THE ENVIRONMENT PARTNERSHIP

WAKEFIELD ROAD

ATHERSLEY

ARBORICULTURAL IMPACT ASSESSMENT IN SUPPORT OF OUTLINE PLANNING

SEPTEMBER 2017

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Executive Summary

1. TEP has been commissioned to undertake a tree survey to inform and support an application for outline consent for residential development at land located off Wakefield Road in Athersley. This report assesses the impact of design principles established by the Illustrative Masterplan rather than specific tree removal or retention.

2. The site comprises open fields with horse paddocks, rough scrubland and scattered trees on undulating topography.

3. Based on an objective assessment made in accordance with BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations, there are 12 moderate quality (Category B) and 29 low quality (Category C) trees and groups on or within influencing distance of the site.

4. A site survey and desktop searches identified no trees subject to Tree Preservation Order; no trees within a Conservation Area; no veteran trees and no ancient woodland.

5. The capacity of trees to support roosting bats should be confirmed by an ecologist prior to works, although during a preliminary ground based assessment, no arboricultural features that may be suitable for bats were observed.

6. The Illustrative Masterplan demonstrates that the site could be developed whilst retaining a significant portion of existing trees within the site interior. The allocation of large areas of land to the south and west of the proposed housing layout also provides good opportunities for new tree establishment as well as enhancement and connectivity of existing arboreal habitats.

7. The majority of trees that would be removed are C Category or U Category trees unsuitable for long-term retention. One Category B group formed from an outgrown hawthorn hedge that bisects the site form south-west to north-east would need to be removed. This will lead to a small loss of ecological value but similar habitats and connectivity would continue to be provided by retained and proposed vegetation along the southern and western boundaries.

8. All trees on and beyond the site boundaries could be retained in accordance with BS5837:2012.

9. Section 6 describes considerations that must be taken into account when designing around trees to help inform decisions on tree retention and removal. It contains information relevant to all project specialists involved in layout or infrastructure design and it will be used by the project Arboricultural Consultant and Local Planning Authority in the assessment of future impacts on trees.

10. 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. Where the recommendations of this report have been followed, any future deterioration in tree condition may not be attributed to the development.

1.0 Introduction

1.1 TEP has been commissioned by Harworth Estates Ltd to conduct an arboricultural survey of land at Wakefield Road in Athersley. This report details the anticipated arboricultural impact of developing the site for residential use, subsequent mitigation recommendations and protective measures.

1.2 The current application is for outline planning permission only and this report assesses the impact of the design principles established by the Illustrative Masterplan provided by the client (Drawing 2), rather than specific tree removal or retention.

1.3 The survey was carried out in May 2017 by means of inspection from ground level by a qualified Arboricultural Consultant. Trees were assessed in accordance with BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations.

1.4 Under the British Standard the assessment of trees is made objectively. The categorisation method identifies the quality and value of the existing tree stock.

1.5 A topographical survey was used to record the position of trees and vegetation (drawing reference: 3898_Athersley_Gawber). Where the age distribution and species mix of tree cover was relatively uniform, trees were plotted as groups. For the purposes of this report it is assumed that the detail on the drawing is accurate. A number of trees were not shown on the topographical surveys and their locations are estimated[1].

1.6 The nature of the soils on site was not assessed during the survey. The possibility of minor soil movement due to tree root activity cannot be discounted. Prior to the undertaking of foundation depth calculations any estimated tree locations should be resolved. Any apparent discrepancy in tree location or queries relating to the location of species within groups should be discussed with TEP prior to submission.

1.7 A total of 18 individual trees (T1-T18); 22 groups of trees (G1-G22); and 1 woodland compartment (W1) were surveyed and mapped[2]. All arboricultural information recorded during the survey is presented at Appendix A.

1.8 This report provides the results of the survey and includes the following:

- A schedule of all trees located on, or within influencing distance of the proposed development site (Appendix A);
- An assessment based on BS 5837:2012, of trees in terms of their potential value within any future development. On the basis of this assessment trees have been categorised into one of four categories: A, B, C or U (Appendices A & B);
- An assessment, based on BS 5837:2012, of the requirement for protection of trees during the construction phase (Section 6);
- Advice on removal, retention and management of trees (Sections 5 & 7);
- A Tree Constraints Plan detailing tree quality categories, canopy spreads and Root Protection Areas (RPA) for all trees surveyed (Drawing 1); and

[1] Estimated feature locations are marked on Drawing 1
[2] See Drawing 1: Tree Constraints Plan

- A copy of the Illustrative Masterplan produced by JRP (Drawing 2)

2.0 The Site and Surroundings

2.1 The site is located on the southern extents of Athersley approximately 1 mile north of Barnsley Town Centre in South Yorkshire. It is a former mineral colliery site and now comprises overgrown fields and paddocks to the east and scrub grassland to the west separated by an overgrown hedge that now forms a row of small, mature trees. It is immediately surrounded by residential and commercial units to the north, east and south and open fields and grass land to the west and southwest. A belt of narrow woodland runs along the southern boundary on a raised disused railway line. The approximate extent of the site is shown in Figure 1.

2.2 The topography of the survey area slopes down from north to south with a change in land levels of approximately 18m. Along the central extents of the eastern part of the site there is a dried up ditch with undulating embankments that leads to a small pond in the south east corner.

2.3 Weather conditions during the survey were sunny and bright.

2.4 Inspection of trees was restricted in some cases by dense vegetation or their location on third party land. These trees were surveyed insofar as was possible from accessible areas of the site and from the public highway[3].

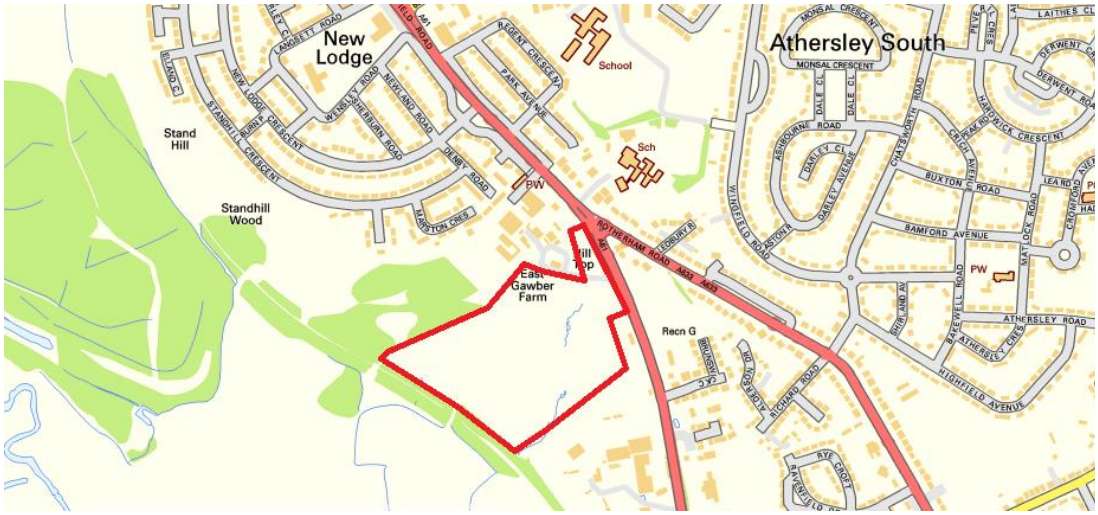

Figure 1 Site location and approximate boundary (OS Street View ® 1:10 000 scale)

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[3] Survey restrictions are noted in Appendix A

Development Proposals

2.5 The current application is for outline consent for residential development which will include the construction of new internal roads and open spaces. Primary vehicle access is proposed to be constructed off Wakefield Road to the north east.

2.6 The Illustrative Masterplan supplied by JRP is reproduced as Drawing 2 (drawing reference: P17 5091 03).

3.0 Statutory Protection and Guidance

National Planning Policy Framework (NPPF)

3.1 The NPPF assumes protection of all ancient woodland and veteran trees unless it can be clearly demonstrated that the need for, or benefits of, development outweigh the loss. In this respect ancient woodland is defined as an area which has been wooded continuously since at least 1600 AD and a veteran as a tree of exceptional value for wildlife, in the landscape, or culturally because of its great age, size or condition.

3.2 On this site there are no ancient woodland or veteran trees.

Tree Preservation Orders & Conservation Area Designations

3.3 Where it is considered expedient to do so, local authorities can create Tree Preservation Orders (TPO) to protect the amenity value conferred to a location by a tree or group of trees. Where a TPO is in force, lopping, topping, felling, uprooting or wilful damage caused to a tree is prohibited and such actions may be prosecuted and incur an unlimited fine. Works to TPO protected trees must only be undertaken with the written consent of the local authority.

3.4 Section 211 of The Town and Country Planning Act 1990 (TCPA) relates to the preservation of trees in Conservation Areas. Under Section 211 anyone proposing to remove, uproot or destroy any tree within a Conservation Area is required to give the local planning authority six weeks' prior notice (a "section 211 notice"). During this period the Council may consider serving a Tree Preservation Order to prevent the proposed work from being undertaken.

3.5 Exceptions from the requirement to give a Section 211 notice are set out in The Town and Country Planning (Tree Preservation) (England) Regulations 2012. A person does not have to give the local planning authority six weeks' prior notice for, amongst other reasons, work to trees so far as such work is necessary to implement a planning permission (other than an outline planning permission).

3.6 A check was undertaken with Barnsley Metropolitan Borough Council on 27 May 2017. The online mapping software confirmed that n trees on or immediately adjacent to the site were subject to Tree Preservation Orders or within a Conservation Area.

Table 1 Features protected by TPO or Conservation Area designation

Tree survey reference	TPO reference	Conservation Area
N/a	None	None

Protected Species – Bats

3.7 Mature trees often contain cavities, crevices and hollows, which are a potential habitat for roosting bats. Bats are afforded protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), as well as under Schedule 2 of the Conservation of Species and Habitats Regulations 2010, and as such causing damage to a bat roost constitutes an offence.

3.8 A preliminary ground level appraisal of the wildlife habitat value of each tree was undertaken by a trained layperson as part of the arboricultural survey. No trees where noted as having potential to support roosting bats. This information should not be treated as comprehensive bat survey. However, an arboricultural view on the likely internal structure of any cavity or crevice may usefully inform a ground based bat habitat assessment. The extent of any bat roost potential in trees should be determined by the project ecologist.

Table 2 Features of possible interest to bats

Tree survey reference	Feature/s of note
None	N/a

3.9 If the presence of a bat roost is suspected whilst undertaking works on any trees on site, operations must be halted until a licensed bat handler or ecologist can provide advice.

Protected Species - Birds

3.10 Trees are a potential habitat for nesting birds, which (as well as their nests and eggs) are protected under the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to intentionally or recklessly, damage or destroy an active nest or any part thereof.

3.11 Due to the suitability of the trees within the survey boundary for nesting birds, all tree work should ideally be undertaken outside the bird nesting season (March to August, inclusive).

3.12 If this is not possible then a detailed inspection of each tree should be undertaken by a qualified ecologist immediately prior to the arboricultural works. Should an active nest be found (being built, containing eggs or chicks), any work likely to affect the nest must be halted until the nest becomes inactive.

4.0 Tree Population

4.1 18 individual trees (T1-T18); 22 groups of trees (G1-G22); and 1 woodland compartments (W1) were recorded within influencing distance of the site. A schedule of all trees and groups in terms of species, condition, age, management recommendations and BS 5837:2012 quality categories is provided at Appendix A.

4.2 The tree population can be divided into two based on different characteristics. The central and eastern parts of the site have been left unmanaged for some time since the closure of the colliery. Subsequently, trees comprise dense clusters and scattered individuals of hawthorn, blackthorn and willow with the occasional small tree. They are mainly concentrated along the undulating embankments of the dried up ditch and in a linear group along the centre of the site. The eastern and southern boundaries comprise dense tree cover of middle aged broadleaves forming narrow woodland belts and screening groups with canopies extending into the site.

4.3 Groups G7 to G17 are all mainly composed of hawthorn, blackthorn elder and willow and collectively form an unkempt belt of scattered vegetation along the edges of the dries up ditch. They are unremarkable in terms of arboricultural value but do provide some good habitat in a largely open site.

Figure 2 View south east towards groups G8 to G12

4.4 A linear group of mature hawthorn is located across the centre of the site (Group G14). It is a former hedgerow that has been left unmanaged and developed into a dense screen that separates the site into two parcels. The trees are a mixture of single and multi-stemmed individuals with gnarly bases, twisted and fused stems and minor occasional grazing damage. They form one continuous canopy and parts are surrounded by dense ground flora such as nettles and brambles.

4.5 A small number of ornamental and garden trees are located in the northern part of the survey area but outside of the application site around East Gawber Farm (trees T1 to T5 and groups G1 to G5). They comprise purple Norway maples, lilac, rowan, silver birch, goat willow and cypress generally in good condition and provide a small amount of amenity within the locality.

4.6 The most prominent tree features surveyed are outside but abutting the application site on the eastern and southern boundaries. Groups G19 to G21 form a dense screen that is located on a steep embankment leading up to the commercial units south east of the site. They comprise young to middle aged native broadleaves forming one dense, continuous canopy. Whilst not remarkable as individual trees they provide valuable screening for the site from a busy commercial yard.

4.7 Trees along the southern boundary comprise a thin narrow establishing woodland growing on a raised bund of a disused railway line. It comprises single and multi-stemmed middle aged trees growing close together with an informal footpath that runs centrally to the group at the highest point of the embankment. This feature is part of a wider belt of trees that runs along the length of the line away from the site to the east and west. It has some arboricultural and amenity merit and good habitat connectivity and the potential to form a good woodland composition within the next 20 to 40 years.

Figure 3 View southwest towards W1

4.8 Tree and group locations, their quality categories and canopy spreads are shown on Drawing 1.

Tree Quality Categorisation

4.9 Under BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations, trees and groups are objectively assigned a quality category to quantify their value within any future development. Table 3 contains a summary of the categories presented in the British Standard. The full table has been reproduced at Appendix B.

4.10 Table 4 presents the results of the tree value categorisation. Hedgerows have not been afforded a quality value as they do not fall within the categorisation criteria of BS 5837:2012.

4.11 Where tree health and form were good and longevity had not been compromised, moderate and values were commonly attained. Such trees were scattered across the site but were found in concentration along the southern and eastern boundaries. In most cases these are middle age trees displaying good crown form that comprise the narrow woodland along the disused railway and screening of commercial sites to the east.

Table 3 Summary of BS 5837 tree quality categorisation criteria

Category A	Trees of high value including those that are particularly good examples of their species and/or those that have visual importance or significant conservation or other value
Category B	Trees of moderate value including those that do not qualify as Category A due to impaired condition and/or those that collectively have higher value than they would as individuals; also trees with material conservation or other value
Category C	Trees of low value including those with very limited merit or impaired condition; trees offering transient or temporary landscape benefits
Category U	Trees with irremediable defects and anticipated early loss due to collapse; dead trees or those in immediate decline and those with infectious pathogens that threaten other trees

Table 4 Results of the tree quality categorisation

^ Indicates trees on third party land

	Category A	Category B	Category C	Category U
Individual Trees (18)	-	T7, T10, T11, T14^, T18^	T1^, T2^, T3, T4, T5, T6, T8, T9, T12, T13, T15, T16, T17	-
Sub-total	**0**	**5**	**13**	**0**
Groups of Trees (22)	-	G1^, G4^, G5^, G6^, G14, G21^	G2^, G3^, G7, G8, G9, G10, G11, G12, G13, G15, G16, G17, G18, G19^, G20^, G22	-
Sub-total	**0**	**6**	**16**	**0**
Woodland (1)	-	W1	-	-
Sub-total	**0**	**1**	**0**	**0**

5.0 Development Impacts and Opportunities

5.1 This section gives an overview of the likely impact of residential development on existing trees, as informed by the Illustrative Masterplan. The actual impact will be determined in any subsequent reserved matters/detailed planning application. It has been assumed that any future development will be broadly similar to the Masterplan proposals but may be influenced by the constraints and opportunities presented in this report and by other technical disciplines.

5.2 The site is characterised by relatively small and/or low quality trees across the centre of the site and wooded perimeters to the south and east. Under the current layout and in principle it would be possible to develop this site for residential use whilst retaining all of the trees around the boundaries, including all those of moderate value (Category B). This aspiration should be realised at the detailed design stage via the avoidance of extensive incursion into rooting areas, significant changes in ground level around exiting trees and consideration of a final structural stand-off that provides adequate space for future growth (See section 6 for further information).

5.3 At site level, existing trees along the southern and eastern boundaries create a strong frame for development and one which the Masterplan respects. The provision of landscape buffers at these locations provides the opportunity to augment existing tree cover and strengthen connectivity with linear features that extend beyond the site. Additionally, the proposed greenspace around existing trees provides reassurance their quality and function will not be eroded as a result of the development.

5.4 The housing layout in its current configuration will require the removal of some trees across the centre of the site, however in their majority, these trees are of insufficient quality to reasonable constrain the design. The removal of one Category B linear group (G14) would be required as well as 3 further moderate quality trees recorded as individuals. This will lead to a small loss of amenity and ecological value that could be mitigated for with new planting within the design. All other trees are of low quality and are likely to require removal to accommodate new internal roads, adequate parking provision and useable garden space.

5.5 Where sensitive design allows for the retention of existing trees, there will be considerable scope to add arboricultural value to the site. This may be achieved through new and more diffuse planting and will be particularly valuable where trees with a large ultimate size are incorporated. The proposals provide an opportunity to significantly improve the quality of tree cover on the site. In addition to the proposed public open space, tree establishment could be achieved within gardens, open space and alongside the primary road network.

5.6 A broad belt of new tree planting is shown along the western boundary. Landscaping would also be provided around residential areas. On this basis, and assuming the retention of the large proportion of existing trees as implied by the Illustrative Masterplan, the site would be capable of supporting residential development with no net loss of tree cover or quality. It may also be possible to improve the connectivity and distribution of tree cover and thereby further improve the arboricultural legacy of the development.

6.0 Considerations at the Detailed Design Stage

6.1 The following information sets out the primary considerations in determining the requirement for tree protective measures and in the assessment of development impact.

Root Protection Areas

6.2 As per BS 5837:2012, the Root Protection Area (RPA) is calculated using each tree's diameter at 1.5 metres[4] and represents the minimum area around each tree that must be left undisturbed to ensure its survival.

6.3 Tree roots typically spread two times the width of the crown, although this figure may be significantly increased for certain species and where specific ground conditions are present. The majority of tree roots are found in the top 600mm of soil and most of the fine roots that absorb water and nutrients are found close to the surface.

6.4 The morphology of roots is influenced by past and present site conditions (including roads, buried structures and underground services), soil type, topography and drainage. This means that a tree's roots may not be uniform in extent and the RPA may not be a circular area centred on the tree stem.

6.5 On this site the majority of trees are growing in relatively homogeneous material. The only barriers to growth are likely to be the undulating topography and areas of hardstanding of Wakefield Road and the commercial units. Roots are unlikely to be absent in all these areas but where unfavourable conditions exist, growth will certainly be impeded.

6.6 The RPA has been adjusted or offset where appropriate to most accurately represent the likely spread of roots for each individual tree[5].

Underground Utility Issues

6.7 The installation of utilities can be very damaging to tree root systems and can affect a much larger area of roots than is directly affected by trench creation.

6.8 Where the installation of services within the RPA of retained trees is unavoidable, appropriate work methods will be required to ensure the safe long-term survival of those trees. This process will require additional consultation with a qualified Arboricultural Consultant and is likely to be more expensive than conventional trench installation.

Structural Stand-off

6.9 A minimum structural standoff will need to be considered for retained trees. The function of such a development standoff is to ensure adequate space is afforded for future growth, ultimate height and crown spread, and to minimise adverse interference with future site use.

[4] Refer to Appendix A for RPA area calculations
[5] See Drawing 1 for RPA shapes

Mature Individual Trees

6.10 Adequate structural stand-off for mature, open-grown and hedgerow trees can be inferred from respective Root Protection Areas. Due to their large stem girth (translating to an RPA radius that generally exceeds their canopy extents) and limited potential for further expansion, these trees are likely to require minimal future management to maintain existing crown dimensions. A 5m buffer from the canopy edge is recommended for low-loadbearing surfaces and a 10m buffer for houses and carriageways.

6.11 Human perception of large trees should also be a consideration when determining the level of structural stand-off. It is important to anticipate and prevent any residual pressure that may be placed on retained trees by future users of the development. The issue of light attenuation and unfounded fears of tree or branch failure can lead to the removal of trees that were subject to strict protection measures during development.

Young and Middle-aged Trees

6.12 Structural stand-off for self-set groups and individual developing trees will need to take account of species and future adjacent land use. Further advice should be sought at the detailed design stage from a qualified Arboricultural Consultant.

Ground Level Changes

6.13 A rise or reduction in soil level can have major implications on the longevity and health of the trees. Minor changes (up to 100mm) can be tolerated in some cases but is heavily dependent on tree species, condition and growing environment.

6.14 Existing ground levels within the RPA should be maintained. The advice of a qualified Arboricultural Consultant should be sought if level changes are required.

Drainage & Storm Water Run-off Issues

6.15 Drainage and storm water run-off requires due consideration to prevent excessive and/or polluted run-off into the rooting area of trees to be retained. Attenuation ponds have been considered on this site and are located on the furthest extents of the Root Protection Areas of trees in W1 to the south of the site. A full assessment of impact on trees of all drainage aspects should be considered as part of the reserved matters process.

7.0 Recommendations

Tree Work

7.1 Management recommendations for trees based on their current agricultural context can be found at Appendix 1. Additional management may be required in response to any change in land use that may result from development.

7.2 All tree surgery work should be carried out by a qualified contractor in accordance with BS 3998:2010 Tree work – Recommendations.

Arboricultural Impact Assessment

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

7.4 One function of the AIA process will be the consideration of trees alongside other project disciplines (layout, drainage, utilities etc.) in order to minimise future conflict and avoid unexpected expense or undesirable tree loss. An AIA will also detail tree protection measures if required.

Protective Fencing and Exclusion Zones

7.5 Site-wide tree protection measures will be required during the construction process to protect retained trees. Tree protection measures must be put in place prior to the commencement of any development works to demarcate a Construction Exclusion Zone (CEZ) around retained trees.

7.6 The CEZ should protect both tree roots and branches and should be designed to incorporate canopy spread where appropriate. All of the CEZ should be protected throughout the construction process by either an approved working methodology, ground protection, or protective fencing.

Mitigation for the removal of trees

7.7 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.

7.8 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. Net gains in biodiversity may be demonstrated where the number of tree species, variety of tree ages or range of niche habitats can be increased. Native, old, large or dead trees are likely to have a relatively significant impact on a scheme's environmental credentials, as will the connectivity of trees, hedges and woodland.

7.9 Replacement tree planting may be required in the event trees are lost as a result of development. This is most commonly secured by the provision of a planting scheme submitted in support of a planning or reserved matters application. The requirement for replacement planting and its extent will be assessed as part of the AIA process.

7.10 Species choice should seek to diversify the population and mirror the diversity of the woodland belt to the south. Smaller species including holly, birch, rowan, apple, cherry, yew and juniper are also recommended for the benefit of local ecology and amenity.

7.11 The advice of a qualified Arboricultural Consultant should be sought during planting plan preparation to ensure species and placement suitability.

7.12 The extent of mitigation planting will ultimately be determined in agreement with the LPA.

Post Construction Tree Care

7.13 Hazard recommendations are based on observations at the time of survey. Trees are dynamic living organisms whose structure is constantly changing. Even those in good condition can suffer from damage or stress. Following site development, regular (annual or biennial) inspections of all retained trees should be undertaken by a qualified Arboricultural Consultant.

APPENDIX A: Arboricultural Survey Data

APPENDIX A: Arboricultural Survey Data Sheets

Surveyor Robin Grimes
Date 25.05.17
Town Athersley
Site Wakefield Road
Dwg Ref D6401.02.001

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	Purple Norway maple	6.0	90	1.0	1.5	1.5	1.5	1.5	1.0	S	Young	Good	Ornamental planting in well-maintained lawn; good form but closely growing with G2	C,1,2	1.1	3.7		Long	N
T2	Purple Norway maple	9.0	150	1.0	2.0	1.5	2.0	2.0	2.0	N	Middle Age	Good	Good form and vigour but slightly suppressed by G4	C,1,2	1.8	10.2		Long	N
T3	Lilac	3.0	100	1.0	1.0	1.0	1.0	1.0	1.5	N	Middle Age	Good	Kinked and twisted stem with small, round crown; good vigour; no significant defects	C,1	1.2	4.5		Long	N
T4	Rowan	4.0	260	1.0	1.0	1.0	1.0	1.0	1.5	E	Middle Age	Fair	Small but pronounced basal flare; bifurcate at 1m; topped, flat crown at 4m	C,1	3.1	30.6		Medium	N
T5	Goat willow	4.5	270	1.0	1.0	1.0	2.0	1.0	0.5	E	Middle Age	Fair	Leans to east; bifurcate at 1m with good stem union; dense, small round crown	C,1	3.2	33.0		Long	N
T6	Silver birch	8.0	240	1.0	3.0	2.5	4.0	3.0	1.5	NW	Middle Age	Good	Kinked stem; open crown; good vigour; minor dead wood	C,1,2	2.9	26.1		Long	N
T7	Hawthorn	7.5	320	1.0	3.0	2.0	2.5	2.0	1.0	S	Mature	Good	open grown tree; good form and vigour for species; dense round crown with some epicormic shoot growth on lower stem; no significant defects	B,1,2	3.8	46.3		Long	N
T8	Common ash	9.5	277	2.0	4.0	3.0	3.0	3.0	2.0	N	Middle Age	Fair	Multi-stemmed tree located in G8; slightly reduced vigour but good form; limited inspection due to location	C,1	3.3	34.6		Long	N
T9	Hawthorn	5.0	211	4.0	2.5	2.5	2.5	2.5	0.5	N	Middle Age	Good	Multi-stemmed at base; good form and vigour; dense, round crown to ground; open grown	C,1,2	2.5	20.2		Long	N
T10	Hawthorn	6.0	420	1.0	4.0	4.0	4.0	4.0	0.5	N	Mature	Good	Good form and vigour for species; large bole and multi-stemmed at 0.5m above stem base; dense crown; excellent vigour; open grown tree	B,1,2	5.0	79.8		Long	N
T11	Hawthorn	6.5	400	1.0	4.0	4.0	4.0	4.0	0.5	E	Mature	Good	Good form and vigour for species; large bole and multi-stemmed at 0.5m above stem base; dense crown; excellent vigour; open grown tree	B,1,2	4.8	72.4		Long	N
T12	Hawthorn	4.0	140	1.0	2.0	2.0	2.0	2.0	0.5	N	Middle Age	Good	Dense, round crown to ground	C,2	1.7	8.9		Long	N
T13	Hawthorn	4.0	110	1.0	1.5	1.5	1.5	1.5	0.5	E	Middle Age	Fair	Dense, round crown to ground; slightly reduced vigour with some moderate die back	C,1	1.3	5.5		Medium	N
T14	Hawthorn	9.0	450	1.0	4.0	5.0	4.5	4.0	0.5	N	Mature	Good	Excellent form with very dense, round crown; no significant defects	B,1,2	5.4	91.6		Long	N
T15	Hawthorn	6.0	90	2.0	1.0	1.0	1.0	1.0	0.5	S	Middle Age	Fair	Multi-stemmed trees growing on steep slope with brash dumped around the base	C,1	1.1	3.7		Long	N

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
T16	Hawthorn	3.5	90	1.0	1.0	1.0	1.0	1.0	0.5	N	Young	Good	Multi-stemmed, self-set tree with good form and vigour; no significant defects	C,1	1.1	3.7		Long	N
T17	Hawthorn	6.5	269	2.0	3.0	3.0	3.0	3.0	0.5	N	Middle Age	Good	Multi-stemmed, self-set tree with good form and vigour and dense round crown to ground; abundant suckers around the base	C,1,2	3.2	32.8		Long	N
T18	Common ash	to 12	510	4.0	6.0	3.0	4.0	4.0	1.0	N	Middle Age	Good	Third party tree; multi-stemmed at base; slightly reduced vigour but good form	B,1	6.1	117.9		Medium	N
Groups																			
G1	Leyland cypress	to 8	to 250	c. 50							Middle Age	Good	Linear group along length of tarmac driveway/track; good screening; good vigour; closely planted forming one continuous canopy around buildings; restricted rooting area; no significant defects	B,2	Refer to Drawing	n/a		Long	N
G2	Lawson's cypress	to 4	to 150	3.0							Middle Age	Good	Ornamental planting in well-maintained lawn; good form but closely growing with T1	C,1,2	Refer to Drawing	n/a		Long	N
G3	Lawson's cypress	to 3.5	50 to 90	8.0							Young	Good	Linear group to rear of private lawn area; good screening and closely planted with younger, newer trees towards centre of group	C,2	Refer to Drawing	n/a		Long	N
G4	Leyland cypress	to 10	to 320	2.0							Middle Age	Good	Good form and vigour; 2 trees growing very close together forming one crown; in small shrub bed at end of lawn and adjacent private driveway	B,1,2	Refer to Drawing	n/a		Long	N
G5	Hawthorn	to 6	90 to 200	9.0							Middle Age	Good	Linear group of trees at bottom of steep slope; good form and vigour with dense, round crowns; possibly former hedgerow; single and multi-stemmed trees	B,2	Refer to Drawing	n/a		Long	N
G6	Lawson's cypress	to 7	150 to 260	28.0							Middle Age	Good	Well-maintained linear group of trees forming one continuous canopy along edge of tarmac drive/access track; forms good screening for adjacent property and buildings; limited rooting area	B,2	Refer to Drawing	n/a		Long	N
G7	Hawthorn	to 7	to 200	c. 20							Middle Age	Good	Circa. 20 single and multi-stemmed, self-set trees in dense group with occasional elder; good vigour; crowns to ground; dense ground vegetation	C,2	Refer to Drawing	n/a		Long	N
G8	Hawthorn	to 6	to 150	c. 20							Middle Age	Fair	Single and multi-stemmed, self-set trees around small valley/gulley of dried up stream; steep and undulating topography in places; very dense bramble/nettle/ground flora understorey with limited inspection in places	C,2	Refer to Drawing	n/a		Long	N

APPENDIX A: Arboricultural 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
G9	Hawthorn	to 6	to 180	c. 25							Middle Age	Fair	Single and multi-stemmed, self-set trees around small valley/gulley of dried up stream; steep and undulating topography in places; very dense bramble/nettle/ground flora understorey with limited inspection in places	C,2	Refer to Drawing	n/a		Long	N
G10	Crab apple	to 5	to 140	c. 10							Middle Age	Good	Circa 10. single and multi-stemmed trees with dense, low crowns; good vigour; no significant defects	C,2	Refer to Drawing	n/a		Long	N
G11	Hawthorn	to 6	to 180	c. 10							Middle Age	Good	Single and multi-stemmed trees in small group to western edge of valley/gulley; dense crowns to ground	C,2	Refer to Drawing	n/a		Long	N
G12	Hawthorn	to 7	to 200	c. 20							Middle Age	Good	Single and multi-stemmed, self-set trees around small valley/gulley of dried up stream; steep and undulating topography in places; very dense bramble/nettle/ground flora understorey with limited inspection in places	C,2	Refer to Drawing	n/a		Long	N
G13	Hawthorn	to 7	to 130	c. 8							Middle Age	Good	Small group of self-set trees with good form and vigour and dense, round crowns	C,2	Refer to Drawing	n/a		Long	N
G14	Hawthorn	to 6	to 400	n/a							Mature	Good	Former hedgerow now outgrown; mature trees with gnarly, multi-stemmed stem bases and minor occasional grazing damage; occasional elder and dog rose; generally good vigour throughout with dense crowns to ground and limited inspection in places due to dense bramble/nettle/ground flora understorey	B,2,3	Refer to Drawing	n/a		Long	N
G15	Hawthorn	to 6	to 180	c. 40							Middle Age	Good	Self-set dense round crowns to ground along eastern edge of valley/gulley on sloped ground	C,2	Refer to Drawing	n/a		Long	N
G16	Hawthorn	to 3.5	to 80	4.0							Young	Good	Single and multi-stemmed, self-set trees with dense crowns	C,2	Refer to Drawing	n/a		Long	N
G17	Hawthorn; grey willow; common ash; sycamore	to 9.5	to 200	n/a							Middle Age	Good	Very dense self-set group along eastern edge of valley/gulley; limited inspection due to location and waterlogged, muddy ground	C,1,2	Refer to Drawing	n/a		Long	N
G18	Hawthorn	to 7	to 200	5.0							Middle Age	Good	Located on steep slope; dense round crowns to ground; multi-stemmed.	C,1,2	Refer to Drawing	n/a		Long	N
G19	Goat willow	to 8	to 200	8.0							Middle Age	Good	Third party trees; single and multi-stemmed with good vigour and no significant defects; crowns encroach over into the site	C,2	Refer to Drawing	n/a		Long	N

APPENDIX A: Arboricultural 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
G20	Blackthorn; hawthorn; goat willow	to 4	50 to 90	n/a							Middle Age	Good	Generally dense blackthorn scrub with occasional hawthorn and goat willow along third party boundary	C,2	Refer to Drawing	n/a		Long	N
G21	Sycamore; silver birch; goat willow; grey willow; hawthorn; common ash; spruce	to 15	to 400	n/a							Middle Age	Good	Third party trees; linear feature along boundary; crowns extending over and into the site; single and multi-stemmed trees with thin, dense young woodland type composition; good screening on steep, sloping ground; limited inspection due to location and topography	B,1,2	Refer to Drawing	n/a		Long	N
G22	Grey willow; silver birch; hawthorn	to 6.5	to 100	n/a							Young	Good	Self-set trees along either side of dirt access track; dense crowns to ground; very dense in places to southern end of group with scattered self-set trees towards northern end	C,2	Refer to Drawing	n/a		Long	N
Woods																			
W1	Sycamore; silver birch; hawthorn; common ash; goat willow; grey willow; English oak; sessile oak	to 16	to 450	n/a							Middle Age	Good	Third party trees; long, linear woodland located on sloped ground of former railway embankment; dense canopy cover; single and multi-stemmed trees with generally good form and vigour	B,1,2	Refer to Drawing	n/a		Long	N

APPENDIX B: Survey Method

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

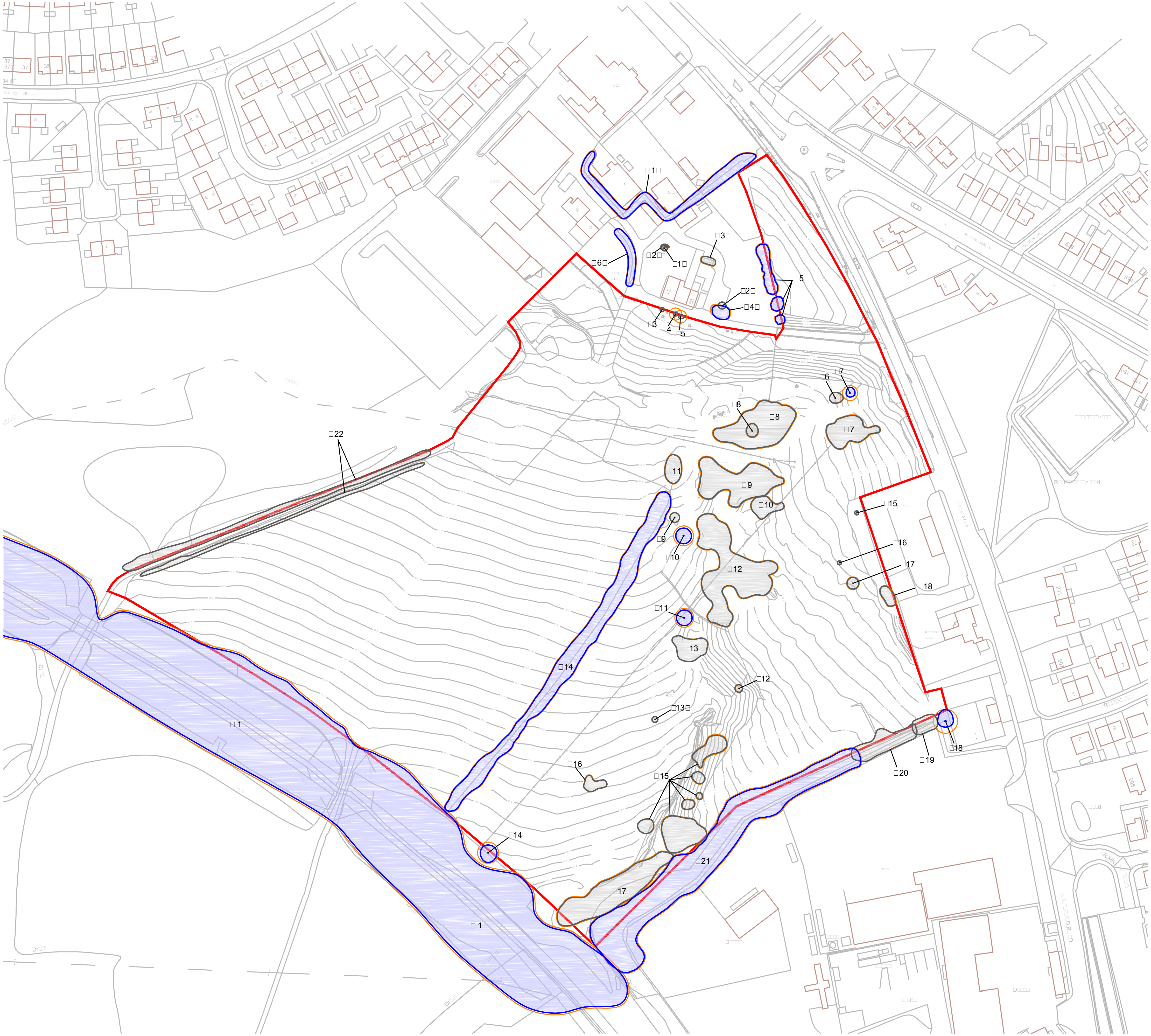
NOTES:

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.

DRAWINGS

Drawing 1 - Tree Constraints Plan
Drawing 2 - Illustrative Masterplan



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5837 2012

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03 / ILLUSTRATIVE MASTERPLAN

PLAN SHOWS EXISTING CONTOURS AT 1m INTERVALS FOR REFERENCE. PROPOSED LEVELS TO BE CONFIRMED.

GATEWAY OPEN SPACE - RETAINING VIEWS OF EAST GAWBER HALL FROM THE MAIN ROAD JUNCTION

A MAXIMUM OF 5 PROPERTIES FRONTING WAKEFIELD ROAD TO BE SERVED BY A SHARED PRIVATE DRIVE

EXISTING PRIVATE ACCESS RETAINED TO No's 29 &30

PRIMARY VEHICLE ACCESS POINT ON WAKEFIELD ROAD, APPROXIMATELY 45m SOUTH OF THE EXISTING ACCESS

10m WIDTH WOODLAND BUFFER TO REDUCE VISUAL IMPACT OF DEVELOPMENT TO VIEWS FROM THE NORTH AND PROVIDE ECOLOGICAL BENEFIT, MITIGATING THE EFFECTS OF VEGETATION REMOVAL ELSEWHERE ON THE SITE

STREET PATTERN AND ARRANGEMENT OF DWELLINGS DESIGNED TO RUN ALONG THE CONTOURS, MINIMISING GRADIENTS AND STEPS IN BUILT FORM

EXISTING VEGETATION TO BE RETAINED WITHIN OPEN SPACE WHERE PRACTICAL

DWELLINGS FACING SITE BOUNDARY AND COMMERCIAL USES TO PROVIDE REAR GARDENS PROTECTED FROM NOISE

LOCATION OF PLAY SPACE

AREA OF VALLEY LANDFORM CONTAINING WATERCOURSE TO BE DEDICATED AS OPEN SPACE, RETAINING AND ENHANCING EXISTING ECOLOGICAL FEATURES

SUBSTANTIAL TREE BELT TO SOUTHERN BOUNDARY TO BE RETAINED TO PROVIDE SCREENING OF DEVELOPMENT AND NEIGHBOURING COMMERCIAL LAND USES

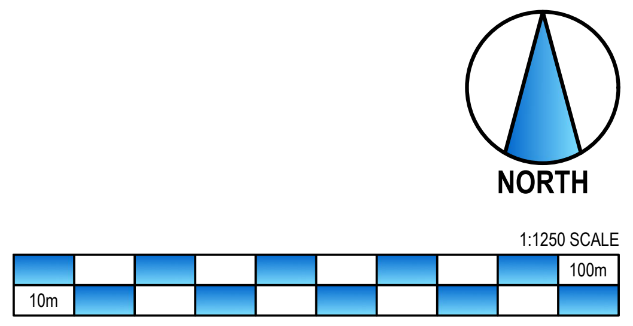
POTENTIAL CONNECTIONS TO PUBLIC FOOTPATH ON FORMER RAILWAY LINE

SERIES OF STEPPED SURFACE WATER ATTENUATION BASINS POSITIONED IN THE LOWEST PART OF THE SITE, USED IN COMBINATION WITH UNDERGROUND STORAGE TANKS

FOOTPATH LINK TO DEFINITIVE PUBLIC FOOTPATH ROUTE ON BOUNDARY OF SITE

DENSELY VEGETATED FORMER RAILWAY CORRIDOR PROVIDES A SUBSTANTIAL SCREEN TO THE LOWER PARTS OF THE SITE

EXISTING POND RETAINED WITHIN OPEN SPACE



jrp ARCHITECTURE | PLANNING | LANDSCAPE

CLIENT:
HARWORTH ESTATES

PROJECT:
ATHERSLEY

DRAWING:
ILLUSTRATIVE MASTERPLAN

DRAWING NUMBER:
P17 5091 03

SCALE @ A1:
1:1250

DRAWN: LB
DATE: 05.09.17

CHECKED:
DATE:

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