to Drawing	n/a		Long	
G160	Scots pine	2.5 to 8	50 to 250								Young to Middle Age	Good	Scattered trees in open area of grassland near pond; predominantly Scots pine	B,2	Refer to Drawing	n/a		Long	
G161	Silver birch	4.5 to 6	50 to 110	8.0							Young	Good	Hedgerow trees adjacent to track	C,3	Refer to Drawing	n/a		Medium	

Ref	Species	Height	Stem Dia.	No. of stems/ individuals	Crown Spread North	Crown Spread South	Crown Spread East	Crown Spread West	Height of Lowest Branch	Direction of Lowest Branch	Maturity	Condition	Comments on form, condition, health and significant defects	BS5837 Tree Quality Assess.	Radius of RPA guide circle	BS5837 RPA Area	Management Recommendations	Estimated Remaining Contribution	TPO
		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G162	Common alder, common ash	8 to 9.5	100 to 250								Middle Age	Fair	Linear group is mostly single stemmed alder along path with smaller ash at west; some minor dieback and dead wood lower down and leaf minor evidence but otherwise good health	B,2	Refer to Drawing	n/a		Long	
G163	Downy birch, elder, Turkey oak, common alder, goat willow, crack willow, pedunculate oak	3 to 15	50 to 500								Middle Age	Good	Screening group; majority off-site; between track and network rail lines; group situated on steep railway bank; Japanese knotweed to eastern end of group; heavily overgrown; dead wood up to 120mm diameter; some lower limbs adjacent to track showing flailing damage; some Himalayan balsam in group; multistemmed form; unable to access majority of group for survey	B,2	Refer to Drawing	n/a		Long	
G164	Common alder, Turkey oak, sycamore, s silver birch, Scots pine, elder, goat willow, hybrid black poplar	3 to 10	50 to 400								Middle Age	Good	Screening group adjacent to track and pond; closely spaced and densely populated; slightly overgrown in places; birds nests; multistemmed form; leaning stems; occasional failed stems and limbs; smaller diameter trees situated to east end of group; occasional dead trees	B,2,3	Refer to Drawing	n/a		Long	
G165	White willow, goat willow, crack willow	2.5 to 7	20 to 150								Young to Middle Age	Good	Dense area of trees on island in middle of pond; surveyed from vantage point	C,2	Refer to Drawing	n/a		Long	
G166	Common hawthorn, common alder, common elder, pedunculate oak	4 to 10	50 to 300								Middle Age	Mixed	Hawthorn in good condition with occasional alder, one showing defoliation, and small elder; cluster of trees adjacent to wetland area and on edge of group of oaks to north	B,2	Refer to Drawing	n/a		Long	
G167	Common alder, hawthorn	2.5 to 4	50 to 90	4.0							Young	Fair	Small trees growing adjacent to and through fence; two alders swamped by Japanese knotweed, which is beginning to encroach into site from adjacent land	C,3	Refer to Drawing	n/a		Short	

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		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G168	Sycamore, silver birch	4 to 12	50 to 300								Middle Age	Good	Screening group on bund beyond fenceline; some stone chips piled at tree bases to east end of group; adjacent to track; multistemmed form with tight unions; Japanese knotweed at eastern end	B,2	Refer to Drawing	n/a		Long	
G169	Lombardy poplar, common beech	7 to 18	200 to 400								Middle Age	Good	Third party trees; linear group of tall poplars with smaller common beech at base; good health and vigour; viewed from northern end; canopies obscuring views of stems; no major visible defects	B,2	Refer to Drawing	n/a		Long	
G170	Sycamore	13 to 14	400 to 600	3.0							Mature	Fair	Three large multistemmed sycamore trees adjacent to track; east tree with 3 stems, central tree with 5 stems, western tree with 2 stems; all stems range between 400 and 600mm; possibly historic coppice suggested by form; dead wood up to 140mm diameter; some very tight stem unions, some with bark ridging; canopies are a little thin in places	A,1,2	Refer to Drawing	n/a		Long	
G171	Silver birch, Scots pine, downy birch, pedunculateoak, hawthorn	5 to 11	50 to 370								Middle Age	Mixed	Stand of mostly single stemmed trees including one large Scots pine in centre and small to medium birch and oak with hawthorn understorey, and groupings of Scots pine; on banking down to edge of compound; dead stems and fallen dead wood; silver birch being shaded out and in variable condition	B,2	Refer to Drawing	n/a		Long	
G172	Silver birch, grey willow, elder	2 to 6	50 to 150								Young to Middle Age	Fair	Dense row of brambles prevents access further south to survey this group; apparently small to medium self-set silver birch, at least in part; no apparent defects; by canal	C,2,3	Refer to Drawing	n/a		Long	

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		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G173	Goat willow, pedunculate oak, silver birch	3.5 to 7.5	75 to 280	10.0							Young to Middle Age	Good	Collection of planted amenity trees; close growing; mostly single stemmed; one larger goat willow on edge multistemmed at base with broken dead branch; screening value	B,2	Refer to Drawing	n/a		Long	
G174	Silver birch, goat willow, sycamore	3 to 10	50 to 350								Middle Age	Good	Planted trees surrounding compound (no access) viewed from road; mostly single stemmed silver birch and oak; some self-set goat willow visible with larger multistemmed sycamore at southwest on bund adjacent to road; standing dead tree visible at southwest corner	B,2	Refer to Drawing	n/a		Long	
G175	Sycamore, blackthorn, wych elm, field maple, common ash, silver birch, downy birch, elder, pedunculate oak	3.5 to 15	75 to 800								Middle Age to Mature	Fair	Linear group between track and woodland path; failed stems of various size evident although some may have fallen into group from adjacent woodland; leaning stems on steep bank that inclines down to north; group understorey overgrown with bracken and bramble; some large multistemmed trees in group; occasional failing or failed limbs in group; some birch trees within group have black/brown bleeds on stems; multistemmed form; some large tight stem unions; possibly some historic coppicing in group suggested by form of some larger multistemmed sycamore; fusing stems; some trees heavily ivy clad, particularly towards western end of group; varying deadwood size up to 130mm; area of dead elm trees to west end of group adjacent to road and industrial area	B,2	Refer to Drawing	n/a		Long	
G176	Common alder	7 to 13	90 to 830	12.0							Middle Age to Mature	Good	Group of mostly tall large alders around and adjacent car park entrance; two largest either side of entrance track to car park; western tree twin stemmed with very tight union, epicormics around bases of these; others mostly clear stemmed; one twin stemmed tree at east; good health and vigour	A,1,2	Refer to Drawing	n/a		Long	

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		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G177	Downy birch, white willow, goat willow, crack willow	2.5 to 10	50 to 200								Middle Age	Good	Trees on island in middle of pond; unable to access, surveyed from vantage point; densely populated and closely spaced	B,2	Refer to Drawing	n/a		Long	
G178	Common alder, pedunculateoak, rowan, elder	7 to to 12	100 to 650	10.0							Middle Age to Mature	Mixed	Mix of species, predominantly alder and oaks with smaller rowan and elder beneath; alder near car park	B,2,3	Refer to Drawing	n/a		Long	
G179	Common hawthorn, elder	4 to 6	50 to 200	15.0							Middle Age	Good	Rounded form; sporadic individual and well-spaced small clusters of trees across open grassland; good health and vigour except for occasional stems with dieback and dead wood	B,1,2	Refer to Drawing	n/a		Long	
G180	Unknown												Trees in inaccessible area between Port Warrington and canal		Refer to Drawing	n/a			
G181	Pedunculate oak, silver birch	6 to 10	100 to 550	15.0							Middle Age to Mature	Good	Group of silver birch and oak adjacent to open space with path between trees; middle aged oak and mature silver birch; good form and excellent health and vigour; dense vegetation in places beneath	A,1,2	Refer to Drawing	n/a		Long	
G182	Unknown												Trees in inaccessible area between Port Warrington and canal		Refer to Drawing	n/a			
G183	Downy birch, rowan, pedunculate oak, elder, crack willow, goat willow, holly, hazel, common ash	3.5 to 14	50 to 400								Middle Age	Good	Linear screening group surrounding southern, western and northern borders of pond; some regeneration of trees but most areas heavily overgrown; patches of dense tree spacing with more openly spaced trees adjacent to path; leaning stems and occasional failed limbs and stems; some phototropic growth of stems some Himalayan balsam in group	B,2	Refer to Drawing	n/a		Long	
G184	Grey willow, goat willow, sycamore	6 to 8	120 to 260								Middle Age	Fair	Small group of outlier trees associated with W1; minor dead branches throughout; some multi-stemmed forms	C,2	Refer to Drawing	n/a		Long	
G185	Common hawthorn	4 to 7	50 to 250	15.0							Mature	Good	Collection of hawthorns in good health with rounded form and canopies to ground; multistemmed	A,1,2,3	Refer to Drawing	n/a		Long	

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		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G186	Pedunculate oak	4 to 16	50 to 600								Middle Age	Fair	Group of oak trees with rounded canopies, growing on lower part of bank; some dieback of branches but otherwise good vigour; smaller stunted common alder at south and north	B,1,2	Refer to Drawing	n/a		Long	
G187	Sycamore, silver birch, pedunculate oak, hawthorn	4 to 15	50 to 400								Middle Age	Good	Large area of trees including linear group on raised ground running north to south by wetland; viewed from a distance, no access within area for survey; canopies look to be in good health	A,1,2	Refer to Drawing	n/a		Long	
G188	Grey willow, goat willow, elder, silver birch	4 to 7	50 to 250						0.0		Young to Middle Age	Fair	Small area of vegetation with dispersed tree cover; mainly willow; scrubby, multistemmed form; self seeded regeneration	C,2	Refer to Drawing	n/a		Long	
G189	Goat willow, pedunculate oak, common hawthorn	6 to 10	50 to 390	4.0							Middle Age	Good	One larger individual oak, smaller goat willow and two smaller hawthorn; all multistemmed; single stemmed oak at east with minor dieback and powdery mildew on some leaves; generally good health and vigour; adjacent to access road; dead branch on eastern largest tree, also with moderate lower shade dead wood over road and canopy reduced on roadside but overall good health.	B,1,2	Refer to Drawing	n/a	Prune canopies away from telephone line	Long	
G190	Common ash, common hazel, field maple	4 to 9	50 to 250								Middle Age	Mixed	Standing dead goat willow trees along roadside above hedge; other trees in good health; mostly multistemmed; mixed height structure; coppiced hazel by adjacent path and field maple	C,2	Refer to Drawing	n/a	Remove and replace dead standing trees	Long	
G191	Pedunculate oak, downy birch, sycamore, elder, common ash	6 to 16	50 to 640								Middle Age to Mature	Good	Forest school at south; bramble understory; mix of mostly single and some multistemmed pedunculate oak and downy birch; burring of some oak stems; ash saplings	A,1,2,3	Refer to Drawing	n/a		Long	
G192	Common alder	8 to 9	50 to 150								Middle Age	Good	Narrow mostly single stemmed trees in linear group at edge of site, with some screening value	C,2	Refer to Drawing	n/a		Long	
G193	Goat willow, pedunculate oak	4 to 10	50 to 250								Middle Age	Fair	Stand of closely growing single and multistemmed trees; narrow form	C,2	Refer to Drawing	n/a		Long	
G194	Goat willow, silver birch	4 to 10	50 to 300								Young to Middle Age	Mixed	Self set multistemmed trees around and adjacent wetland areas and path; some large specimens within adjacent ditch with stems leaning to ground; most trees in good health; typical form	C,2	Refer to Drawing	n/a		Long	

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		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
G195	Downy birch	3 to 6	50 to 130								Young to Middle Age	Good	Dense area of self set trees	C,2	Refer to Drawing	n/a		Long	
G196	Goat willow, hawthorn, elder, pedunculate oak, downy birch, hazel aspen, wild cherry	3 to 12	50 to to 450								Middle Age	Mixed	Mostly wild cherry to east around steps; failed cherry stems and major dieback on one tree; heavily overgrown on bank; path and steps through middle of group; Himalayan balsam; standing dead tree; leaning reduced cherry stem over path and steps, growing out of bank	B,2	Refer to Drawing	n/a		Long	
G197	Common alder	6 to 12	75 to to 600								Middle Age	Good	Some occasional failed limbs; up to 120mm diameter dead wood; likely bat potential; mostly single stemmed large well spaced trees; overgrown understorey; overall good health and vigour	A,1,2,3	Refer to Drawing	n/a		Long	
G198	Pedunculate oak, common alder, crack willow, elder, hawthorn, wych elm, common lime	6 to 12	100 to 650								Middle Age	Mixed	Large trees, mostly single stemmed; some collapsed multistemmed willows with typical regrowth for the species; overgrown understorey with ponds/wet areas; Himalayan balsam; good habitat connectivity provided to adjacent groups	A,1,2,3	Refer to Drawing	n/a		Long	
G199	Sycamore, silver birch	5 to 5.5	50 to 120	15.0							Young to Middle Age	Good	Trees growing adjacent to fence; multistemmed form mostly with some single stemmed trees	C,3	Refer to Drawing	n/a		Medium	
G200	Silver birch	3 to 7	50 to 130	10.0							Young to Middle Age	Good	Trees growing adjacent to fence; multistemmed forms mostly; some single stemmed trees; trees off-site within industrial area, unable to access, surveyed from within site	C,3	Refer to Drawing	n/a		Medium	
G201	Silver birch, goat willow, crack willow	5 to 15	75 to 350								Middle Age	Good	Unable to access, surveyed from site; on bank; densely populated and appears to comprise closely spaced trees; linear screening group	B,2	Refer to Drawing	n/a		Long	
G202	Goat willow	2.5 to 5	50 to 150								Young to Middle Age	Good	Scattered trees and sporadic small groups of goat willow surrounding waterbody and within reed beds; unable to access, surveyed from vantage point nearby	C,3	Refer to Drawing	n/a		Medium	
G203	Common hawthorn	4 to 6	50 to 250	2.0							Middle Age	Good	Two trees on bund between open spaces; rounded multistemmed forms; good vigour	C,1	Refer to Drawing	n/a		Long	

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		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
Hedges																			
H1	Dogwood	1.0	10 to 20						0.0		Middle Age	Good	Maintained amenity boundary hedge		Refer to Drawing	n/a		Long	
H2	Dogwood	1.0	10 to 20						0.0		Middle Age	Good	Maintained amenity hedge		Refer to Drawing	n/a		Long	
H3	Common hawthorn, Turkey oak, dogwood	1.5 to 2	50 to 100						0.0		Middle Age	Good	Maintained but small gaps boundary hedge adjacent path		Refer to Drawing	n/a		Long	
H4	Common hawthorn, dogwood, gorse	1.5 to 2	50 to 100						0.0		Middle Age	Good	Maintained but small gaps; boundary hedge adjacent path; some dead stems and small hedgerow trees within		Refer to Drawing	n/a		Long	
H5	Common hawthorn	2.5 to 3.5	50 to 100						0.0		Middle Age	Good	Maintained but small gaps; boundary hedge adjacent path		Refer to Drawing	n/a		Long	
H6	Common hazel	1 to 3	20								Middle Age	Good	Layed hazel hedge; outgrown in places		Refer to Drawing	n/a		Long	
H7	Common hawthorn	1 to 4	50								Middle Age	Good	Maintained hedge adjacent to track; average height is 2m; slightly taller to eastern end due to hedgerow trees preventing flailing		Refer to Drawing	n/a		Long	
H8	Common hazel	4 to 4.5	10								Middle Age	Good	Managed roadside hedgerow		Refer to Drawing	n/a		Long	
H9	Common hazel, cherry, blackthorn field maple, hawthorn	1.5 to 7	10								Middle Age	Good	Managed informal hedgerow along edge of road		Refer to Drawing	n/a		Long	

APPENDIX C: Detailed Tree Survey Data Sheets

Ref	Species	Height	Stem Dia.	No. of stems/ individuals	Crown Spread North	Crown Spread South	Crown Spread East	Crown Spread West	Height of Lowest Branch	Direction of Lowest Branch	Maturity	Condition	Comments on form, condition, health and significant defects	BS5837 Tree Quality Assess.	Radius of RPA guide circle	BS5837 RPA Area	Management Recommendations	Estimated Remaining Contribution	TPO
		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
Woods																			
W1	Grey willow, goat willow, common ash, sycamore, aspen, crack willow, dogwood, elder, white willow, common alder, pedunculate oak	6 to 10	50 to 260						1.0		Young to Middle Age	Fair	Limb and stem failures; some standing dead stems; minor dead branches throughout; ash dieback observed; unknown cause of dieback in sycamore; some age and size structure developing; understorey limited; close spacing; squirrel damage	B,2	Refer to Drawing	n/a		Long	
W2	Aspen, sycamore, dogwood, white willow, silver birch, rowan	4 to 7	50 to 250						0.0		Young to Middle Age	Good	Establishing woodland; dense crowns but understorey developing; pipeline located within	B,2	Refer to Drawing	n/a		Long	
W3	Common ash, silver birch, pedunculate oak, rowan, wild cherry, goat willow, grey willow, sycamore, hawthorn	5 to 9	100 to 320						1.0		Young to Middle Age	Fair	Well-established, closely spaced woodland; predominantly ash with visible ash dieback throughout; no real understorey; some standing deadwood	B,2,3	Refer to Drawing	n/a	20% thin with a focus on removal of poor quality ash	Medium	
W4	Common ash, silver birch, sycamore, downy birch, goat willow, white willow, crack willow, purging buckthorn, wild cherry, rowan	3 to 12	75 to 400						0.0		Middle Age	Good	Trees to south are generally smaller in height than those to the north; varied height structure to south with some taller silver birch; similar age and size of trees within wood; young regeneration in understorey; purging buckthorn and silver birch dominant to south west of wood with ash and sycamore dominant to north; some standing dead stems to east end of woodland; some ash dieback evident	B,1,2	Refer to Drawing	n/a		Long	
W5	Common ash, wild cherry, pedunculate oak	5 to 9	100 to 280						0.0		Middle Age	Fair	Small woodland, distinct from W3; minor dead wood throughout; closely spaced linear planting; minor ash dieback; no understorey	B,2,3	Refer to Drawing	n/a	10% thin with a focus on removal of poor quality ash	Medium	
W6	Common ash, rowan, silver birch, pedunculate oak, common hawthorn, grey willow	3 to 8	75 to 300						1.0		Young to Middle Age	Fair	Small woodland, separate from W3; mainly ash; minimal understorey, some young trees; some ash dieback noted; minor dead wood throughout	B,2,3	Refer to Drawing	n/a	Remove tree guards	Long	

APPENDIX C: Detailed Tree Survey Data Sheets

Ref	Species	Height	Stem Dia.	No. of stems/ individuals	Crown Spread North	Crown Spread South	Crown Spread East	Crown Spread West	Height of Lowest Branch	Direction of Lowest Branch	Maturity	Condition	Comments on form, condition, health and significant defects	BS5837 Tree Quality Assess.	Radius of RPA guide circle	BS5837 RPA Area	Management Recommendations	Estimated Remaining Contribution	TPO
		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
W7	Common ash, pedunculate Oak, common hawthorn, alder buckthorn	5 to 8	75 to 300						0.0		Middle Age	Good	Small woodland plantation; mostly ash; low level ash dieback symptoms; no significant understorey	B,2	Refer to Drawing	n/a		Medium	
W8	Silver birch, grey willow, elder, crack willow	3 to 12	100 to 500						1.0		Middle Age	Fair	Linear compartment within wider woodland, to northern boundary; many willow stems failed and hanging; birch healthy and in good condition; no significant defects; edged path to southern boundary of compartment	B,2,3	Refer to Drawing	n/a		Long	
W9	Silver birch, crack willow	3 to 12	100 to 500						0.0		Middle Age	Fair	Linear compartment within wider woodland, to northern boundary; many willow stems failed and hanging; birch healthy and in good condition; no significant defects; edged path to southern boundary of compartment	B,2,3	Refer to Drawing	n/a		Long	
W10	Crack willow, silver birch, grey willow, hawthorn , elder, pedunculate oak	5 to 15	75 to 600						0.0		Middle Age to Mature	Fair	Large area of wet woodland with dense understorey; vigorous Himalayan balsam throughout; occasional large failed limbs on willows; some total failures at root plate; good vigour; typical form for species; good habitat connectivity	A,1,2,3	Refer to Drawing	n/a		Long	
W11	Silver birch, downy birch, grey willow, pedunculate Oak, crack willow, Common hawthorn	3 to 14	50 to 500						0.0		Mixed Age	Good	Large woodland compartment; continuation of adjacent woodland to west; largely wet underfoot; extending up steep embankment to south and to lake in east; good habitat and structural diversity	A,1,2,3	Refer to Drawing	n/a		Long	
W12	Silver birch, grey willow, goat willow, common alder, blackthorn, hawthorn, gorse, elder	3 to 9	75 to 160						0.0		Young to Middle Age	Good	Low density young woodland with occasional larger trees; dense to south where adjoins path; good habitat; some multistemmed trees	B,3	Refer to Drawing	n/a		Long	
W13	Pedunculate oak, hawthorn, elder, sycamore, common alder, crack willow, common ash	3 to 13	90 to 810								Mixed Age	Good	Narrow strip of woodland next to lake; mainly oak and alder; some multistemmed willows next to water's edge; dead wood throughout; good habitat value	B,2,3	Refer to Drawing	n/a		Long	

APPENDIX C: Detailed Tree Survey Data Sheets

Ref	Species	Height	Stem Dia.	No. of stems/ individuals	Crown Spread North	Crown Spread South	Crown Spread East	Crown Spread West	Height of Lowest Branch	Direction of Lowest Branch	Maturity	Condition	Comments on form, condition, health and significant defects	BS5837 Tree Quality Assess.	Radius of RPA guide circle	BS5837 RPA Area	Management Recommendations	Estimated Remaining Contribution	TPO
		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
W14	Silver birch, pedunculate oak, common alder, sycamore, elder, common ash, grey willow, crack willow	3 to 16	110 to 540								Middle Age	Good	Linear woodland dominated by silver birch; good mix of species; occasional dead trees; some tall narrow woodland form; minor dead wood throughout	B,2,3	Refer to Drawing	n/a		Long	
W15	Pedunculate oak, common alder, common ash, hawthorn, crack willow, sycamore, grey willow	3 to 16	75 to 550								Mixed Age	Fair	Area of wet woodland with ditches to north and west; some multistemmed trees; cavities often present; good age and size structure; some standing dead trees, particularly to the north-east	A,2,3	Refer to Drawing	n/a		Long	
W16	Common alder, common hawthorn, elder	4 to 12	75 to 200								Middle Age	Fair	Closely spaced suckering alder and multi-stemmed hawthorn; clearly plantation; some standing dead; generally tall narrow forms	C,2	Refer to Drawing	n/a		Long	
W17	Pedunculate oak, common alder, hawthorn, sycamore	5 to 17	160 to 650								Middle Age to Mature	Good	Open structured woodland; mainly oak; good proportion of standing and fallen dead wood; some tall narrow form with high canopy; some multi-stemmed; various common defects including broken branches, cracks, decay pockets; no major defects	A,1,2,3	Refer to Drawing	n/a		Long	

APPENDIX C: Detailed Tree Survey Data Sheets

Ref	Species	Height	Stem Dia.	No. of stems/ individuals	Crown Spread North	Crown Spread South	Crown Spread East	Crown Spread West	Height of Lowest Branch	Direction of Lowest Branch	Maturity	Condition	Comments on form, condition, health and significant defects	BS5837 Tree Quality Assess.	Radius of RPA guide circle	BS5837 RPA Area	Management Recommendations	Estimated Remaining Contribution	TPO
		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
W18	Downy birch, pedunculate oak, hazel, hawthorn, elder, goat willow, crack willow, Turkey oak, holly, grey willow	3 to 15	50 to 600								Mixed Age	Mixed	Predominantly middle aged birch woodland; many with multistemmed form; heavily overgrown understorey of nettles, bramble and Himalayan balsam; undulating ground throughout; densely populated; younger self set regeneration in understorey; occasional failed stems and limbs throughout; some standing dead trees and cavities; likely bat potential and good habitat value; occasional small clearings	A,1,2,3	Refer to Drawing	n/a		Long	
W19	Downy birch, sycamore, silver birch, hawthorn, pedunculate oak, hazel, rowan, holly	3.5 to 15	50 to 430								Mixed Age	Good	Predominantly middle aged birch woodland with some mature specimens and young regeneration in understorey; understory overgrown with bramble, nettles and bracken; densely populated and closely spaced; failing stems with some over path; some birch trees have black-brown exudate bleeds on stems; stands of older and mature trees pre-dating the surrounding plantation or natural regeneration; has the makings of a high quality mature woodland, although not fully mature; overall, the combination of mature trees, well-developing young woodland, coppice and native species constitute a high quality woodland macrostructure; heavy bramble; occasional holly; small area of coppice in north-western corner; largest trees along the northern boundary are visually distinct but functionally part of the woodland and include mature ash, which is unusual for the site	A,1,2,3	Refer to Drawing	n/a		Long	

APPENDIX C: Detailed Tree Survey Data Sheets

Ref	Species	Height	Stem Dia.	No. of stems/ individuals	Crown Spread North	Crown Spread South	Crown Spread East	Crown Spread West	Height of Lowest Branch	Direction of Lowest Branch	Maturity	Condition	Comments on form, condition, health and significant defects	BS5837 Tree Quality Assess.	Radius of RPA guide circle	BS5837 RPA Area	Management Recommendations	Estimated Remaining Contribution	TPO
		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
W20	Common alder, pedunculate oak, hazel, field maple, hawthorn, wild cherry, sycamore	6 to 14	50 to 550								Middle Age to Mature	Mixed	Mixed height structure with smaller trees along edge including coppiced hazel; large area of dead stems around inner ponds/wet areas; standing dead trees and failed stems with likely bat potential; some large oaks and alders in good condition; some ivy clad stems; varying sizes of deadwood including above access road; leaning stems also over road; overgrown understorey; several large multistemmed crack willows at northwest corner, tall with good vigour but ivy on stems and large failed stems to north and south of path; large multistemmed sycamores along north of path at northwest adjacent to ditch; small clearing; dead standing stems and fallen large dead tree at eastern extent around wetland; no access to trees within, this area dominated by willows; Himalayan balsam present; also several large sycamore set back from path	A,2,3	Refer to Drawing	n/a		Long	

DRAWINGS

Drawing 1 - Arboricultural Desktop Overview
Drawing 2 - Arboricultural Walkover Survey Overview
Drawing 3 - Arboricultural Walkover Survey (Inset 1)
Drawing 4 - Arboricultural Walkover Survey (Inset 2)
Drawing 5 - Arboricultural Walkover Survey (Inset 3)
Drawing 6 - Arboricultural Walkover Survey (Inset 4)
Drawing 7 - Arboricultural Walkover Survey (Inset 5)
Drawing 8 - Arboricultural Walkover Survey (Inset 6)
Drawing 9 - Tree Constraints Plan (Overview)
Drawing 10 - Tree Constraints Plan 1
Drawing 11 - Tree Constraints Plan 2
Drawing 12 - Tree Constraints Plan 3
Drawing 13 - Tree Constraints Plan 4
Drawing 14 - Tree Constraints Plan 5
Drawing 15 - Tree Constraints Plan 6
Drawing 16 - Tree Constraints Plan 7
Drawing 17 - Tree Constraints Plan 8
Drawing 18 - Tree Constraints Plan 9
Drawing 19 - Illustrative Masterplan
Drawing 20 - Trees within development parcels plan

KEY

[This drawing must be reproduced in colour]

- Site Boundary
- National Tree Map (c.10,474 trees)

Mapped designations and classifications

Ancient Woodland (with 15m buffer)	(None)
Tree Preservation Order (Warrington Borough Council)	(None)
Habitat of Principal Importance (NERC: Deciduous Woodland)	(50.17ha)
Habitat of Principal Importance (NERC: Wood Pasture and Parkland)	(None)
Habitat of Principal Importance (NERC: Traditional Orchard)	(None)
Community Forest (Mersey Forest and Northern Forest)	(All)
Ancient/Veteran/Notable Tree (Ancient Tree Inventory)	(tbc)
Conservation Area (Warrington Borough Council)	(None)

Vegetation type (National Forest Inventory)

Assumed woodland	(59.75ha)
Broadleaved	(56.44ha)
Conifer	(0ha)
Coppice	(0ha)
Coppice with standards	(0ha)
Failed	(0ha)
Felled	(0ha)
Ground preparation	(2.03ha)
Low density	(2.19ha)
Mixed mainly broadleaved	(9.00ha)
Mixed mainly conifer	(0ha)
Shrub	(0ha)
Windthrow	(0ha)
Young trees	(28.09ha)

Rev	Description	Drawn	Approved	Date

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Project
Port Warrington and Arpley Meadows, Arboricultural Walkover and Desktop

Title
Arboricultural desktop overview

Drawing Number
D6929.02.001

Scale	Date
1:5,000 @ A1	16/03/2018

Drawn	Checked	Approved
TDP	JGS	JGS

KEY

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Site Boundary

Designations and classifications (ground truthed)

Ancient Woodland (15m buffer)	(None)
Tree Preservation Order (Warrington Borough Council)	(None)
NERC Deciduous Woodland (Existing within Moore Nature Reserve, excl. Arpley mitigation)	(65.11ha)
Habitat of Principal Importance (NERC: Wood Pasture and Parkland)	(None)
Habitat of Principal Importance (NERC: Traditional Orchard)	(None)
Habitat of Principal Importance (NERC: Hedgerow)	(1,905m)
Community Forest (Mersey Forest and Northern Forest)	(All)
Candidate Veteran Tree (Compartments most likely to contain further veterans marked *)	(tbc)
Conservation Area (Warrington Borough Council)	(None)

Vegetation type (measurements taken within the boundary)

Mature trees (non-woodland or notable)	
Broadleaved	(54.84ha)
Conifer	(0ha)
Coppice	(1.66ha)
Coppice with standards	(0ha)
Failed	(0ha)
Felled	(0ha)
Ground preparation	(0ha)
Low density	(8.26ha)
Mixed mainly broadleaved	(3.33ha)
Mixed mainly conifer	(0ha)
Shrub	(3.85ha)
Windthrow	(0ha)
Young trees	(2.12ha)

Arpley ES mitigation (approximate including existing)

Broadleaved	(49.16ha)
Scrub/shrub	(7.23ha)

Port not surveyed

Rev	Description	Drawn	Approved	Date
A	Clarification following full tree survey	TP	JS	22/10/19

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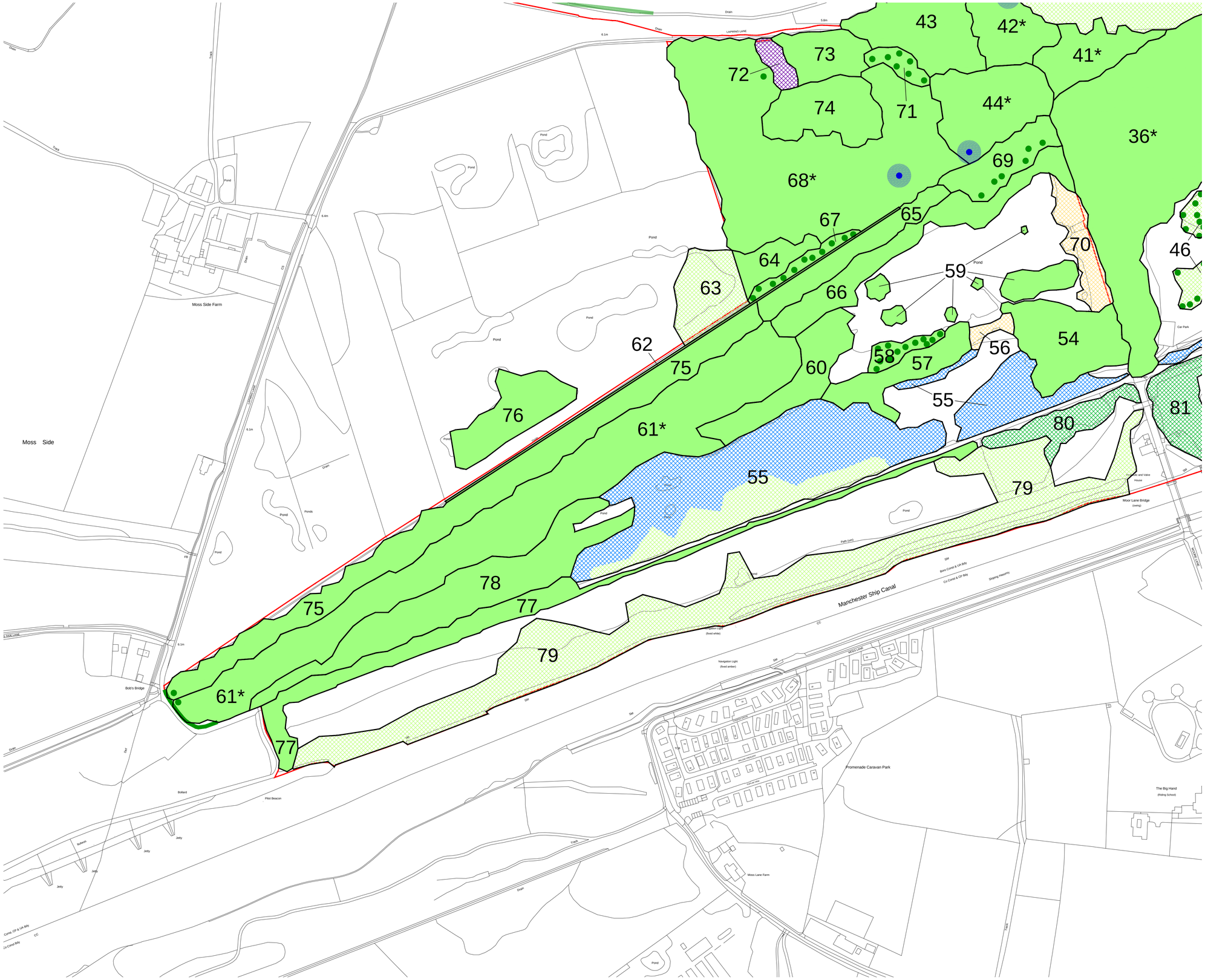
Project
Port Warrington and Arpley Meadows, Arboricultural Walkover and Desktop

Title
Arboricultural Walkover Overview

Drawing Number
D6929.02.002

Scale	Date
1:5,000 @ A1	16/03/2018

Drawn	Checked	Approved
TDP	JGS	JGS



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Site Boundary

Designations and classifications (ground truthed)

Ancient Woodland (15m buffer)	(None)
Tree Preservation Order (Warrington Borough Council)	(None)
NERC Deciduous Woodland (Existing within Moore Nature Reserve, excl. Arpley mitigation)	(65.11ha)
Habitat of Principal Importance (NERC: Wood Pasture and Parkland)	(None)
Habitat of Principal Importance (NERC: Traditional Orchard)	(None)
Habitat of Principal Importance (NERC: Hedgerow)	(1,905m)
Community Forest (Mersey Forest and Northern Forest)	(All)
Candidate Veteran Tree (Compartments most likely to contain further veterans marked *)	(tbc)
Conservation Area (Warrington Borough Council)	(None)

Vegetation type (measurements taken within the boundary)

Mature trees (non-woodland or notable)	
Broadleaved	(54.84ha)
Conifer	(0ha)
Coppice	(1.66ha)
Coppice with standards	(0ha)
Failed	(0ha)
Felled	(0ha)
Ground preparation	(0ha)
Low density	(8.26ha)
Mixed mainly broadleaved	(3.33ha)
Mixed mainly conifer	(0ha)
Shrub	(3.85ha)
Windthrow	(0ha)
Young trees	(2.12ha)

Arpley ES mitigation (approximate including existing)

Broadleaved	(49.16ha)
Scrub/shrub	(7.23ha)

Rev	Description	Drawn	Approved	Date
A	Clarification following full tree survey	TP	JS	22/10/19

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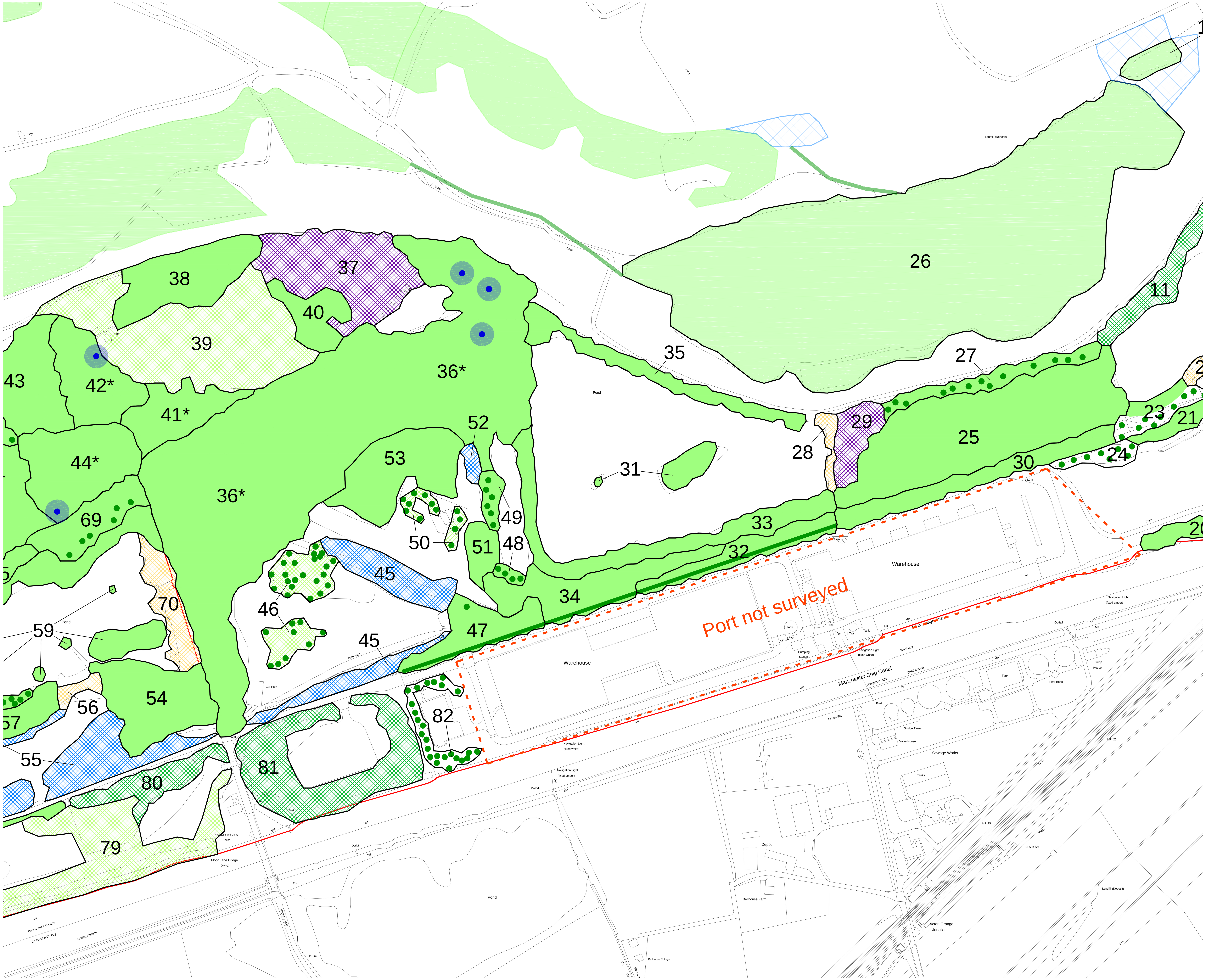
Project
Port Warrington and Arpley Meadows, Arboricultural Walkover and Desktop

Title
Arboricultural Walkover Survey (Inset 1)

Drawing Number
D6929.02.003

Scale	Date
1:2,000 @ A1	16/03/2018

Drawn	Checked	Approved
TDP	JGS	JGS



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Site Boundary

Designations and classifications (ground truthed)

Ancient Woodland (15m buffer)	(None)
Tree Preservation Order (Warrington Borough Council)	(None)
NERC Deciduous Woodland (Existing within Moore Nature Reserve, excl. Arpley mitigation)	(65.11ha)
Habitat of Principal Importance (NERC: Wood Pasture and Parkland)	(None)
Habitat of Principal Importance (NERC: Traditional Orchard)	(None)
Habitat of Principal Importance (NERC: Hedgerow)	(1,905m)
Community Forest (Mersey Forest and Northern Forest)	(All)
Candidate Veteran Tree (Compartments most likely to contain further veterans marked *)	(tbc)
Conservation Area (Warrington Borough Council)	(None)

Vegetation type (measurements taken within the boundary)

Mature trees (non-woodland or notable)	
Broadleaved	(54.84ha)
Conifer	(0ha)
Coppice	(1.66ha)
Coppice with standards	(0ha)
Failed	(0ha)
Felled	(0ha)
Ground preparation	(0ha)
Low density	(8.26ha)
Mixed mainly broadleaved	(3.33ha)
Mixed mainly conifer	(0ha)
Shrub	(3.85ha)
Windthrow	(0ha)
Young trees	(2.12ha)

Arpley ES mitigation (approximate including existing)

Broadleaved	(49.16ha)
Scrub/shrub	(7.23ha)

Rev	Description	Drawn	Approved	Date
A	Clarification following full tree survey	TP	JS	22/10/19

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Project
Port Warrington and Arpley Meadows, Arboricultural Walkover and Desktop

Title
Arboricultural Walkover Survey (Inset 2)

Drawing Number
D6929.02.004

Scale	Date
1:2,000 @ A1	16/03/2018

Drawn	Checked	Approved
TDP	JGS	JGS

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Site Boundary

Designations and classifications (ground truthed)

Ancient Woodland (15m buffer)	(None)
Tree Preservation Order (Warrington Borough Council)	(None)
NERC Deciduous Woodland (Existing within Moore Nature Reserve, excl. Arpley mitigation)	(65.11ha)
Habitat of Principal Importance (NERC: Wood Pasture and Parkland)	(None)
Habitat of Principal Importance (NERC: Traditional Orchard)	(None)
Habitat of Principal Importance (NERC: Hedgerow)	(1,905m)
Community Forest (Mersey Forest and Northern Forest)	(All)
Candidate Veteran Tree (Compartments most likely to contain further veterans marked *)	(tbc)
Conservation Area (Warrington Borough Council)	(None)

Vegetation type (measurements taken within the boundary)

Mature trees (non-woodland or notable)	
Broadleaved	(54.84ha)
Conifer	(0ha)
Coppice	(1.66ha)
Coppice with standards	(0ha)
Failed	(0ha)
Felled	(0ha)
Ground preparation	(0ha)
Low density	(8.26ha)
Mixed mainly broadleaved	(3.33ha)
Mixed mainly conifer	(0ha)
Shrub	(3.85ha)
Windthrow	(0ha)
Young trees	(2.12ha)

Arpley ES mitigation (approximate including existing)

Broadleaved	(49.16ha)
Scrub/shrub	(7.23ha)

Rev	Description	Drawn	Approved	Date
A	Clarification following full tree survey	TP	JS	22/10/19

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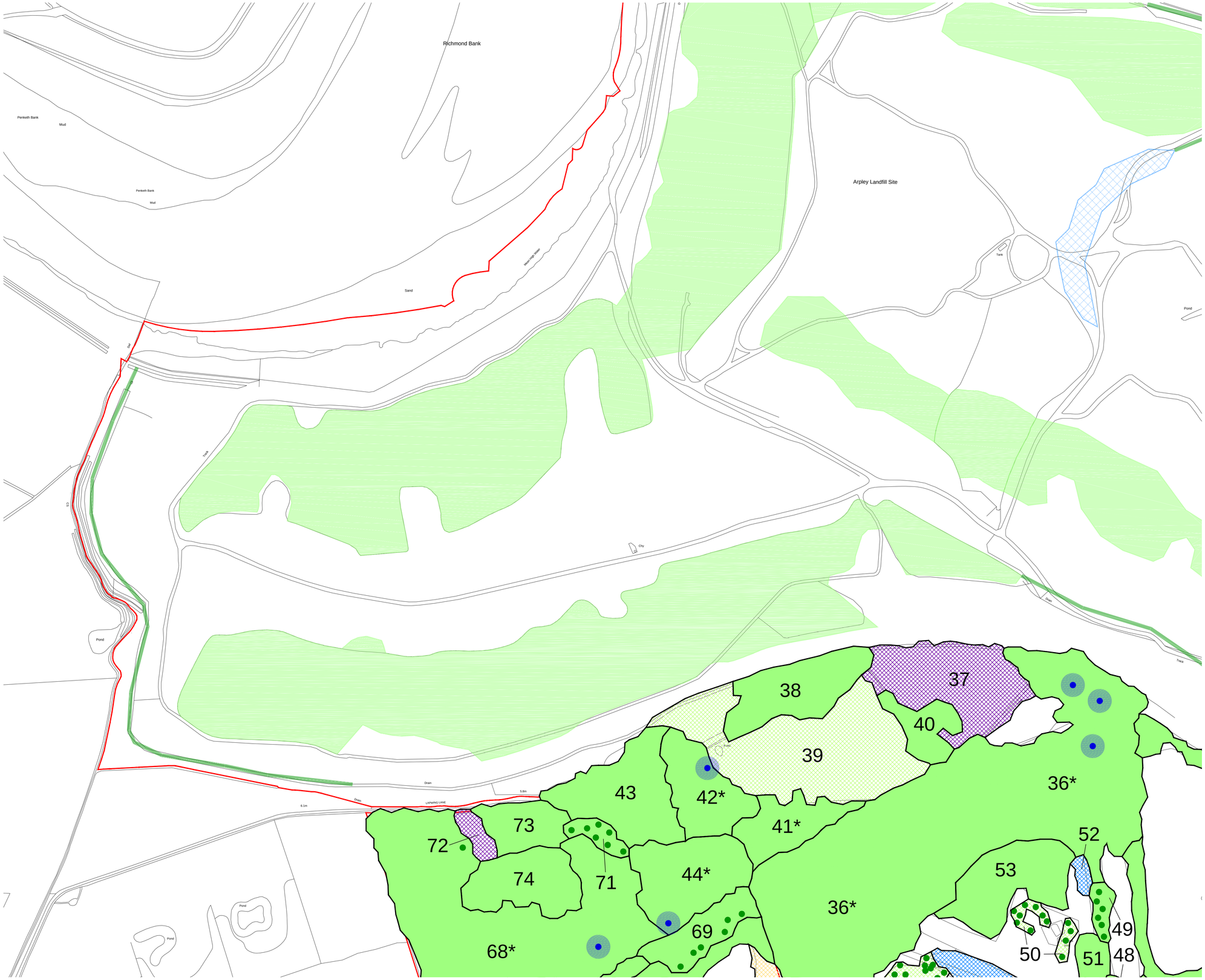
Project
Port Warrington and Arpley Meadows, Arboricultural Walkover and Desktop

Title
Arboricultural Walkover Survey (Inset 3)

Drawing Number
D6929.02.005

Scale	Date
1:2,000 @ A1	16/03/2018

Drawn	Checked	Approved
TDP	JGS	JGS



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Site Boundary

Designations and classifications (ground truthed)

Ancient Woodland (15m buffer)	(None)
Tree Preservation Order (Warrington Borough Council)	(None)
NERC Deciduous Woodland (Existing within Moore Nature Reserve, excl. Arpley mitigation)	(65.11ha)
Habitat of Principal Importance (NERC: Wood Pasture and Parkland)	(None)
Habitat of Principal Importance (NERC: Traditional Orchard)	(None)
Habitat of Principal Importance (NERC: Hedgerow)	(1,905m)
Community Forest (Mersey Forest and Northern Forest)	(All)
Candidate Veteran Tree (Compartments most likely to contain further veterans marked *)	(tbc)
Conservation Area (Warrington Borough Council)	(None)

Vegetation type (measurements taken within the boundary)

Mature trees (non-woodland or notable)	
Broadleaved	(54.84ha)
Conifer	(0ha)
Coppice	(1.66ha)
Coppice with standards	(0ha)
Failed	(0ha)
Felled	(0ha)
Ground preparation	(0ha)
Low density	(8.26ha)
Mixed mainly broadleaved	(3.33ha)
Mixed mainly conifer	(0ha)
Shrub	(3.85ha)
Windthrow	(0ha)
Young trees	(2.12ha)

Arpley ES mitigation (approximate including existing)

Broadleaved	(49.16ha)
Scrub/shrub	(7.23ha)

Rev	Description	Drawn	Approved	Date
A	Clarification following full tree survey	TP	JS	22/10/19

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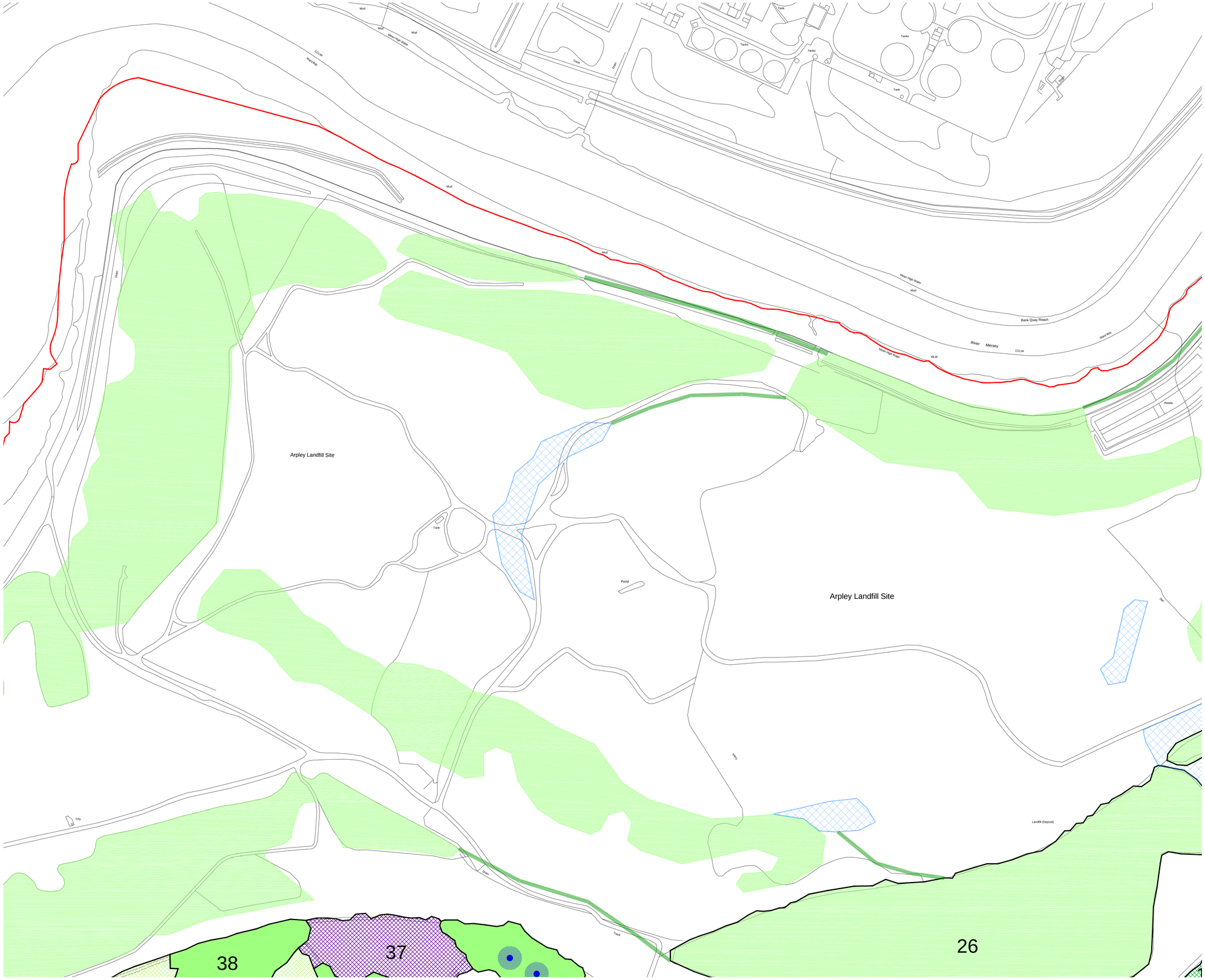
Project
Port Warrington and Arpley Meadows, Arboricultural Walkover and Desktop

Title
Arboricultural Walkover Survey (Inset 4)

Drawing Number
D6929.02.006

Scale	Date
1:2,000 @ A1	16/03/2018

Drawn	Checked	Approved
TDP	JGS	JGS



KEY

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Site Boundary

Designations and classifications (ground truthed)

Ancient Woodland (15m buffer)	(None)
Tree Preservation Order (Warrington Borough Council)	(None)
NERC Deciduous Woodland (Existing within Moore Nature Reserve, excl. Arpley mitigation)	(65.11ha)
Habitat of Principal Importance (NERC: Wood Pasture and Parkland)	(None)
Habitat of Principal Importance (NERC: Traditional Orchard)	(None)
Habitat of Principal Importance (NERC: Hedgerow)	(1,905m)
Community Forest (Mersey Forest and Northern Forest)	(All)
Candidate Veteran Tree (Compartments most likely to contain further veterans marked *)	(tbc)
Conservation Area (Warrington Borough Council)	(None)

Vegetation type (measurements taken within the boundary)

Mature trees (non-woodland or notable)	
Broadleaved	(54.84ha)
Conifer	(0ha)
Coppice	(1.66ha)
Coppice with standards	(0ha)
Failed	(0ha)
Felled	(0ha)
Ground preparation	(0ha)
Low density	(8.26ha)
Mixed mainly broadleaved	(3.33ha)
Mixed mainly conifer	(0ha)
Shrub	(3.85ha)
Windthrow	(0ha)
Young trees	(2.12ha)

Arpley ES mitigation (approximate including existing)

Broadleaved	(49.16ha)
Scrub/shrub	(7.23ha)

Rev	Description	Drawn	Approved	Date
A	Clarification following full tree survey	TP	JS	22/10/19

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Project
Port Warrington and Arpley Meadows, Arboricultural Walkover and Desktop

Title
Arboricultural Walkover Survey (Inset 5)

Drawing Number
D6929.02.007

Scale	Date
1:2,000 @ A1	16/03/2018

Drawn	Checked	Approved
TDP	JGS	JGS

KEY

[This drawing must be reproduced in colour]

Site Boundary

Designations and classifications (ground truthed)

Ancient Woodland (15m buffer)	(None)
Tree Preservation Order (Warrington Borough Council)	(None)
NERC Deciduous Woodland (Existing within Moore Nature Reserve, excl. Arpley mitigation)	(65.11ha)
Habitat of Principal Importance (NERC: Wood Pasture and Parkland)	(None)
Habitat of Principal Importance (NERC: Traditional Orchard)	(None)
Habitat of Principal Importance (NERC: Hedgerow)	(1,905m)
Community Forest (Mersey Forest and Northern Forest)	(All)
Candidate Veteran Tree (Compartments most likely to contain further veterans marked *)	(tbc)
Conservation Area (Warrington Borough Council)	(None)

Vegetation type (measurements taken within the boundary)

Mature trees (non-woodland or notable)	
Broadleaved	(54.84ha)
Conifer	(0ha)
Coppice	(1.66ha)
Coppice with standards	(0ha)
Failed	(0ha)
Felled	(0ha)
Ground preparation	(0ha)
Low density	(8.26ha)
Mixed mainly broadleaved	(3.33ha)
Mixed mainly conifer	(0ha)
Shrub	(3.85ha)
Windthrow	(0ha)
Young trees	(2.12ha)

Arpley ES mitigation (approximate including existing)

Broadleaved	(49.16ha)
Scrub/shrub	(7.23ha)

Arpley Landfill Site

Rev	Description	Drawn	Approved	Date
A	Clarification following full tree survey	TP	JS	22/10/19

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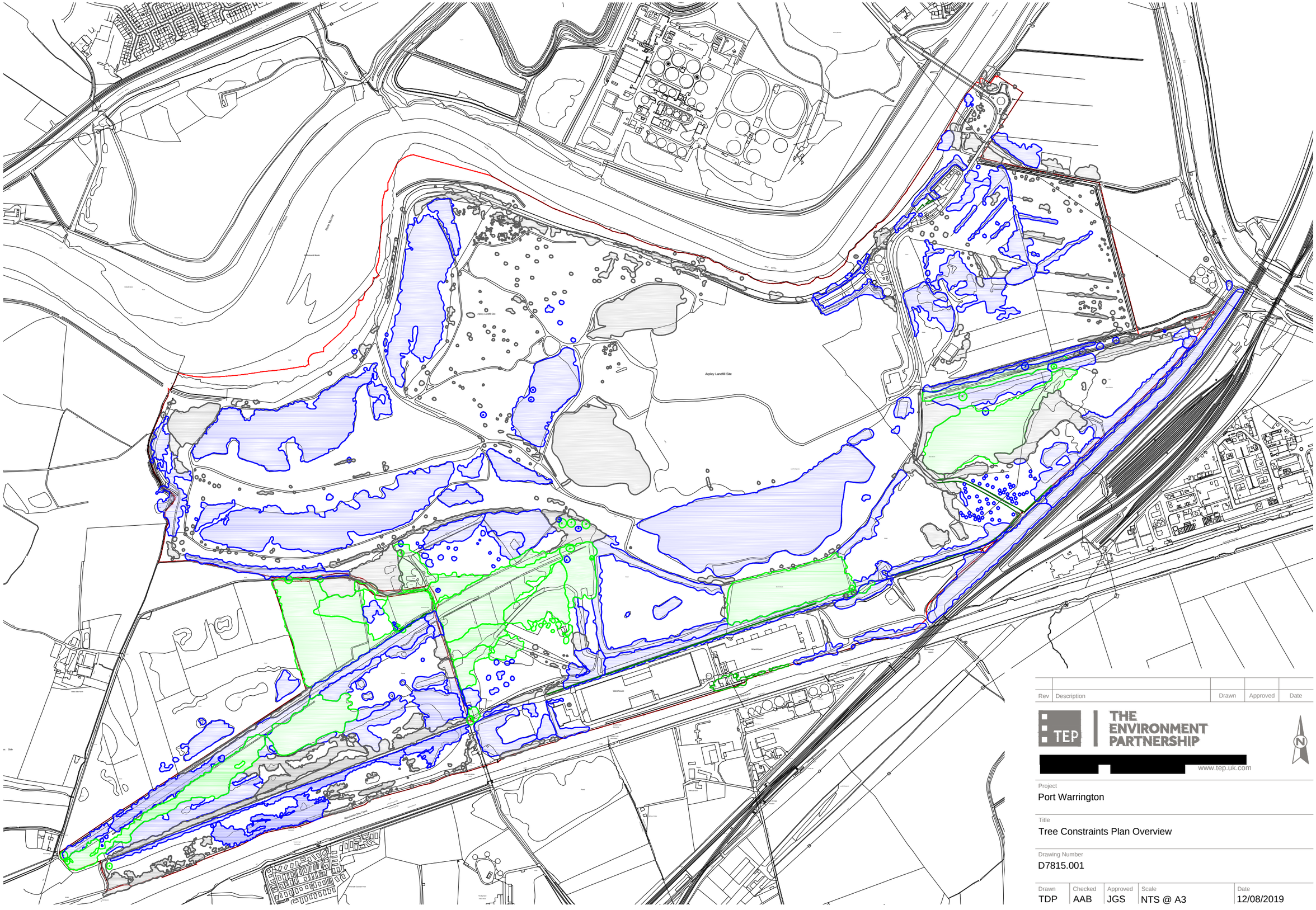
Project
Port Warrington and Arpley Meadows, Arboricultural Walkover and Desktop

Title
Arboricultural Walkover Survey (Inset 6)

Drawing Number
D6929.02.008

Scale	Date
1:2,000 @ A1	16/03/2018

Drawn	Checked	Approved
TDP	JGS	JGS



Rev	Description	Drawn	Approved	Date

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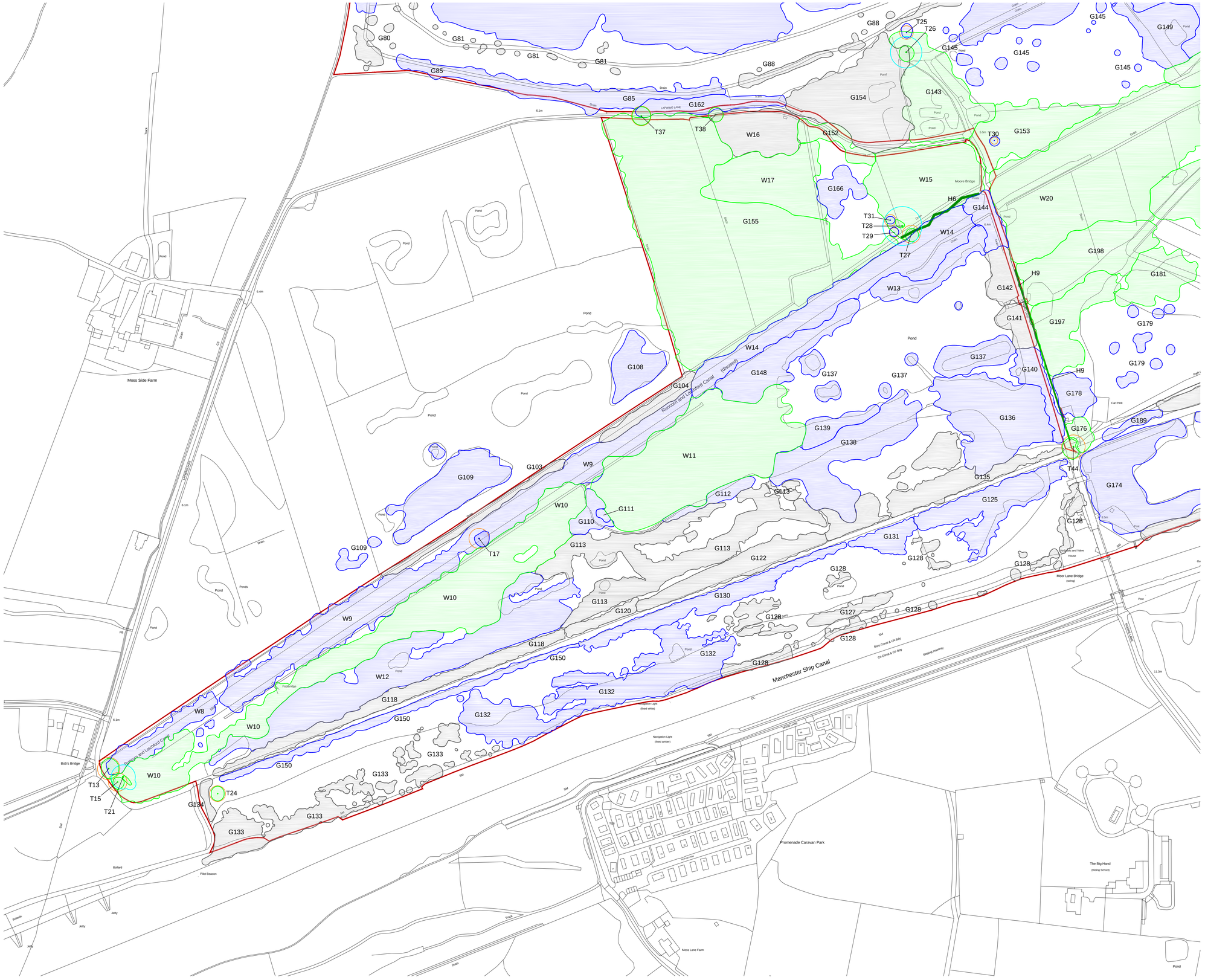
Project
Port Warrington

Title
Tree Constraints Plan Overview

Drawing Number
D7815.001

Drawn	Checked	Approved	Scale	Date
TDP	AAB	JGS	NTS @ A3	12/08/2019



KEY

[This drawing must be reproduced in colour]

- T1/G1/W1 Trees
- H1 Hedgerow
- Root Protection Area
- Veteran tree buffer
- Survey boundary

NOTE: Root Protection Area for Groups and Woodland should be assumed to be contiguous with the canopy edge.

Tree Quality Categorisation

(Based on BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations)

- Category A (High quality)
- Category B (Moderate quality)
- Category C (Low quality)
- Category U (Unsuitable for retention)
- Hedgerow (Not categorised)
- Inaccessible trees (Not categorised)

NOTE: This drawing should be read in conjunction with the respective Arboricultural Survey Data (Appendix A).

Rev	Description	Drawn	Approved	Date

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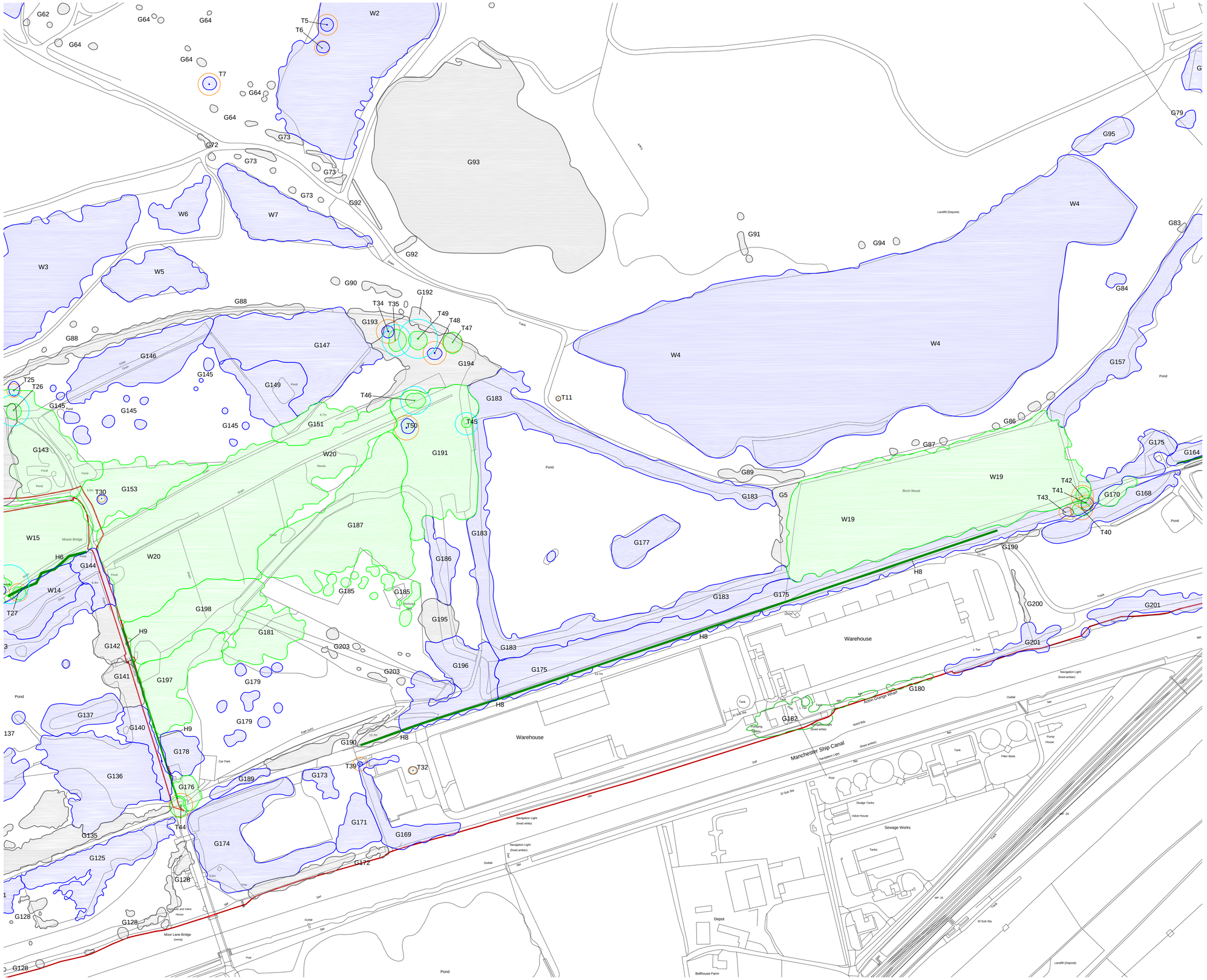
Project
Port Warrington

Title
Tree Constraints Plan

Drawing Number
D7815.002

Scale	Date
1:2,000 @ A1	18/08/2019

Drawn	Checked	Approved
TDP	AAB	JGS



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Rev	Description	Drawn	Approved	Date

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Project
Port Warrington

Title
Tree Constraints Plan

Drawing Number
D7815.003

Scale	Date
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Drawn	Checked	Approved
TDP	AAB	JGS

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Rev	Description	Drawn	Approved	Date

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Project
Port Warrington

Title
Tree Constraints Plan

Drawing Number
D7815.004

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1:2,000 @ A1	18/08/2019

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Title
Tree Constraints Plan

Drawing Number
D7815.005

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1:2,000 @ A1	18/08/2019	
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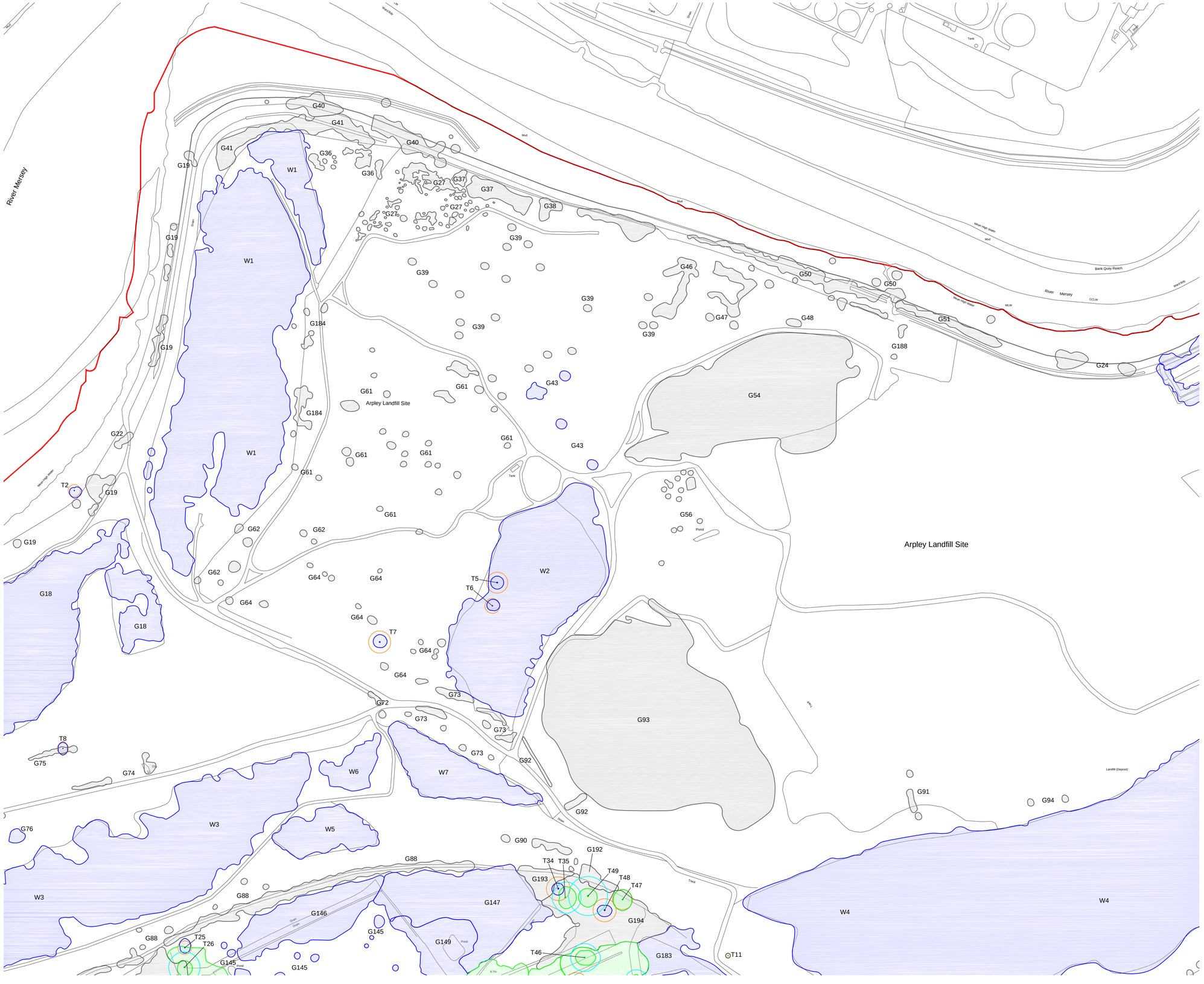
TDP	AAB	JGS



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Rev	Description	Drawn	Approved	Date

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Title
Tree Constraints Plan

Drawing Number
D7815.006

Scale	Date
1:2,000 @ A1	18/08/2019

Drawn	Checked	Approved
TDP	AAB	JGS

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Arpley Landfill Site

Rev	Description	Drawn	Approved	Date

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Project
Port Warrington

Title
Tree Constraints Plan

Drawing Number
D7815.007

Scale	Date
1:2,000 @ A1	18/08/2019

Drawn	Checked	Approved
TDP	AAB	JGS

A57

Proposed Western link road

Suggested alternative access point

West Coast Main Line

Warrington Commercial Park may include Port uses

Warrington Council recommended route access point

Gatewarth

River Mersey

Arpley Meadows Country Park

Potential for green infrastructure links to wider Warrington Waterfront Scheme

Unit 1
Unit 2
Unit 3
Unit 4
Unit 5
Unit 6
Unit 7
Unit 8
Unit 9
Unit 10
Unit 11
Unit 12
Unit 20

Manchester Ship Canal

A56

Possible location vessel turning basin

Possible rail link into Port Warrington

Existing Acton Grange berth provides sustainable water: rail hub

Second berth opportunity

Port Warrington existing and consented parts shown hatched

Linear plots suitable for warehousing and distribution

Moore Lane lay-by berth

LANDING LANE

MOSS SIDE LANE

MOORE LANE

BELLRICKEL LANE

RONCORN ROAD

DISTRIBUTOR ROAD

FORREST WAY

KEY

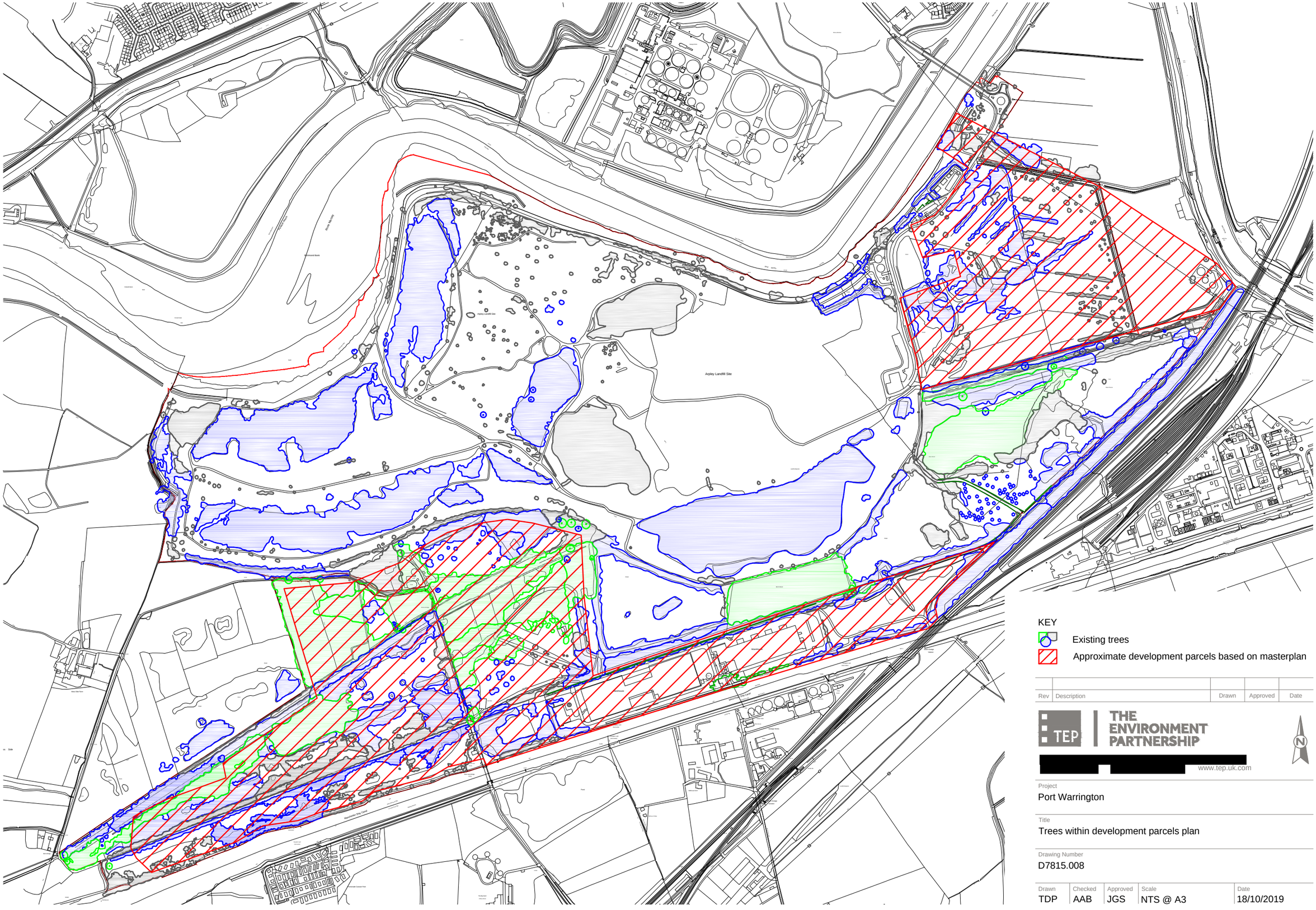
- Proposed Development Area
- Public Open Spaces
- Warrington Waterfront development Areas
- South West Urban Extension
- Indicative employment development in Use Classes B1,B2,B8:
  Port Warrington - maximum floorspace 2,215,784ft² / 205,849m²
  Warrington Commercial Park- Maximum floorspace 887,596 ft² / 82,452m²
- Warrington Commercial Park will include mixed use development
- Proposed and improved vehicular routes
- Existing woodland zones retained
- Proposed mitigation planting
- Proposed landscape buffers
- Activity zones
- Adventure play / children's play area
- Picnic areas
- Country Park entrances
- Woodland Trail
- Development Plots

Port Warrington and Warrington Commercial Park

B10173-AEW-XX-XX-DR-0112_P3_Proposed Illustrative Masterplan

1:5000 @A0 TF AL 05/02/2019

aewarchitects.com



KEY

Existing trees

Approximate development parcels based on masterplan

Rev	Description	Drawn	Approved	Date

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Project
Port Warrington

Title
Trees within development parcels plan

Drawing Number
D7815.008

Drawn	Checked	Approved	Scale	Date
TDP	AAB	JGS	NTS @ A3	18/10/2019

HEAD OFFICE MARKET GATESHEAD LONDON CORNWALL

[redacted]