David Wilson Homes East Midlands

Land off Barkby Road, Queniborough

Arboricultural Assessment

January 2018

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1.0 INTRODUCTION

1.1 This report has been prepared by FPCR Environment and Design Limited on behalf of David Wilson Homes East Midlands Limited to present the findings of an Arboricultural Assessment and survey of trees located at a parcel of land to the west of Barkby Road, Queniborough (hereafter referred to as ôthe siteõ), OS Grid Ref SK 640 121, as shown in the Assessment Boundary Plan. The survey was carried out on Thursday 7 December 2017.

1.2 The tree survey and assessment of existing trees has been carried out in accordance with guidance contained within British Standard 5837:2012 *'Trees in Relation to Design, Demolition and Construction - Recommendations'* (hereafter referred to as BS5837). The guidelines set out a structured assessment methodology to assist in determining which trees would be deemed either as being suitable or unsuitable for retention.

1.3 The guidance also provides recommendations for considering the relationship between existing trees and how those trees may integrate into designs for development; demolition operations and future construction processes so that a harmonious and sustainable relationship between any retained trees and built structures can be achieved.

1.4 The purpose of the report is therefore to firstly present the results of an assessment of the existing treesô arboricultural value, based on their current condition and quality and to secondly provide an assessment of impact arising from the proposed development of the site.

1.5 This report has been produced to accompany an outline planning application for proposed residential development and has included an assessment of any impact to the tree cover. The survey has therefore focused on any trees present within or bordering the site that may potentially be affected by the future proposals or will pose a constraint to any proposed development.

1.6 The site is located to the southern edge of the village of Queniborough lying to the west of Barkby Road, which is one of the principal access routes leading to the village from the south. The site consists of two agricultural fields surrounded by established hedgerows. To the western edge of the parcel is adjacent to the Queniborough Industrial Estate, the field wraps around the southern side of the industrial estate, due north of Homestead Farm. However, the application site consists of only part of this field, effectively projecting the eastern boundary of the industrial estate in a southerly direction as demarcated by fencing and recent tree planting.

1.7 Along its northern edge, the application area adjoins the gardens of existing residential development to the north with the site boundary being demarcated by an agricultural style hedgerow and further supplemented by shorter sections of ornamental hedge, trees and other vegetation planted within neighbouring gardens. A public right of way traverses the site in a north easterly to south westerly direction (linking Queniborough to Syston). The site is relatively level and features hedges and recent tree planting around its perimeter with the only internal permanent woody vegetation being a single dividing hedge located approximately two thirds of the way along the parcel from the east.

1.8 Following reference to Charnwood Borough Council's website Interactive Planning Map (Cadcorp), it is confirmed that the trees at the site are not the subject of a preservation order (the closest preserved trees being along Barkby Road close to the junction with Avenue Road (TPO 178 of 1972)). Furthermore, the application area is beyond the Queniborough Village Conservation Area, which lies some distance to the north east beyond the village school.

2.0 METHODOLOGY

2.1 The survey of trees has been carried out in accordance with the criteria set out in Chapter 4 of BS5837. The survey has been undertaken by a suitably qualified and experienced arboriculturalist and has recorded information relating to all those trees within the site and those adjacent to the site which may be of influence to any proposals. Trees were assessed for their arboricultural quality and benefits within the context of the proposed development in a transparent, understandable and systematic way.

2.2 Trees have been assessed as groups where it has been determined appropriate. The term group has been applied where trees form cohesive arboricultural features either aerodynamically, visually or culturally including biodiversity or habitat potential for example parkland or wood pasture. An assessment of individual trees within groups has been made where a clear need to differentiate between them, for example, in order to highlight significant variation between attributes including physiological or structural condition or where a potential conflict may arise.

2.3 Trees have been divided into one of four categories based on Table 1 of BS5837, *'Cascade chart for tree quality assessment'*. For a tree to qualify under any given category it should fall within the scope of that categoryõs definition (see below). Category U trees are those which would be lost in the short term for reasons connected with their physiology or structural condition. They are, for this reason not considered in the planning process on arboricultural grounds. Categories A, B and C are applied to trees that should be of material considerations in the development process. Each category also having one of three further sub-categories (i, ii, iii) which are intended to reflect arboricultural, landscape and cultural or conservation values accordingly.

2.4 **Category (U) – (Red):** Trees which are unsuitable for retention and are 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 within this category are:

- Trees that have a serious irremediable structural defect such that their early loss is expected due to collapse and includes trees that will become unviable after removal of other category U trees.
- Trees that are dead or are showing signs of significant, immediate or irreversible overall decline.
- Trees that are infected with pathogens of significance to the health and/ or safety of other nearby trees or are very low quality trees suppressing adjacent trees of better quality.
- Certain category U trees can have existing or potential conservation value which may make it desirable to preserve.

2.5 **Category (A) – (Green):** Trees that are considered for retention and are of high quality with an estimated remaining life expectancy of at least 40 years with potential to make a lasting contribution. Such trees may comprise:

- Sub category (i) trees that are particularly good examples of their species, especially if rare or unusual, or are essential components of groups such as formal or semi-formal arboricultural features for example the dominant and/or principal trees within an avenue.
- Sub category (ii) trees, groups or woodlands of particular visual importance as arboricultural and / or landscape features.
- Sub category (iii) trees, groups or woodlands of significant conservation, historical, commemorative or other value for example veteran or wood pasture.

2.6 **Category (B) – (Blue):** Trees that are considered for retention and are of moderate quality with an estimated remaining life expectancy of at least 20 years with potential to make a significant contribution. Such trees may comprise:

- Sub category (i) trees that might be included in category A but are downgraded because of impaired condition for example the presence of significant though remediable defects, including unsympathetic past management and storm damage.
- Sub category (ii) 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.
- Sub category (iii) trees with material conservation or other cultural value.

2.7 **Category (C) – (Grey):** Trees that are considered for retention and are of low quality with an estimated remaining life expectancy of at least 10 years or young trees with a stem diameter below 150mm. Such trees may comprise:

- Sub category (i) unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories.
- Sub category (ii) trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value or trees offering low or only temporary / transient screening benefits.
- Sub category (iii) trees with no material conservation or other cultural value.

Tree Schedule

2.8 Appendix A presents details of any individual trees, groups and hedgerows found during the assessment including heights, diameters at breast height, crown spread (given as a radial measurement from the stem), age class, comments as to the overall condition at the time of inspection, BS5837 category of quality and suitability for retention and the root protection area.

2.9 General observations particularly of structural and physiological condition for example the presence of any decay and physical defect and preliminary management recommendations have also been recorded where appropriate.

Hedgerows

2.10 For the purposes of this assessment, a hedgerow is described as any boundary line of trees or shrubs less than 5m wide at the base and are managed under a regular pruning regime. Hedgerows and substantial internal or boundary hedges (including evergreen screens) have been recorded including lateral spread, height and stem diameter(s). Where trees are present within a hedgerow that are significantly different in character from the remainder, these have been identified and recorded separately.

2.11 A tree survey in accordance with BS5837 does not assess hedgerows against the Hedgerow Regulations 1997 or specifically from an ecological perspective, and is outside the scope of this assessment.

Other Considerations

2.12 It may be necessary during detailed design to undertake further assessment and accurate positioning of woody species within hedgerows and tree groups to assist structural calculations for foundation design of structures in accordance with current building regulations. Knowledge of soil type was not known at the time of this tree assessment. If a current soil survey of the site has taken place then it must be read in conjunction with the results of the tree survey.

2.13 The exact position of individual trees or species included as part of a tree group, hedgerow or woodland should be checked and verified on site prior to any decisions for foundation design, tree operations or construction activity being undertaken. Further survey work would be required for calculating foundation depths in accordance with NHBC Chapter 4.2 Building near Trees.

Conditions of Tree Survey

2.14 The survey was completed from ground level only and from within the boundary of the site. Aerial tree inspections or the internal condition of the stem/s or branches were not undertaken at this stage as this level of survey is beyond the scope of the initial assessment. Evaluation of tree condition given within this assessment applies to the date of survey and cannot be assumed to remain unchanged. It may be necessary to review these within 12 months, in accordance with sound arboricultural practice.

Site Plans

2.15 The individual positions of trees and groups have been shown on the Tree Survey Plan. The positions of trees are based on a topographical / land survey, as far as possible, supplied by the client. Where topographical information has not identified the position of trees and hedgerows, their relation to any existing surrounding features has been plotted using a global positioning system and aerial photography to provide approximate locations. The crown spread, root protection area and shade pattern (where appropriate) are also indicated on this plan.

2.16 As part of this assessment, a Tree Retention Plan has been prepared to show the proposed layout in relation to the existing tree cover allowing an assessment of any potential conflicts. The plan also identifies which trees would be required to be removed or retained as part of the proposed development.

Tree Constraints and Root Protection Areas

2.17 Below ground constraints to future development are represented by the area surrounding the tree containing sufficient rooting volume for the specimen to have the best chance of survival in the long term which is identified as the root protection area (RPA). The RPA has been calculated in accordance with section 4.6 of BS5837 and requires suitable protection in order for the tree to be successfully incorporated into any future scheme. Where applicable the shape of the Root Protection Area has been modified to take into account the presence of any nearby obstacles (existing or past) which may have restricted root growth and the likely root distribution i.e. the presence of hard standing, structures and underground apparatus.

2.18 Where groups of trees have been assessed, the Root Protection Area has been shown based on the maximum sized tree in any one group and so may exceed the Root Protection Area required for some of the individual specimens within the group. Further detailed inspection of the individual trees forming a group may be required where development impacts upon the group.

2.19 Above ground constraints such as the current crown spread of the trees and an illustration of the shade pattern (where appropriate) have been considered and identified within the Tree Survey Plan and Tree Retention Plan indicates their potential area of shading influence.

3.0 RESULTS

3.1 A total of three individual trees, five groups of trees and eight sections of hedgerow were surveyed as part of the Arboricultural Assessment. Trees were surveyed as individual trees and groups of trees where examples are clearly present as per the description. Refer to the Tree Survey Plan and Appendix A ï Tree Schedule for full details of the trees included in this assessment. The table below summarises the trees assessed. Several of the trees have been discussed in more detail following the table, owing to their physical condition or arboricultural significance.

Table 1: Summary of Trees by Retention Category

	Individual Trees	Total	Groups of Trees	Total
Category U - Unsuitable		0		0
Category A (High Quality / Value)		0		0
Category B (Moderate Quality / Value)		0	TG5	1
Category C (Low Quality / Value)	T1, T2, T3	3	G1, G2, G3, G4	4

3.2 Of the eight sections of hedgerow, three were classified as Category B (H1, H3 and H7) whilst the remainder were classified as Category C. Hedgerows H1 to H7 inclusive are all predominantly deciduous agricultural style hedges with only a short length of hedgerow, H8, being of an ornamental origin and consisting of a short length of cypress trees located within the rear garden of a property off The Ridings close to the entry point of the public right of way from the north east of the site.

3.3 The existing mature and regularly managed hedgerows provide a meaningful boundary separating the site from existing residential development to the north.

Photograph 1: View along length of hedge H1 from existing access point off Barkby Road

3.4 The only individual trees applicable to the site grow within neighbouring gardens of existing residential properties.

Photograph 2: Showing off-site sycamore tree that has been subject to heavy pruning

3.5 Off-site group G5 comprises the most notable boundary trees including both deciduous and coniferous specimens.

Photograph 3: View of tree group TG5 looking north along hedge H2

3.6 Internal groupings of trees G1, G2 and G3 consist of recently established mixed deciduous trees planted in linear belts with the intention of reinforcing the site boundary as defined by the existing mature hedgerows.

Photograph 4: Looking north east along tree group G1 that has been established to the east of somewhat outgrown hedge H4 which grows along the boundary with the neighbouring industrial estate

Photograph 5: The southern section of tree group G1 consisting of planting three rows deep forming the south-western edge of the application area

Photograph 6: View looking east along tree group G2 with hedge H5 to the left hand side
(Note: planting consists of three rows with the outer row being tight up against the edge of the existing hedge)

Photograph 7: View east along tree group G3 which consists of twin row planting spaced off hedgerow H6, allowing access for future maintenance

4.0 ARBORICULTURAL IMPACT ASSESSMENT

4.1 The following paragraphs present a summary of the tree survey and discussion of particular trees and groups recorded in the context of any proposed development in the form of an Arboricultural Impact Assessment in accordance with section 5.4 of BS5837. Any final tree retentions will need to be reconciled with the advice contained within this report.

4.2 The Arboricultural Impact Assessment has been based upon Dominion Design's Conceptual Plan (Drawing number: QUEN-CONC-SK2, Revision: 0, dated 19/12/2017) which shows the outline form of the proposed residential development. New vehicular access into the site is to be provided off Barkby Road, necessitating the removal of a short section of roadside hedgerow, H7. The residential layout is bisected by the existing public right of way which remains within a corridor of public open space supplemented by new landscaping provision and the formation of a new landscaping gateway feature close to the point where the public right of way exits the assessment site, along the southern boundary. It is also intended to incorporate a locally equipped area of play along the southern boundary.

4.3 Surface water attenuation is proposed on the western boundary of the site with the associated earthworks necessitating the removal of sections of the recently established trees within tree groups G1 and G2.

4.4 The dividing hedge line, H2, will inevitably be broken by the internal infrastructure. However, it is possible to retain approximately half of its current length, removing a short section for the southernmost access road and the northern half.

Table 2: Summary of Impact on Tree Stock

	Trees to be Retained	Total	Trees to be Removed in full or part	Total
Category U - Unsuitable	Not applicable	0	Not applicable	0
Category A (High Quality / Value)	Not applicable	0	Not applicable	0
Category B (Moderate Quality / Value)	G5	1	Not applicable	0
Category C (Low Quality / Value)	T1, T2, T3, G3, G4	5	G1 (part loss), G2 (part loss)	2

4.5 It is necessary to remove approximately half of hedge H2 which was assessed as Category C value and a short (circa 30m) section of roadside hedge H7 which was assessed as Category B.

New Tree Planting

4.6 New tree planting will form an integral part of the new development however, proposals for new tree planting should be appropriate for the future use of the site and not just aim to improve the existing tree population.

4.7 As part of the development proposals an adequate quantity of structured tree planting has been demonstrated predominantly within or close to hard landscaped areas of car parking or alongside the primary access roads within the roadside verges. The purpose and function of this new tree planting should be understood from the start of any design stages so that key objectives from a landscape perspective can also be achieved.

4.8 The success of any landscaping scheme relies on an adequate provision of a high quality rooting environment within which trees can thrive and reach their full potential. Planting trees with due care and consideration can, in the long term, provide a greater return on a schemes green investment and ensure trees remain healthy and grow to mature proportions. Healthy mature trees integrate well into the built environment; increase the maturity of the landscape; help provide a natural green and leafy urban environment in which people would want to reside whilst also benefiting local wildlife.

4.9 The planting of trees within confined urban environments should consider the use of appropriately designed planting pits specifically engineered to promote tree health and longevity. The rooting environment will need to provide an adequate volume of quality soil for roots to suitably develop by calculating the amount of available soil volumes needed and selecting species whose mature size is compatible with the site. This is an integral component of the planning stage (Lindsey & Bassuk, 1991).

4.10 Wherever possible, following discussions with the developer and utility companies, common service trenches should be specified to minimise land take associated with underground service provision and facilitation access for future maintenance.

4.11 The landscaping scheme should consider the use of both native tree species (for their low maintenance requirements and nature conservation value) and ornamental species (for their contribution to urban design and amenity value). Species choices should be selected on the basis of their suitability for the final site use. Furthermore, during the design process consultation should be made with the Local Planning Authority to obtain information on their tree strategy and incorporate the planting proposals with any local policies and initiatives and/or Biodiversity Action Plans (BAP).

4.12 Careful consideration would need to be given to the following: ultimate height and canopy spread, form, habit, density of crown, potential shading effect, colour, water demand, soil type and maintenance requirements in relation to both the built form of the new development and existing properties. Through careful species selection, the landscape scheme shall reduce the risk of trees being removed in the future on the grounds of nuisance. Nuisance can be perceived in a number of ways and vary from person to person however most commonly, within the context of trees, low overhanging branches, excessive shading, seasonal leaf fall and the misinformed perception that trees close to buildings cause damage.

4.13 Tree planting should be avoided where they may obstruct overhead power lines or cables. Any underground apparatus should be ducted or otherwise protected at the time of construction to enable trees to be planted without resulting in future conflicts.

Tree Management

4.14 The layout of the development is currently reserved for subsequent approval. In the course of a reserved matters application pursuant to layout, a review of the relationship between the layout and the retained trees should be undertaken by a qualified arboriculturalist to assess the existing tree cover and prepare a schedule of tree works.

4.15 All retained trees should be subjected to sound arboricultural management as recommended within section 8.8.3 of BS5837 *Post Development Management of Existing Trees,* where there is a potential for public access in order to satisfy the landowner's duty of care. Additionally, inspections annually and following major storms should be carried out by an experienced arboriculturalist or arborist to identify any potential public safety risks and to agree remedial works as required.

4.16 All tree works undertaken should comply with British Standard 3998:2010 and should therefore be carried out by skilled tree surgeons. It would be recommended that quotations for such work be obtained from Arboricultural Association Approved Contractors as this is the recognised authority for certification of tree work contractors.

4.17 All vegetation and, particularly, woody vegetation proposed for clearance should be removed outside of the bird-breeding season (March - September inclusive) as all birds are protected under the Wildlife and Countryside Act, 1981 (as amended) whilst on the nest. Where this is not possible, vegetation should be checked for the presence of nesting birds prior to removal by an experienced ecologist.

General Design Principles in Relation to Retained Trees

4.18 In a subsequent Reserved Matters application following the final layout of the scheme, assessment of the distance of proposed development in relation to the calculated root protection area of retained trees should be made which will inform the final layout.

4.19 Ground investigation through the use of pneumatic excavation, such as an Air Spade and digging of trial pits, may be required should there be areas where it is not possible to modify the layout to avoid conflict with retained trees. Ground investigations would aim to determine the actual location of the physical roots without causing them damage in the process. Such an assessment would enable consideration of the practicality and suitability of certain ótree friendlyô construction methods and would better inform decision making for a design.

4.20 Further assessment of the impact to actual roots found during the ground investigations can then be made and solutions reached thus, greatly reducing any potential future impacts on retained trees whilst allowing the development to proceed and minimising risks to future tree health. Ultimately the aim would be to reduce conflicts between trees and buildings, and achieve successful tree retention.

4.21 The use of ñno-digò construction methods should be considered prior to decisions being made as to the removal of each tree concerned, where conflicts between trees identified for retention and the layout arise. Such methods of construction and the use of industry led specialist engineering solutions i.e. three dimensional ñload bearingò cellular confinement systems can be used particularly in the case of carriageways, footways and driveways in order to avoid unnecessary losses of trees.

4.22 The routing of below ground services should also be considered with regard to the retained trees as part of a subsequent reserved matters application pursuant to layout. As recommended by the guidance given in section 7.7 of BS5837 services, where possible, should not encroach within the Root Protection Areas of retained trees. If below-ground services are proposed within a Root Protection Area, modifications to the alignment of the service route may need to be made in order to minimise adverse effects on root stability and overall tree health.

4.23 Consideration may also need to be given to the potential for tree roots of newly planted trees and hedgerows to affect or compromise the future services. As far as feasible, it would be preferable that proposed services near both the existing and any new planting should be ducted for ease of access and maintenance and grouped together to minimise any future disturbance.

5.0 TREE PROTECTION MEASURES

5.1 Retained trees will be adequately protected during works ensuring that the calculated root protection area for all retained trees can be appropriately protected through the erection of the requisite tree protection barriers. Measures to protect trees should follow the guidance in BS5837 and will be applied where necessary for the purpose of protecting trees within the site whilst allowing sufficient access for the implementation of the proposed layout. These have been broadly summarised below.

General Information and Recommendations

5.2 All trees retained on site will be protected by suitable barriers or ground protection measures around the calculated root protection area, crown spread of the tree or other defined constraints of this assessment as detailed by section 6 and 7 of BS5837.

5.3 Barriers will be erected prior to commencement of any construction work and before demolition including erection of any temporary structures. Once installed, the area protected by fencing or other barriers will be regarded as a construction exclusion zone. Fencing and barriers will not be removed or altered without prior consultation with the Project Arboriculturalist.

5.4 Any trees that are not to be retained as part of the proposals should be felled prior to the erection of protective barriers. Particular attention needs to be given by site contractors to minimise damage or disturbance to retained specimens.

5.5 Where it has been agreed, construction access may take place within the RPA if suitable ground protection measures are in place. This may comprise single scaffold boards over a compressible layer laid onto a geo-textile membrane for pedestrian movements. Vehicular movements over the root protection area will require the calculation of expected loading and the use of proprietary protection systems.

5.6 Confirmation that tree protective fencing or other barriers have been set out correctly should be gained prior to the commencement of site activity.

Tree Protection Barriers

5.7 Tree protection fencing should be fit for the purpose of excluding any type of construction activity and suitable for the degree and proximity of works to retained trees. Barriers must be maintained to ensure that they remain rigid and complete for the duration of construction activities on site.

5.8 In most situations, fencing should comprise typical construction fencing panels attached to scaffold poles driven vertically into the ground. For particular areas where construction activity is anticipated to be of a more intense nature, supporting struts acting as a brace should be added and fixed into position through the application of metal pins driven into the ground to offer additional resistance against impacts. Where site circumstances and the risk to retained trees do not necessitate the default level of protection an alternative will be specified appropriate to the level / nature of anticipated construction activity. The recommended methods of fencing specifications for this site have been illustrated in Appendix B.

5.9 It may be appropriate on some sites to use temporary site offices, hoardings and lower level barrier protection as components of the tree protection barriers. Details of the specific protection barriers for the site can be provided should the application be approved, as part of a site specific Arboricultural Method Statement for a Reserved Matters application and in accordance with the guidance contained within BS5837.

Protection outside the exclusion zone

5.10 Once the areas around trees have been protected by the barriers, any works on the remaining site area may be commenced providing activities do not impinge on protected areas.

5.11 All weather notices should be attached to the protective fencing to indicate that construction activities are not permitted within the fenced area. The area within the protective barriers will then remain a construction exclusion zone throughout the duration of the construction phase of the proposed development. Protection fencing signs can be provided upon request.

5.12 Wide or tall loads etc should not come into contact with retained trees. Banksman should supervise transit of vehicles where they are in close proximity to retained trees.

5.13 Oil, bitumen, cement or other material that is potentially injurious to trees should not be stacked or discharged within 10m of a tree stem. No concrete should be mixed within 10m of a tree. Allowance should be made for the slope of ground to prevent materials running towards the tree.

5.14 No fires will be lit where flames are anticipated to extend to within 5m of tree foliage, branches or trunk, taking into consideration wind direction and size of fire.

5.15 Notice boards, telephone cables or other services should not be attached to any part of a retained tree.

5.16 Any trees which need to be felled adjacent to or are present within a continuous canopy of retained trees, must be removed with due care (it may be necessary to remove such trees in sections).

Protection of Trees Close to the Site

5.17 A number of trees were located on the boundaries of the site and therefore the root protection area and crown spread of these trees will need to be protected in the same way as all the retained trees within the site. All trees located outside the boundaries of the assessment site yet within close proximity to works should be adequately protected during the course of the development by barriers or ground protection around the calculated root protection area.

5.18 Any trees which are to be retained and whose Root Protection Areas may be affected by the development should be monitored, during and after construction, to identify any alterations in quality with time and to assess and undertake any remedial works required as a result.

Protection for Aerial Parts of Retained Trees

5.19 Where it is deemed necessary to operate a wide or tall load, plant bearing booms, jibs and counterweights or other such equipment as part of the construction works it is best advised that appropriate, but limited tree surgery, be carried out beforehand to remove any obstructive branches. Any such equipment would have potential to cause damage to parts of the crown material, i.e. low branches and limbs, of retained trees within the protective barriers. This is termed as áaccess facilitation pruningô within BS5837. Any such pruning should be undertaken in accordance with a specification prepared by an arboriculturalist.

5.20 A pre-commencement site meeting with contractors who are responsible for operating machinery will be required, as described above, to firstly highlight the potential for damage occurring to tree crowns and to ensure that extra care is applied when manoeuvring machinery during such operations within close proximity to retained trees to avoid any contact.

5.21 In the event of having caused any branch or limb damage to retained trees it is strongly recommended that suitable tree surgery be carried out, in accordance with British Standard 3998:2010 and in agreement with the Local Planning Authority prior to correcting the damage, upon completion of development.

6.0 CONCLUSION

6.1 The site consists of former agricultural land adjoining existing residential development to the north and industrial units to the west. The boundary to the north is supplemented by off-site tree planting within adjacent gardens which will remain unaffected by the proposed development.

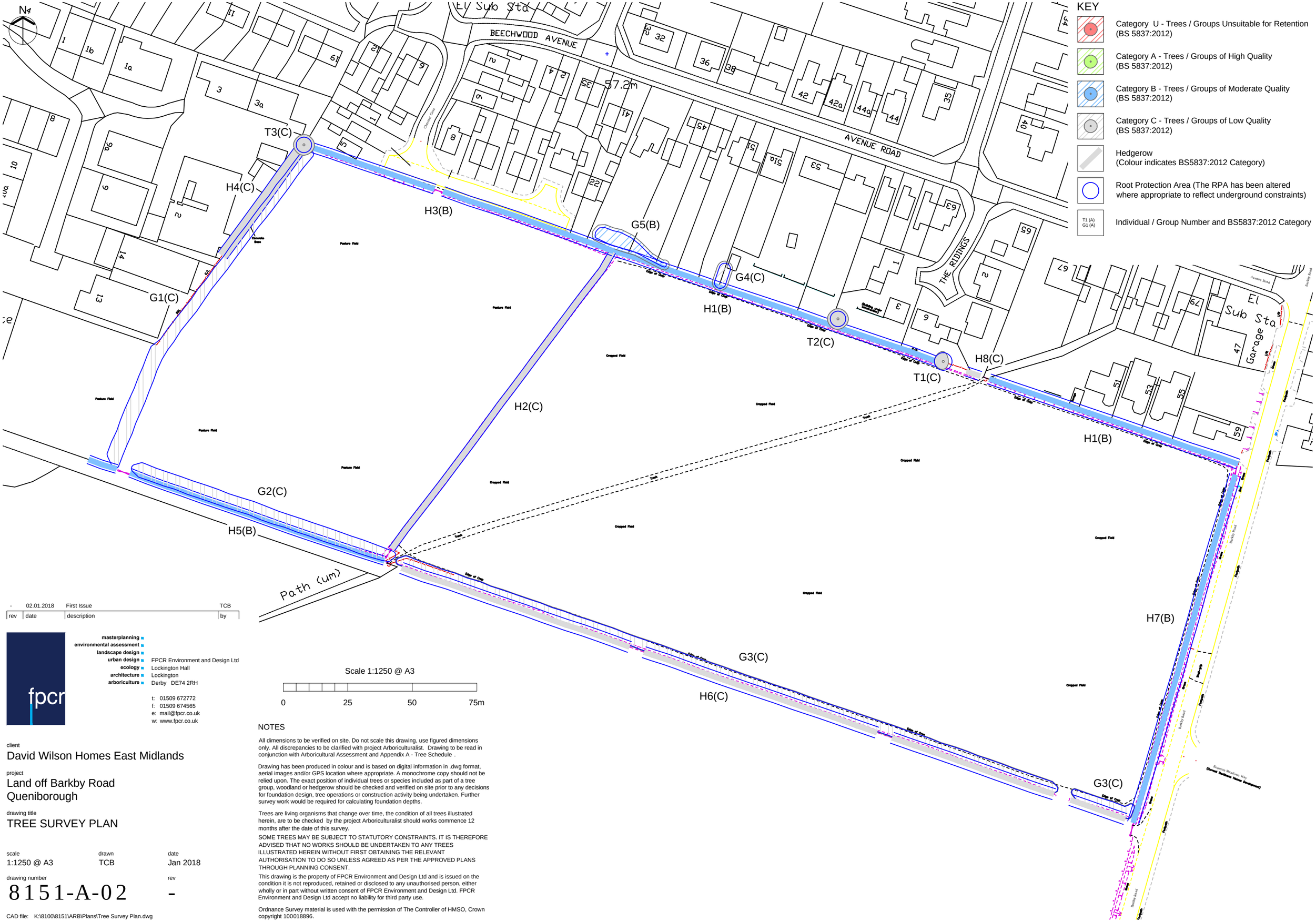
6.2 In keeping with the former agricultural use, the application area contains minimal internal woody vegetation (with only one dividing hedge line) but has well defined outer boundaries which have been augmented by recently established trees, the majority of which may be incorporated into the proposed residential layout.

6.3 The Individual value of existing trees, hedges and/or groupings of trees is limited. However, many of the groupings, in particular younger trees, have considerable potential in landscaping terms to develop into a purposeful future amenity with considerable longevity.

6.4 Loss of trees and vegetation due to the proposed layout affects only a small number of recently established trees plus short sections of hedgerow and is easily mitigated. There remains an appreciable stand-off from the site boundaries allowing for additional supplementary planting within this conspicuous zone, giving rise to an opportunity to further improve the species diversity and associated arboricultural value and landscaping input around the site perimeter.

6.5 Further provision is made for green infrastructure planting to maintain a strong green corridor along the existing right of way route with further tree planting associated with the individual plots and/or gardens to soften, in particular, areas of car parking and associated infrastructure.

6.6 Acknowledging that the proposed form of development is subject to reserved matters approval, it has been demonstrated that the trees which are suitable for retention can be successfully integrated within a finalised layout. Allowance has been made for their robust protection during the construction period, ensuring their successful long term integration and retention.



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TREE SURVEY PLAN

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NOTES

All dimensions to be verified on site. Do not scale this drawing, use figured dimensions only. All discrepancies to be clarified with project Arboriculturalist. Drawing to be read in conjunction with Arboricultural Assessment and Appendix A - Tree Schedule .

Drawing has been produced in colour and is based on digital information in .dwg format, aerial images and/or GPS location where appropriate. A monochrome copy should not be relied upon. The exact position of individual trees or species included as part of a tree group, woodland or hedgerow should be checked and verified on site prior to any decisions for foundation design, tree operations or construction activity being undertaken. Further survey work would be required for calculating foundation depths.

Trees are living organisms that change over time, the condition of all trees illustrated herein, are to be checked by the project Arboriculturalist should works commence 12 months after the date of this survey.

SOME TREES MAY BE SUBJECT TO STATUTORY CONSTRAINTS. IT IS THEREFORE ADVISED THAT NO WORKS SHOULD BE UNDERTAKEN TO ANY TREES ILLUSTRATED HEREIN WITHOUT FIRST OBTAINING THE RELEVANT AUTHORISATION TO DO SO UNLESS AGREED AS PER THE APPROVED PLANS THROUGH PLANNING CONSENT.

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David Wilson Homes East Midlands

project
Land off Barkby Road
Queniborough

drawing title
TREE RETENTION PLAN

scale	drawn	date
1:1250 @ A3	TCB	Jan 2018

drawing number
8151-A-03

rev
-

CAD file: K:\8100\8151\ARB\Plans\Tree Retention Plan.dwg

NOTES

All dimensions to be verified on site. Do not scale this drawing, use figured dimensions only. All discrepancies to be clarified with project Arboriculturalist. Drawing to be read in conjunction with Arboricultural Assessment and Appendix A - Tree Schedule .

Drawing has been produced in colour and is based on digital information in .dwg format, aerial images and/or GPS location where appropriate. A monochrome copy should not be relied upon. The exact position of individual trees or species included as part of a tree group, woodland or hedgerow should be checked and verified on site prior to any decisions for foundation design, tree operations or construction activity being undertaken. Further survey work would be required for calculating foundation depths.

Trees are living organisms that change over time, the condition of all trees illustrated herein, are to be checked by the project Arboriculturalist should works commence 12 months after the date of this survey.

SOME TREES MAY BE SUBJECT TO STATUTORY CONSTRAINTS. IT IS THEREFORE ADVISED THAT NO WORKS SHOULD BE UNDERTAKEN TO ANY TREES ILLUSTRATED HEREIN WITHOUT FIRST OBTAINING THE RELEVANT AUTHORISATION TO DO SO UNLESS AGREED AS PER THE APPROVED PLANS THROUGH PLANNING CONSENT.

Appendix A - Tree Schedule

Measurements	Age Class	Overall Condition	Root Protection Area (RPA)
Height - Measured using a digital laser clinometer (m)	YNG: Young trees up to ten years of age	G - Good: Trees with only a few minor defects and in good overall health needing little, if any attention	ÅThe RPA Radius column provides the extent of an equivalent circle from the centre of the stem (m). ÅThe RPA is calculated using the formulae described in paragraph 4.6.1 of British Standard 5837: 2012 and is indicative of the rooting area required for a tree to be successfully retained. Tree roots extend beyond the calculated RPA in many cases and where possible a greater distance should be protected. ÅWhere veteran trees have been identified the RPA has been calculated in accordance with Natural England guidance i.e. 15x the stem diameter, uncapped.
Stem Dia. - Diameter measured (mm) in accordance with Annex C of the BS5837	SM: Semi-mature trees less than 1/3 life expectancy	F - Fair: Trees with minor rectifiable defects or in the early stages of stress from which it may recover	
Crown Radius - Measured using a digital laser clinometer radially from the main stem (m)	EM: Early mature trees 1/3 ï 2/3 life expectancy	P - Poor: Trees with major structural and/or physiological defects such that it is unlikely the tree will recover in the long term	
Abbreviations est - Estimated stem diameter avg - Average stem diameter for multiple stems upto - Maximum stem diameter of a group	M: Mature trees over 2/3 life expectancy	D - Dead: This could also apply to trees in an advanced state of decline and unlikely to recover	
	OM: Over mature declining or moribund trees of low vigour	The BS category particular consideration has been given to the following ÅThe health, vigour and condition of each tree ÅThe presence of any structural defects in each tree/group and its future life expectancy ÅThe size and form of each tree/group and its suitability within the context of a proposed development ÅThe location of each tree relative to existing site features e.g. its screening value or landscape features ÅAge class and life expectancy	
	V: Veteran tree possessing certain attributes relating to veteran trees		

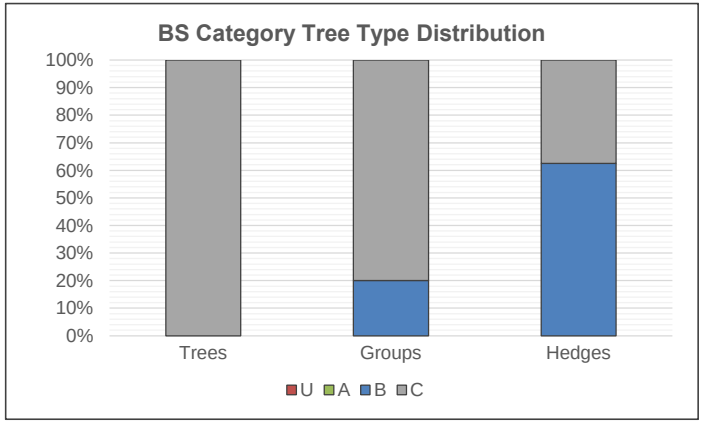
Structural Condition
The following is an example of considerations when inspecting structural condition: • The presence of fungal fruiting bodies around the base of the tree or on the stem, as they could possibly indicate the presence of possible internal decay • Soil cracks and any heaving of the soil around the base • Any abrupt bends in branches and limbs resulting from past pruning • Tight or weak óVôshaped forks and co-dominant stems • Hazard beam formations and other such biomechanical related defects (as described by Claus Mattheck, Body Language of Trees HMSO Research for Amenity Trees No. 4 1994) • Cavities as a result of limb losses or past pruning • Broken branches or storm damage • Damage to roots • Basal, stem or branch / limb cavities • Crown die-back or abnormal foliage size and colour

Quality Assessment of BS Category
Category U - Trees 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.
Category A - Trees of high quality with an estimated remaining life expectancy of at least 40 years.
Category B - Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.
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 150mm.
Sub-categories: (i) - Mainly arboricultural value (ii) - Mainly landscape value (iii) - Mainly cultural or conservation value

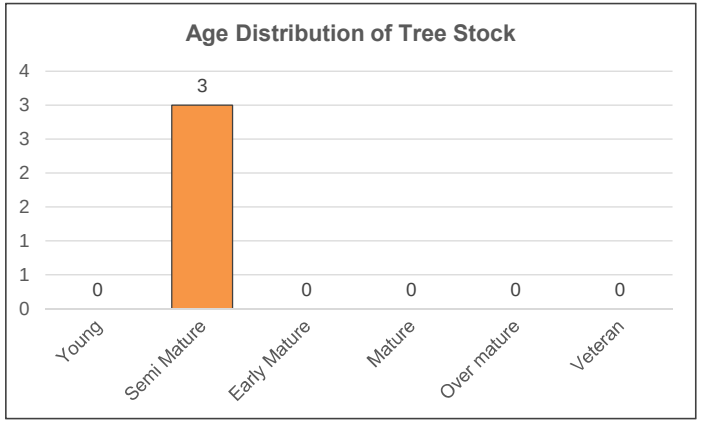
Appendix Summary

	Individual Trees		Totals	Tree Groups and Hedgerows		Totals
Category U			0			0
Category A			0			0
Category B			0	G5, H1, H3, H5, H6, H7		6
Category C	T1, T2, T3		3	G1, G2, G3, G4, H2, H4, H8		7
		Total	3		Total	13

BS Category Tree Type Distribution displays the proportion of trees assessed in each type to enable a better understanding of the category distribution.



Age Distribution of Tree Stock shows the number of trees in each age category across the tree stock allowing assessment of their longevity to be made.



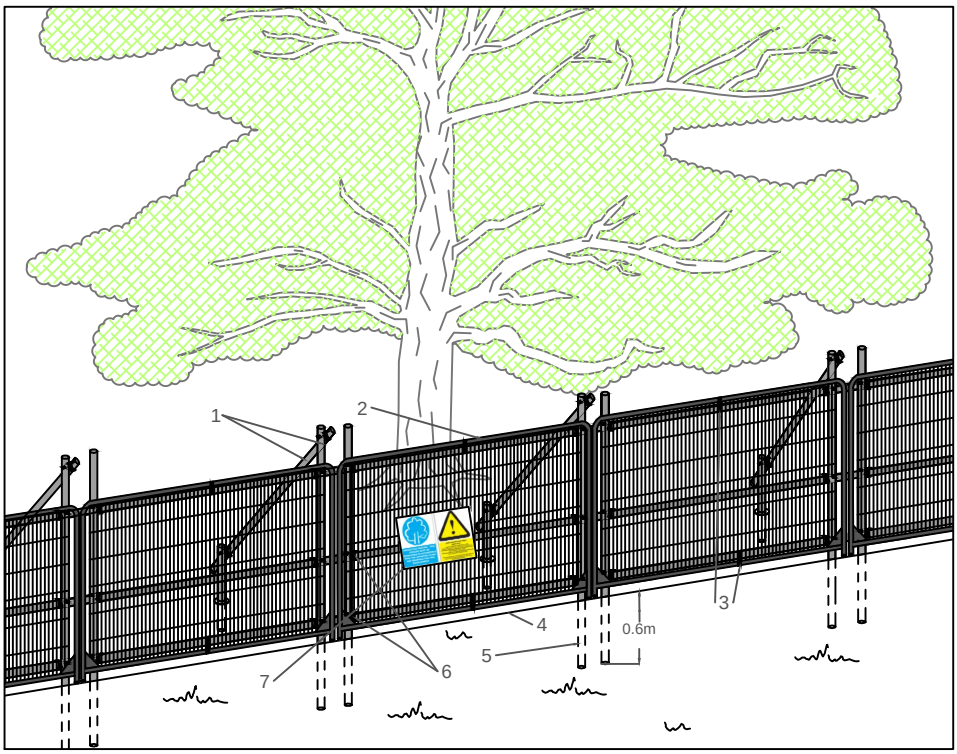
Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
INDIVIDUAL TREES										
T1	Sycamore Acer pseudoplatanus	8	280	N - 4 S - 3 E - 2 W - 3.5	SM	F	Off-site tree growing within neighbouring rear garden. Historically topped in the manner of a pollard at around 4m above ground level. More recently reduced in height to approximately 6ï 6.5m above ground level and currently featuring regrowth of up to 25mm in diameter by 1.5m in length. Tree is considered somewhat compromised in its form and of limited arboricultural merit and will require regular cyclical pruning.	35	3.4	C (i)
T2	Downy Birch Betula pubescens	6.5	250	4	SM	F	Off-site tree set back around 4m from the centre line of hedge. Densely clad in ivy, obscuring much of principal structure from inspection. Indications it may previously have been reduced at around 4m above ground level.	28	3.0	C (i)
T3	Yew Taxus baccata	4.5	100 120	2.5	SM	F	Off-site tree growing within garden of 5 Beechwood Avenue. Trunk divides at around 0.7m and forms an acute union, however this is likely fair at present. Crown growth is intermingling within that of adjacent hedges. However, overall tree provides some valued screening between the garden and the neighbouring industrial site.	11	1.9	C (i)

Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
GROUPS OF TREES										
G1	Field maple Acer campestre Rowan Sorbus aucuparia Small leafed lime Tilia cordata Norway maple Acer platanoides	5.5	up to 80	1	Y	G	Recently established linear tree belt consisting of staggered double-row planting (around 1.3m minimum between rows and an average interline spacing of 4.5m). However, at the south eastern section (approximately 25ï 30% of hedge length), width swells out to three rows where there is no hedgerow. Trees established as advanced standards and each secured to a wooden stake on the windward side.	3	1.0	C (ii)
G2	Norway maple Acer platanoides Field maple Acer campestre Small leafed lime Tilia cordata Rowan Sorbus aucuparia	6	up to 80	1	Y	G	Recently established in a similar manner to tree group G1, however with three staggered rows; the southernmost being planted tight up against the northern face of hedge H5. Occasional trees are listing south west due to the local prevailing wind.	3	1.0	C (ii)
G3	Field maple Acer campestre Rowan Sorbus aucuparia Small leafed lime Tilia cordata	5.5	up to 70	1	Y	G	A two-row deep planting, with around 1.5m between rows and an interline spacing of approximately 4.5m, established along the headland of the arable field. Southernmost row has been established at a little over 1m from the outer face of hedge H6, allowing access for a flail head so long as undertaken on an annual basis. Trees individually staked on the windward side, however attached at varying heights with some ties having slipped.	2	0.8	C (ii)
G4	Leyland cypress X Cupressocyparis leylandii	8	up to 180	3	EM	P	A pair of off-site trees, the closest being set back around 4.5m to the north of hedge H1. Trees are remnants of a more significant conifer screen dividing off-site gardens. The remaining specimens have both had recent fire damage due to heat scorch on their western sides.	15	2.2	C (ii)

Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
G5	Common beech Fagus sylvatica Silver birch Betula pendula Lawson cypress Chamaecyparis lawsoniana Hazel Corylus avellana Laurel Prunus laurocerasus Rowan Sorbus aucuparia Damson Prunus domestica Holly Ilex aquifolium Elder Sambucus nigra Norway spruce Picea abies Cypress Cupressus spp	9	up to 280	4.5	Y-EM	G	Off-site trees spanning two rear gardens. The most significant components on arboricultural and landscaping grounds are the birch, beech and Norway spruce.	35	3.4	B (ii)

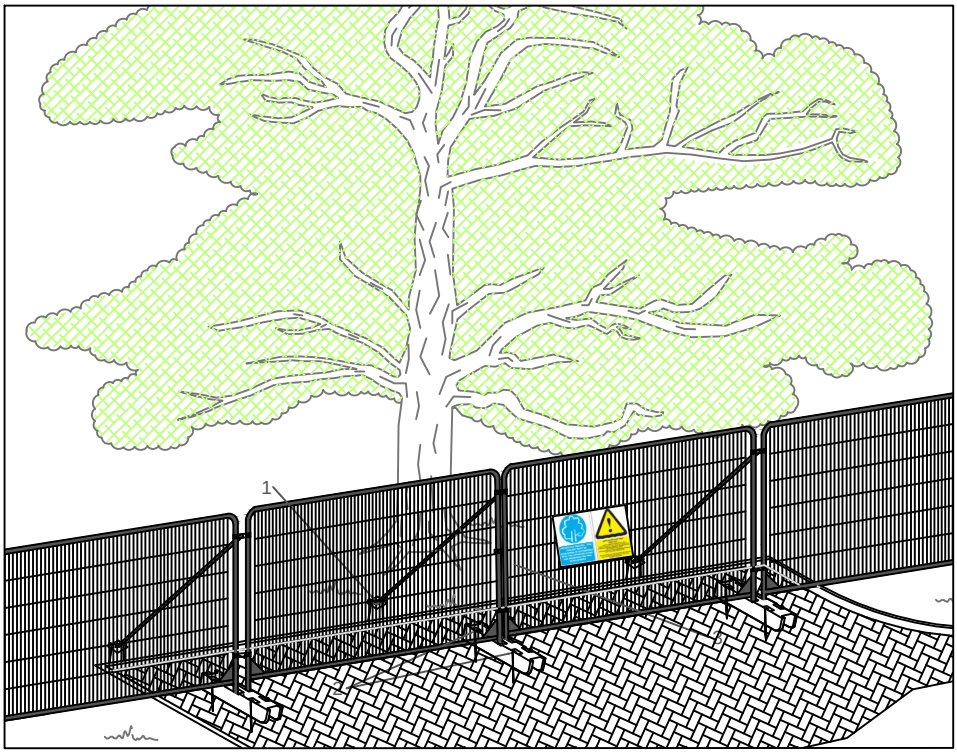
Hedge No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
HEDGEROWS										
H1	Hawthorn Crataegus monogyna English oak Quercus robur Blackthorn Prunus spinosa Holly Ilex aquifolium Elder Sambucus nigra	2	up to 170	1	M	G	Typically managed agricultural hedgerow Flail damage present	13	2.0	B (ii)
H2	Hawthorn Crataegus monogyna Holly Ilex aquifolium Elder Sambucus nigra	2	up to 110	1	EM	G	Typically managed agricultural hedgerow Flail damage present	5	1.3	C (ii)
H3	Hawthorn Crataegus monogyna Elder Sambucus nigra	2	up to 160	1	M	G	Typically managed agricultural hedgerow Flail damage present	12	1.9	B (ii)
H4	Hawthorn Crataegus monogyna Elder Sambucus nigra	7	up to 180	2	M	F	Outgrown hedgerow Gaps present	15	2.2	C (ii)
H5	Hawthorn Crataegus monogyna	2	up to 140	1	M	G	Typically managed agricultural hedgerow Flail damage present Old laid forms	9	1.7	B (ii)
H6	Hawthorn Crataegus monogyna Elder Sambucus nigra	2	up to 180	1	M	G	Typically managed agricultural hedgerow Flail damage present Old laid forms	15	2.2	B (ii)

Hedge No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
H7	Hawthorn Crataegus monogyna Elder Sambucus nigra Dog rose Rosa canina English elm Ulmus procera Holly Ilex aquifolium	2	up to 180	1	M	G	Typically managed agricultural hedgerow Flail damage present	15	2.2	B (ii)
H8	Leyland cypress X Cupressocyparis leylandii	3	up to 150	1	EM	F	Off-site conifer screen growing directly to rear of deciduous hedge	10	1.8	C (ii)



Standard specification for protective barrier

1. Standard scaffold poles
2. Heavy gauge 2m tall galvanized tube and welded mesh infill panels
3. Panels secured to scaffold frame with wire ties
4. Ground level
5. Uprights driven into the ground until secure (min depth of 0.6m)
6. Standard scaffold clamps
7. Construction Exclusion Zone signs



Above ground stabilising systems

1. Stabiliser strut with base plate secured with ground pins
2. Feet blocks secured with ground pins
3. Construction Exclusion Zone signs

masterplanning
environmental assessment
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ecology
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NOTES

drawing title

APPENDIX B
PROTECTIVE FENCING SPECIFICATIONS

CAD file: S:\Arb resources\Basic Templates\Tree Protection\Appendix B - Protective Fencing A4.dwg