Aire Valley Tree Consultancy Ltd.

Pre-Development
Arboricultural Impact Assessment & Arboricultural Method Statement

Rev A
Planning Reference 2017/62/94129/E

Site:
Oakroyd Hall, WYFRS HQ, Bradford Road, Birkenshaw, Bradford, BD11 2DY

Client:
Rouse Homes

Date:
19 March 2018

AVTCL Ref: 1. WYFRS. Rouse. 3-18

Summary

Planning consent is being sought for the demolition of existing buildings and erection of 30 dwellings with associated garages and parking at Oakroyd Hall, West Yorkshire Fire & Rescue Headquarters, Bradford Road, Birkenshaw, BD11 2DY. Trees are found within and adjacent to the proposed development which could be influenced by it if not fully considered.

This report is compiled in accordance with British Standard 5837:2012 *Trees in relation to design, demolition and construction – Recommendations.*

A Tree Constraints Plan is included in Appendix A showing the current, pre-development site and its trees locations, canopy spread, root protection areas and retention (quality) category.

An Arboricultural Impact Plan also included in Appendix A shows the current site trees locations, canopy spread, root protection areas, retention category and area of proposed development.

- Details were recorded for 150 individual and groups of trees
- 55 trees will require removal to implement the development
- Seven further trees are recommended for removal as part of the development
- Five trees require pruning to enable site access and building clearance
- Further pruning recommendations have been recommended
- The remaining trees will require protection by the installation of temporary protective fencing
- Groundworks or access within retained trees rooting areas will require precautionary techniques and temporary ground protection
- It is considered the development can go ahead following recommendations in British Standard 5837 without significant detriment to retained trees

An Arboricultural Method Statement is included in section 7 which provides the tree related protection requirements and construction considerations to ensure retained trees are not significantly harmed during the development.

A Tree Protection Plan also included in Appendix A shows the location of temporary tree protective fencing, ground protection and areas requiring precautionary construction techniques.

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1. Introduction

1.1 Purpose of the Report

Planning consent is being sought for the demolition of existing buildings and erection of 30 dwellings with associated garages and parking at Oakroyd Hall, West Yorkshire Fire & Rescue Headquarters, Bradford Road, Birkenshaw, BD11 2DY. Trees are found within and adjacent to the proposed development which could be influenced by it if not fully considered.

Rouse Homes provided Aire Valley Tree Consultancy Ltd with a topographic plan showing on-site trees and highlighting the areas of the site which were proposed for development.

Rouse Homes instructed Aire Valley Tree Consultancy Ltd to undertake a pre-development tree survey to British Standard 5837:2012 *Trees in relation to design, demolition and construction – Recommendations*.

This report will include the following information:

1. Results from a tree survey, undertaken in accordance with *British Standard 5837:2012 Trees in relation to design, demolition and construction – Recommendations*
2. An appraisal of the trees located within the influencing distances and their possible constraints to the development
3. An Arboricultural Impact Assessment of the development and recommendations for tree retention, pruning and removal
4. An Arboricultural Method Statement to ensure the health and longevity of retained trees, informing client, contractor and planners of the requirements to protect retained trees

1.2 Terms of Reference

Instructions were given by Rouse Homes to visit the site and prepare the findings in a report. The report should be read in conjunction with the Tree Constraints, Arboricultural Impact, Shade and Tree Protection Plans located in Appendix A.

The following documents were provided by Rouse Homes:

- Topographical Survey ref RSH 1004-001
- Proposed site plan/Planning Layout ref 17-11-28 SK 02
- Copy of Tree Preservation Order (no.21) 2014

The following documents and involvement with a previous outline application have been considered

- Kirklees Open Access planning pages – consultee comments – trees 5 January 2018
- This reports surveyor and author was involved in design team and local authority discussion for a previous outline application in 2015/16

A design team meeting with the local authority on 6 March 2018.

1.3 Method of Inspection

The inspection of the trees was undertaken at ground level using visual assessment (VTA) of the trees canopy, stem and basal area, based on methodology devised by Mattheck (1998). No diagnosis tools were used in the survey. The survey is compiled in accordance with British Standard 5837:2012 *Trees in relation to design, demolition and construction – Recommendations* (hereafter BS5837). Root Protection Areas (RPAs) are based upon equations taken from section 4.6 of BS5837.

1.4 Qualifications and Experience

This report is based on the author's site observations and the provided information. Conclusions have been made in light of his experience and qualifications. A list of the authors experience and qualifications in arboriculture are detailed in Appendix B. The client may choose to accept or disregard the recommendations made in this report or seek additional advice.

1.5 Trees Subject to Statutory Controls

Before authorising any works checks with the Local Planning Authority (LPA) should be completed. Statutory permission may be required before any work can take place. It is a criminal offence to cut down, top, lop, uproot, wilfully damage or destroy any tree covered by a Tree Preservation Order, within a Conservation Area or subject to planning conditions unless the LPA has specifically permitted the work. Roots have as much protection as branches. Trees proposed for removal without other statutory protection may still require a Felling Licence, administered by the Forestry Commission if the timber volume felled is greater than five cubic metres in any calendar quarter.

A plan showing trees subject to a Tree Preservation Order within the development site, Woods W1, W2, individual tree, T2 and W4 is copied below. T1 and W3 outside the development site.

2.0 Caveats and Limitations

2.1 Scope of Survey

This report is concerned only with trees in relation to construction. This report makes no attempt to provide a full health and safety inspection of the trees surveyed. It should not be seen as an alternative for a tree hazard assessment which is specific to minimising the risk and liability associated with trees. Potentially/obviously hazardous trees will be highlighted, and appropriate recommendations made only where seen and when urgent action is required in the interests of public safety.

Any observations made with regards to the condition of built structures are from a layperson's view. No assessment of the potential influence of trees, upon buildings or other structures resulting from the effects of trees upon shrinkable load-bearing soils has been made.

2.2 Change in Weather Conditions

The content of this report may become invalidated if a change of circumstance affecting the trees arises as a result of unusual weather conditions. Particularly, but not limited to extreme storms and high winds.

2.3 Change of Soil Conditions

Structural or chemical soil disruption around the trees may invalidate the findings in this report, especially where there is significant damage to the rooting area of the trees not following recommendations in BS5837 or National Joint Utilities Group Volume 4 (Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees.

2.4 Investigative Method Limitations and Extent of Investigation

The trees in question were surveyed using non-invasive methods (the trees were not exposed to any physical disruption such as drilling). Recommendations regarding internal cavities and/or internal decay cannot be made from this report without further inspection. Chemical analysis of the soil was not undertaken. Comments made upon the structure of the tree are based upon inspection from ground level.

Many of the trees are found on the boundary of the site. Trees were only viewed from the roadside to the east, south and from within the site. This has limited the extent to which a full appraisal can be made. It is however considered adequate for the process of tree categorisation to inform the BS 5837 process.

2.5 Force Majeure

The contents of this survey may become invalidated by any 'Force Majeure' such as significant natural or man-made disasters out of the control of any specific party.

2.6 Report Manipulation

The report is issued for the purposes of the instructing client in the form it is given and therefore no liability is accepted to any other party where reproduction, manipulation or reliance upon any incorrect representation of this report has been undertaken.

2.7 Tree Ownership

Work recommendations given below do not override the need to establish ownership and if necessary obtain permission where required.

3.0 Survey Details

3.1 Survey Details:

- A tree survey took place on 7th and 8th February 2018
- On the day of inspections, the weather conditions were dry, with no visibility constraints
- Horizontal and vertical measurements were taken using a laser rangefinder. Estimations were made where access could not be gained, or vegetation prevented accurate recordings
- Tree locations were already plotted on the provided topographical survey. Off-site trees 4.25 to 4.30 however were plotted on site using offset measurements. These trees were included for clarity. I am not a land surveyor but consider their locations are accurate enough for the purpose of this report. Should greater clarity be required I recommend a suitably qualified land surveyor is instructed.

3.2 Tree Observations & Categorisation

Trees were visually assessed, and all relevant information recorded on site. Trees were graded on their quality and remaining life expectancy. Section 4.5.2 of BS 5837 states *'The purpose of the tree categorisation method, which should be applied by an arboriculturist, is to identify the quality and value (in a non-fiscal sense) of the existing tree stock, allowing informed decisions to be made concerning which trees should be removed or retained in the event of development occurring'*.

There are four retention category's, U, A, B and C, with sub category's 1, 2 & 3 to reflect arboricultural, landscape or cultural values respectively. The category colours as given below are represented on all maps and plans to aid removal/retention and site design.

- Category U – Trees in such **poor** condition that they cannot realistically be retained in the context of the current land use for greater than 10 years.
- Category A – Trees of **high** quality with an estimated life expectancy of at least 40 years.
- Category B – Trees of **moderate** quality with an estimated life expectancy of at least 20 years.
- Category C – Trees of **low** quality with an estimated life expectancy of at least 10 years, or young trees with a stem diameter of less than 150mm.

Category U trees are those that should be removed in the short term and should not be considered further in the planning process unless there is ecological/habitat value. All other category trees are material considerations in the planning process.

3.3 Identification and Location of the Trees

The report should be read in conjunction with the Tree Constraints, Arboricultural Impact, Shade and Tree Protection Plans located in Appendix A. Copies of the site plans are provided in A3 paper format in Appendix A; larger copies printed on A1 are also available on request.

Numbered tree tags are attached to most of the on-site trees to inform previous tree health and safety surveys. These numbers have also been recorded for each tree in the tree schedule in Appendix C.

3.4 Topography

The site slopes upwards from the south east to the north west.

3.5 Root Protection Area (RPA) Amendments

Section 3.7 of BS 5837 states that the root protection area (RPA) is a '*layout tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the trees viability, and where the protection of the roots and soil structure is treated as a priority'*

Section 4.6.2 of BS5837 states that '*the RPA should initially be plotted as a circle centred on the base of the stem. Where pre-existing site conditions or other factors indicate that rooting has occurred asymmetrically, a polygon or equivalent area should be produced. Modifications to the shape of the RPA should reflect a soundly based arboricultural assessment of likely root distribution.'*

Any circular RPA's of trees as plotted on the tree related plans in Appendix 1 found under existing buildings or beyond 1m under adjacent highways has been cut-off and added elsewhere to the relevant RPA's. This has been done as limited rooting potential is considered available underside of existing buildings or beyond 1m under the adjacent highways.

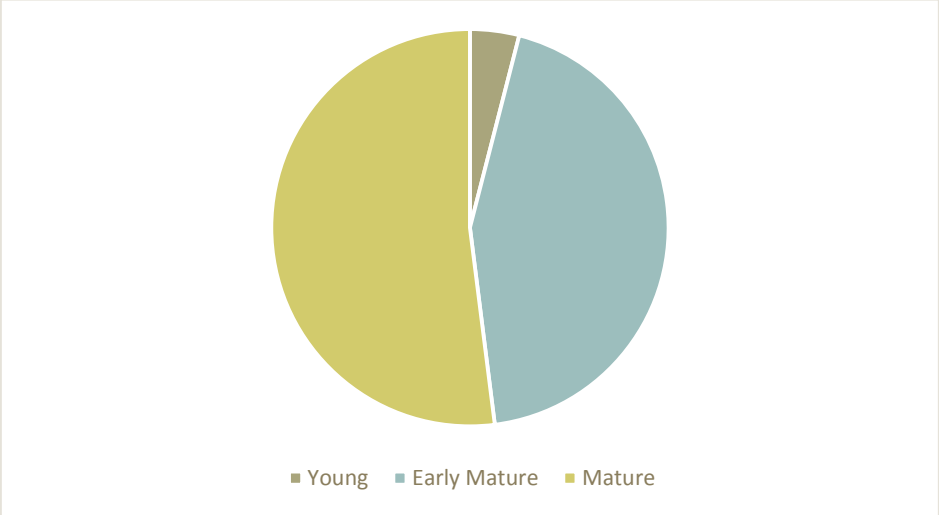
The m² area of the amended RPA's is accurate and follows recommendations in Annex D of BS5837.

4.0 Tree Appraisal

4.1 Number of Trees

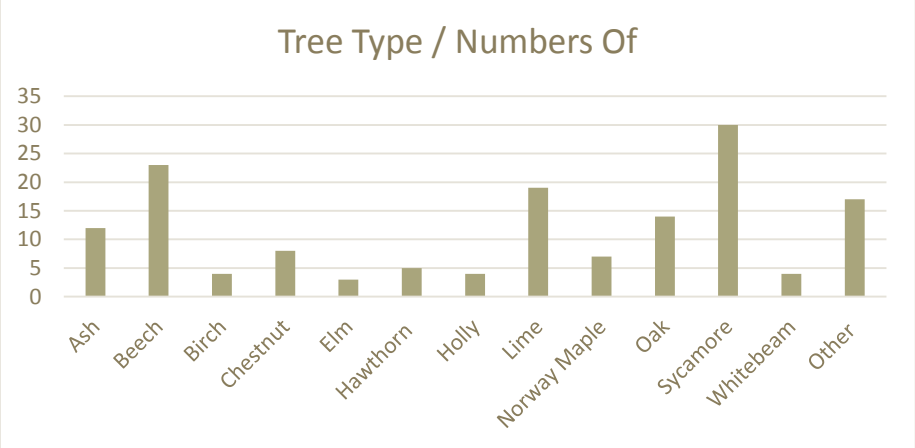
- Details were recorded for 150 individual and groups of trees in five areas
- Area 1 – 40 trees to the south east of the site
- Area 2 – 24 trees to the south and west of the site
- Area 3 – 12 trees to the centre of the site
- Area 4 – 35 trees to the north west of the site
- Area 5 – 39 trees to the north east of the site

4.2 Age Range

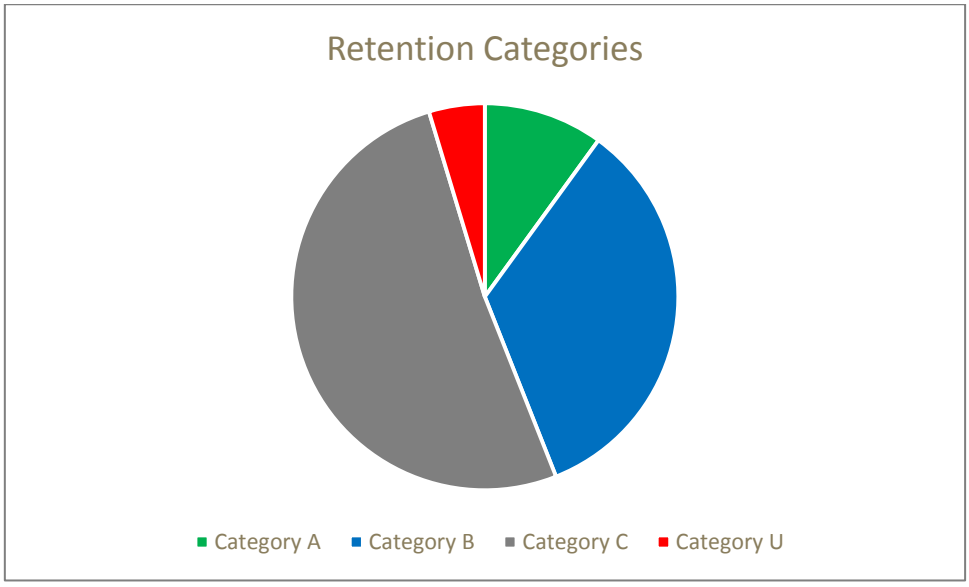


Young – Established, if light conditions allow speed of growth rapid
Early Mature – Well established, if light conditions allow speed of growth rapid, of seed bearing age
Mature – Speed of growth reduced, reaching peak crown size

4.3 Tree Type



4.4 Tree Retention Categorisation



5.0 Tree Constraints

5.1 Above Ground Constraints – Tree Trunk and Canopy

The trees current canopy spread is marked on plans to aid site design. Consideration needs to be made to the following:

- Mature height and spread
- Species characteristics such as evergreen or deciduous, honeydew (sap) drip, fruit fall
- Shade potential
- Potential incompatibilities between layout and trees proposed for retention
- Working/access space needed for construction phase
- Protection of tree canopies from machinery impact or scaffold clearance
- Infrastructure requirements- easements, lighting, solar collectors, CCTV

5.2 Below Ground Constraints – Root Protection Area

BS 5837 states a *'root protection area (RPA) is a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority'*.

For single stems the RPA is calculated as an area equivalent to a circle with a radius 12 times the stem diameter. The RPA is plotted on plans as a circle, but where pre-existing site conditions are considered to have altered the rooting area a polygon will be produced.

The default position is that proposed structures should be located outside the RPA's of retained trees. If operations are proposed within the RPA, the arboriculturist should:

- Demonstrate that the tree can remain viable and that the area lost to encroachment can be compensated for elsewhere, contiguous with its RPA
- Propose a series of mitigation measures to improve the soil environment that is used by the tree for growth

If utility operations within the RPA are proposed consideration should be given to NJUG4 (National Joint Utilities Group Volume 4 (Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees)).

5.3 Arboricultural Impact Plan

A plan accompanying this report (found in Appendix A) has highlighted the trees retention category, canopy extent and their current below ground constraints (RPA) superimposed upon the proposed site design. This is used to highlight any possible conflicts/impacts between tree constraints and site design.

6.0 Arboricultural Impact Assessment

6.1 Development Proposal

The proposal is the demolition of existing buildings and erection of 30 dwellings with associated garages and parking.

6.2 Tree Related Planning History

Outline planning permission with dwelling locations sited has previously been approved. The time frame since tree surveys (2013) that informed that approval, anticipated tree growth and non-development related tree management has required a re-survey of the site trees. This survey and report has included data collected for trees not originally surveyed, both on and off-site, which through canopy spread and root protection areas pose a constraint to approved outline and proposed development.

A Tree Preservation Order (TPO) was served in 2014 (see plan in section 1.5 above) on the boundary wooded areas of the site and notable individual trees. Subsequent meetings between the design team (including Aire Valley Tree Consultancy Ltd) and local planning authority to inform the outline application indicated the acceptance that the internal trees to the site would have to be removed in order to enable any economically viable development. The TPO was therefore served on the boundary trees which provide amenity value to the wider area and screen the site. One significant, high quality oak tree within the site was protected with a TPO and both outline and current/proposed site designs have planned for its retention as a key landscape feature.

6.3 Arboricultural Impact of the Development

Impact / work recommended		Retention Category			
		A	**B**	**C**	**U**
1	Tree to be removed to enable development	2.5, 2.16, 3.11, **5.18, 5.20**,	**1.13, 1.15, 1.16, 1.19**, 1.40, 2.4, 2.19, 2.20, 3.1, 3.2, 3.3, 3.4, 3.5, 3.8, 3.9, 3.10, 4.23, 4.24, **5.15, 5.36, 5.39**	**1.14, 1.17, 1.38**, 1.39, 2.1, 2.2, 2.3, 2.10, 2.12, 2.13, 2.14, 2.17, 3.7, 4.31, 4.32, 4.33, 4.34, 4.35, **5.12, 5.13, 5.14, 5.16, 5.17, 5.38**,	**1.12, 1.18**, 2.18, 3.6, **5.21**
2	Trees recommended for removal as part of the development			**4.14, 4.19,** 5.1, 5.2, **5.3**	**1.32, 1.37**,
3	Trees that require pruning in order to enable the development	**3.12**	4.27	4.28, 4.29, 4.30	
4	Trees recommended for pruning for post development clearance	1.26, **4.7**,	1.20, **4.4, 4.6, 4.15**,	1.25	
5	Trees recommended for pruning as good arboricultural management		1.7, 1.24, **4.12, 4.20, 4.21**, **5.7, 5.9**,	1.10, 1.21, 1.22, 1.29, 1.31, 1.33, **4.10**,	

Notes:
Tree numbers in **bold** are those subject to a Tree Preservation Order.
Items in Row 2, 4 & 5 are not necessarily required in order to enable the development but are recommended to be undertaken while a tree contractor is on-site reducing the need for any future planning applications and reducing site management costs long-term.

6.4 Dead, Declining or Structurally Unsound Trees

Trees graded as Retention Category U are dead, in irreversible decline or have structural defects.

6.5 Above Ground Tree Constraints – Tree Trunk and Canopy

The table in section 6.3, above highlights the arboricultural impact of the proposed development

- The trunks of trees that are found within the footprint of the proposed development - which require removal in order to enable the development, are listed in Row 1, in section 6.3 above
- Trees which are recommended for removal due to their poor structural form or inappropriateness adjacent a proposed residential dwelling are listed in Row 2, in section 6.3 above
- The canopies of trees listed in Row 3, in section 6.3 above have low or lateral branches which overhang the proposed site, a dwelling or access roads and need to be pruned in order to enable the development. Pruning will ensure that low and lateral branches are not damaged by high sided construction vehicles during the development, or by post development site users
- The canopies of trees listed in Row 4, in section 6.3 above do not need to be pruned in order to enable the development. However, where an appropriate pruning point is available or where previous pruning has already been undertaken without detriment to tree health or longevity (particularly trees in area 4) a management schedule has been provided. This will reduce the future pressure on retained trees and any burden of tree works applications on the local planning authority
- Trees in Row 5, in section 6.3 above have dead, defective or partially failed branches within their canopies which are recommended for management. It is recommended this work be undertaken while a tree contractor is on site undertaking other works. This work does not need to be undertaken to enable the development

A Shade Plan is included in Appendix A which shows the shade cast from significant trees from am to pm. Most of the retained trees are deciduous, so shade will only be an issue in the summer months.

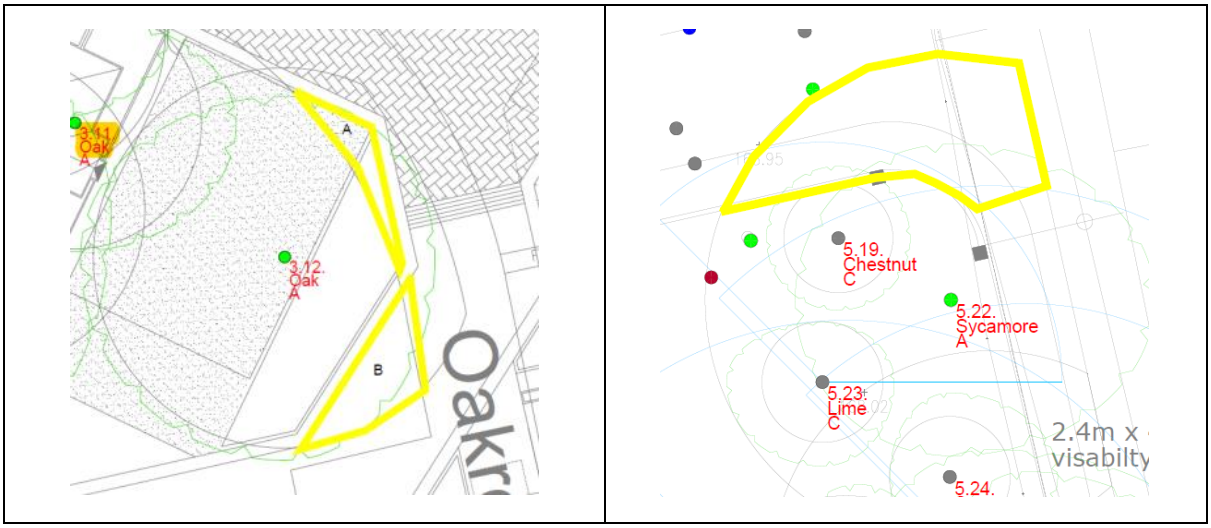
- Retained trees in Area 1 do not cast a significant shade on proposed plots 4, 5 and 6
- Retained trees in Area 2 numbered 2.7, 2.8 and 2.9 do not cast a significant shade on proposed plots 11, 12 and 13
- Further trees in Area 2, numbered 2.16, 2.19, 2.20 and 2.21 would cast a potentially significant shade to proposed plots 16, 17 and 18. This, along with other issues (see section 6.7) has informed the decision to remove these trees
- Further retained trees in Area 2, numbered 2.22, 2.23 and 2.24 cast a shade on proposed plots 22 and 23. These plots have large gardens and amenity areas, so the impact of this shading will be minimal
- Retained tree 3.12 does not cast a significant shade on proposed plot 21
- Retained trees in Area 4 will collectively cast a shade on the proposed garden areas from late afternoon onwards but the dwellings will be in full sun all-day
- Retained trees in Area 5 do not cast a shade on proposed plots 1 and 30

6.6 Below Ground Tree Constraints – Root Protection Areas (RPA's)

- Trees which are recommended for removal due to their closeness to the proposed through total or significant loss of RPA are also listed in Row 1, in section 6.3 above
- Off-site tree 4.27 will see a minor infringement in its RPA via a footpath/patio area. This is a low impact construction and this tree has alternative rooting area to all other sides
- Sections 7.4.2.3 and 7.5.2.3 of BS 5837 indicate that any new hard surfacing proposed within the RPA of a retained tree on a development site should not exceed 20% of any existing unsurfaced ground. We can use this as a guide in determining if proposed surfacing will have a significant impact on retained trees. See table below. The rooting areas of Oak 3.12 and Sycamore 5.22 appear to be the only trees which will see any significant infringement by the development

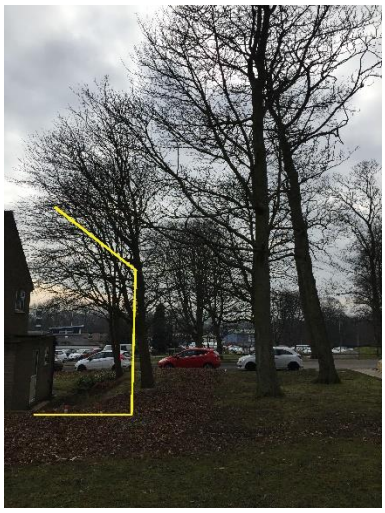
Impact of the Development on Retained Trees RPA's

Tree No.	Tree Type	BS Retention Category	RPA m²	Current & Proposed RPA Change	% of RPA Surfaced Proposed	Significance
3.12	Oak	A	234.5	This RPA has been altered in shape as no expected RPA beyond 1m under existing highway. See image below left– Area A, bordered yellow would see 10m²/4.2% **gain** in RPA. Area B, bordered yellow a 15.5m²/6.6% **loss** in RPA.	Minor. Oak tolerant, alternative rooting area to south west	
5.22	Sycamore	A	261	This RPA has been altered in shape as no expected RPA beyond 1m under existing highway. See image below right	18	Minor, this loss area formally hosted trees which would have provided root competition, alternative rooting area to west and south



6.7 Tree Removal to West Additional to Outline Proposal

Some trees to the west on (2.1 - 2.5), and off the development site were not recorded on plans in the outline application. The presumption is that such scrutiny was undertaken by the local authority and design team at that time that the decision was made early on that these trees would be removed in order to enable the agreed siting. These trees have been plotted on the current topographic survey and surveyed in accordance with BS 5837. The approved outline plan with dwelling siting and subsequent site re-design to include 30 dwellings has been produced on this assumption. The approximate approved outline and proposed footprint is labelled in yellow on the photograph below. Two category C trees, 2.1 and 2.2 are within the footprint and would need to be removed to enable development. It is considered that the two large trees, 2.4 and 2.5 to the right of the picture will be in too close a proximity to the outline and proposed, if retained dominating the small gardens.



Ash tree 2.19, to the centre west of site, was proposed for retention in the approved outline – see the centre tree of the three in the bottom left photo which has a wide spreading canopy which has shaded and made the adjacent two trees asymmetric in form. Ash tree, 2.19 has a potential longitudinal crack running through its main stem, see yellow arrows on pictures bottom right, wound wood is evident. This Ash tree could be retained and pruned, reduced in size, however it would also be a significant tree for a residential garden. It is therefore considered by the design team that this tree and adjacent Sycamore number 2.16 be removed as part of the development.

None of these trees have high amenity value, can currently be seen from any significant public vantage point or were deemed worthy of protection in the 2014 Tree Preservation Order.

6.8 Service Runs

A surface water storage tank and waste water pipe will be installed to the north of Area 1. This will require excavation and therefore removal of trees 1.12 to 1.19.
All other utilities will be installed within the site's built up areas and highways, outside the RPA's of retained trees – see Arboricultural Impact Plan.

6.9 Construction Access & Storage of Materials

Initial construction plant and machinery will access the site from the current access drive to the south east, off Oakroyd Drive. This access is hard surfaced and historic. The pruning of trees listed in Row 3 of section 6.3 will ensure no low branches are a constraint to or are damaged by the movement of plant and machinery.

Storage is available outside retained trees RPA's.

As such no planned plant and machinery movements will enter the RPA's of retained trees. However, tree protective fencing should be installed to prevent any unplanned incursion into the RPA's of retained trees prior to any groundworks.

6.10 Impact on Amenity

The trees proposed for removal to the east of the site, within Area 5 are required in order to provide site access. This linear group has already been broken by the removal of a structurally defective tree, unrelated to development. Additional planting opportunities now exist to improve the area either side of the proposed access.

Trees proposed for removal in Area 2 cannot be viewed form any current significant public vantage point. They are screened from the wider area by sheer distance, existing buildings, other groups of trees and linier woodland. Whilst this area contains good quality trees, in the pre-development context they currently have no or limited amenity value in the context of Part 8 of the Town & Country Planning Act. Therefore, the trees to be removed will not have a significant detrimental effect on the amenity of the area.

6.11 Proposed Planting to Mitigate for Tree Loss

A planting plan has been produced.

6.12 Indirect Damage Potential

Section 4.3 of BS 5837 states that a soil assessment should be undertaken by a competent person to determine 'shrinkability' or volume change. I am not a soil scientist and therefore recommend a specialist in this field is consulted before any foundation design stage.

6.13 Tree Protection – Fence

Retained trees will have to be protected from direct damage by machinery impact or storage of materials and compaction of rooting areas. Robust but temporary fences will have to be installed prior to any other onsite works. The timing and method can be found in section 7 below.

6.14 Tree Protection – Ground Protection

Techniques and products are available which allow surfacing or movement within the RPA's of retained trees without detriment to their longevity. See section 7 below.

6.15 Tree Protection – Ground Protection/Precautionary Techniques

Groundwork operations adjacent to Oak tree 3.12 will have to use techniques that reduce the impact on roots and rooting areas. See section 7 below.

6.16 Conclusions

- Details were recorded for 150 individual and groups of trees
- 55 trees will require removal to implement the development
- Seven further trees are recommended for removal as part of the development
- Five trees require pruning to enable site access and building clearance
- Further pruning recommendations have been recommended
- The remaining trees will require protection by the installation of temporary tree protective fencing, temporary ground protection and precautionary techniques
- It is considered the development can go ahead following recommendations in British Standard 5837 without significant detriment to retained trees
- Tree related operations must be appropriately timed, monitored and recorded to ensure the health and longevity of retained trees – see section 7 below

7.0 Arboricultural Method Statement

7.1 Project Arboriculturist

BS5837 recommends the appointment of a Project Arboriculturist to ensure that on and off-site trees are fully considered during the development process. The Project Arboriculturist' for this development are Ross Cannon and Craig Flowerdew of Aire Valley Tree Consultancy Ltd, whose contact details are at the rear of this report. Any tree related enquiry, no matter how minor should be directed to them. Consultation is often time well spent

7.2 Tree / Ground Protection – Generic Precautions

These general precautions **must** be followed within the RPAs of **retained** trees during the construction phase:

- No soil disturbance, including compaction
- No change in the soil level, by stripping or filling unless controlled below
- No excavation, without prior discussion with the Project Arboriculturist and/or the Local Planning Authority unless controlled below
- No redirection of surface water runoff into or out of the RPA
- No temporary buildings, sheds, or offices, without prior discussion with the Project Arboriculturist and/or the Local Planning Authority
- No storage of materials or fuel
- No dumping of materials, whether into a skip or onto the ground
- No fires within 10m of the RPA or tree canopy, whichever is greater
- No refuelling of mechanical equipment
- No storage or mixing of cement
- No washing of cement mixers within or uphill of the RPA
- Follow the guidance contained within the National Joint Utilities Group Volume 4 (Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees (Issue 2, 2007); www.njug.org.uk) when installing underground services inside or other excavation in the RPA of a tree

7.3 Tree Work Recommendations

A tree work schedule is included in Appendix C in the 'Management' column.
Contractor vehicles and plant to only park outside retained trees RPA's.
Tree stumps can either be removed by grinding, if within the RPA of an adjacent retained tree or retained for removal by excavation if within an area of proposed groundworks.

7.4 Tree Work Standard - BS 3998:2010

All tree work should be carried out in accordance with BS 3998 2010 "Recommendations for tree work" by a competent, qualified arborist. They must also hold sufficient public/employee's liability insurance.

7.5 Bird & Bat Activity

Consideration should be made with regards to bird and bat activity. All bird's nests are protected when in use, bat roosts are protected whether in use or not. Bats are fully protected under schedule 5 of the Wildlife & Countryside Act 1981 and the Countryside and Rights of Way Act 2000.

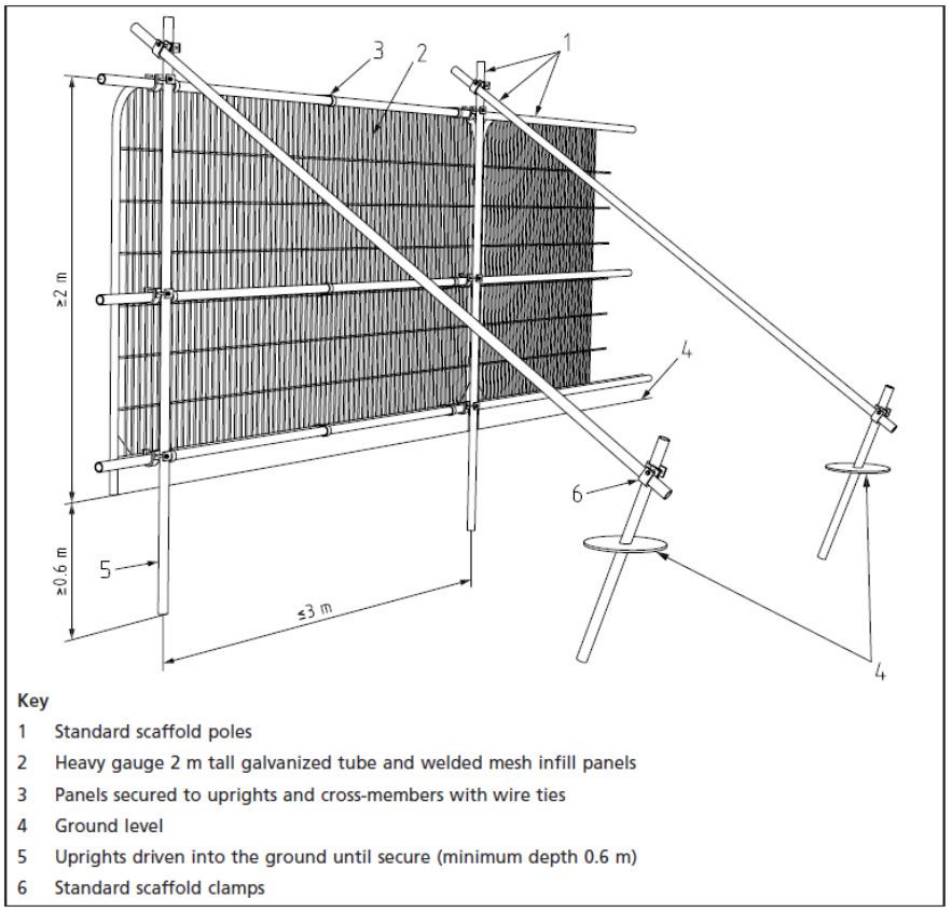
7.6 Temporary Tree Protective Fencing

Temporary protective fencing should be erected as shown on a Tree Protection Plan forming a 'Construction Exclusion Zone' (CEZ).

Fencing will prevent construction activity that could cause damage to retained trees or their rooting areas. No plant, equipment or vehicles should operate within the protective fencing without suitable ground protection and agreement from the Project Arboriculturist or Local Planning Authority. The fencing must be robust enough to withstand impacts from machinery and plant equipment operating in the area. Paragraph 6.2.2 and Fig. 2 & 3 of BS5837 details the appropriate fencing specification. The appropriate fencing is shown below.

The fencing will have to be installed or updated in two phases – see Tree Protection Plan

- Phase 1 – to allow for tree protection during demolition and removal of concrete pads (see section 7.8 below, particularly adjacent trees 2.22 – 2.24 and group 4)
- Phase 2 – additional or the moving outwards into the site of existing phase 1 fencing following the demolition or removal of foundations or concrete pads, where roots are likely to be found underside or adjacent



Key

1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

The phase 1 protective fencing should be erected prior to any other development activity taking place

The pictures below show the required fencing specification used elsewhere as examples

This sign (below) must be laminated and securely fixed to the outside/site side of the Tree Protective Fence line every 6-8m. Replace when weathered or lost. Available as a pdf on request

7.7 Temporary Ground Protection – Generic Recommendations

Where unplanned incursion into the RPA's of retained trees is required the following ground protection measures should be utilised. Such an incursion will require the approval of the Local Planning Authority.

BS 5837 recommends '*temporary ground protection should be capable of supporting any traffic entering the site without being distorted or causing compaction of underlying soil'*

a) for pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100mm depth of woodchip), laid onto a geotextile membrane;

b) for pedestrian-operated plant up to a gross weight of 2t, a proprietary, interlinked ground protection boards placed on top of a compression resistant layer (e.g. 150mm depth of woodchip) laid on a geotextile membrane;

c) for wheeled or tracked construction traffic exceeding 2t gross weight, an alternative system (engineer approved) designed with arboricultural input to accommodate the likely loading to which it will be subjected'

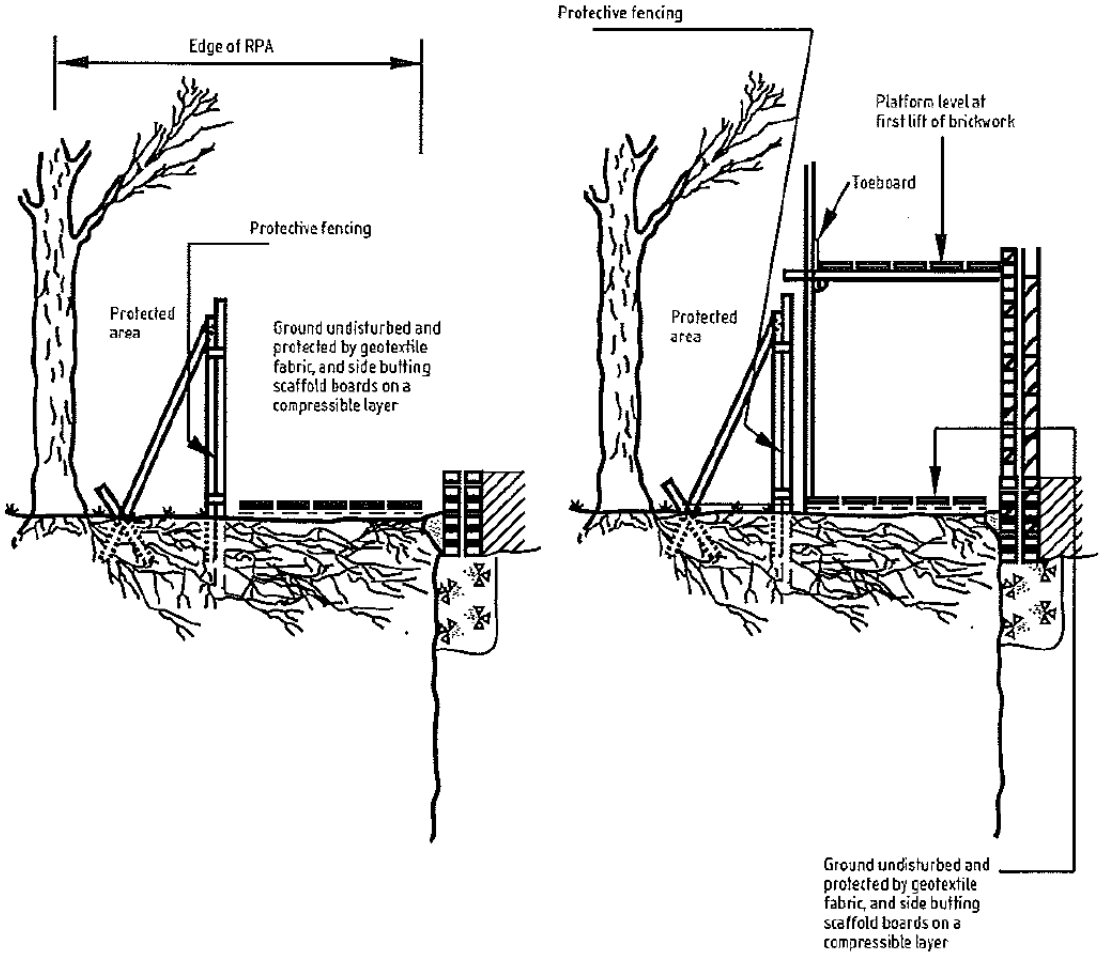
7.8 Temporary Ground Protection Adjacent Plot 1, 5, 21 and 27

Plots 1, 5, 21 and 27 will require the construction of a retaining wall or require construction access or scaffold erection at the periphery of retained trees RPA's. The heights of these retaining walls are shown on the Arboricultural Impact Plan. In order that these features can be built without detriment to the retained trees RPA's the following Temporary Ground Protection methodology must be used. See location on Tree Protection Plan.

1. Do not move plant, machinery or vehicles across unprotected ground
2. Remove any large stones or surface features
3. Do not lower existing soil levels
4. Lay a breathable Geotextile base
5. Construct a wooden frame to accommodate and retain the woodchip compression layer
6. Infill the 150mm of woodchip
7. Lay and secure with screws a wooden sheet wearing top, or scaffold boards
8. Lay a further non-slip wearing course of https://www.groundtrax.com/groundmatz/ or similar (not shown on photo's below)

Some photographs below show the system, used elsewhere. Holes can be drilled through to safely accommodate upright scaffold poles. A ramp can be installed at either end for ease of use. This should be updated or replaced if it is damaged or worn and no longer fit for purpose. Timing of installation and removal is given below.

A diagram below shows the system but using scaffold boards as a wearing course. The use of ply boards as above tends to be a cheaper and more robust option.


Edge of RPA
Protective fencing
Protected area
Ground undisturbed and protected by geotextile fabric, and side buffing scaffold boards on a compressible layer
Protective fencing
Platform level at first lift of brickwork
Toeboard
Protected area
Ground undisturbed and protected by geotextile fabric, and side buffing scaffold boards on a compressible layer

7.9 Removal of Existing Tarmac, Paths, Foundations & Concrete Slabs within Retained Trees RPA's

Trees 1.20, 2.22, 2.23, 2.24, 3.12, 4.1, 4.4, 4.6, 4.7, 4.15, 4.20, 4.22 and 4.27 have potential RPA's under or adjacent to existing built structures which need to be removed in order to enable development.

1. Machine/plant to be parked on current hard standing/building footprint and remove surface/footing using back actor/tined bucket on hydraulic arm
2. Machine/plant not to park within unprotected RPA but use back actor at its full extent to pull surface up and towards it, away from trees ('top down-pull back) until only sub base is left starting at the nearest point to the trees and working back away from them. Below this level hand digging or a combination of slow and considerate back actor use will be required
3. All roots should be retained if possible and kept damp and covered
4. Work should be planned so that once existing surface is removed the machine/plant does not have to traverse over the newly exposed ground as root damage could occur
5. Install or move outwards temporary tree protective fencing as per Phase 2 on the Tree Protection Plan
6. Installation of new surfacing/soils should take place as soon as possible after excavation to reduce the time roots/rooting area will be exposed
7. It will be preferable to retain the existing sub-base/foundations in situ if it is considered by the site manager that it is fit for purpose. This option could be less detrimental to tree roots
8. No reduction in the levels of underlying soil should occur within the RPA
9. Ground levels to be made up using good quality sandy loam soil

7.10 Removal of Footpath and Rail in RPA of Tree 2.21

A narrow pedestrian operated dumper and mini-digger can traverse the existing footpath as long as they do not leave or have tracks/wheels wider than the footpath. It is anticipated the footpath and rail concrete base will have to be lifted by a mini-digger and sections removed by the dumper reversing back out of the RPA, always traversing on the existing footpath. Sub base can be retained, and a layer of topsoil placed on top – see Landscape Phase below. A section of temporary tree protective fence may need to be removed to enable this work. Once complete the temporary tree protective fence should be re-instated.

7.11 Ground Alteration within RPA of Tree 3.12

See Precautionary Area on Tree Protection Plan.
This area will see a combination of removal and re-instatement of existing kerbs and tarmac as well as new soils and fencing.
Project Arboriculturist to attend on day of groundworks in this area.
Hand digging, or a combination of slow and considerate back actor use will be required within the RPA where soils are to be lowered: -

- No plant or machinery access within area protected with temporary tree protective fencing – pedestrian access only
- Line of excavation marked on the ground – excavation by machine to be undertaken 30cm outside/site side (away from retained tree) of this line. Hand digging then to take place up to the required edge
- Project Arboriculturist to identify and manage exposed roots discussing with site manager any issues
- Project Arboriculturist to photograph any roots as appropriate
- Roots of 25mm diameter or more should ideally be retained and be moved to one side of the excavation, if not be cut back with a sharp tool, such as secateurs, leaving as small a wound as possible, except where they occur in clumps
- Installation of new surfacing/footing should take place as soon as possible after excavation to reduce the time roots will be exposed
- Ground to be made up in height should include a good quality upper surface of sandy loam soil.

Fencing in this area to be installed by pedestrian operative, not machine. Post holes dug by hand. Post holes sides but not base lined with a porous textile prior to post mix being poured.

7.12 Ground Alteration within RPA of Tree 5.22

When excavating for access drive prune all exposed roots to southern extent (closest to tree 5.22) with a sharp tool leaving as small a wound as possible.

7.13 Landscaping Phase

The landscaping phase may require the removal of the temporary tree protective fencing. As such it is essential that operations that will harm trees or their rooting areas are avoided.

The landscape contractor must be aware at time of quotation that the use of plant and machinery within retained trees RPA's is prohibited. Therefore, appropriate planning for the movement of materials will have to take place.

1. Wait until all heavy plant is removed from site
2. Soil levels cannot be significantly raised. Where minor irregularities in levels are found, which need to be levelled for the installation of turf for example use a sandy loam soil. It is envisaged that no more than 100mm would be acceptable. The use of low walls to control slope change as opposed to large scale soil level changes is preferable but this would need a further arboricultural method statement and LPA approval if within retained trees RPA's
3. Do not enter within the RPA's with any machine or plant – pedestrian and wheel barrows only. Materials can be deposited (but not stored) within this area from a machine bucket/dumper as long as the actual wheels or tracks of the machine do not enter the RPA's
4. When installing fence posts for rear garden fences within retained trees RPA's it is unlikely that any significant root damage will occur. However, if roots greater than 2.5cm diameter are severed these need to be cut cleanly. If post holes are to be infilled with concrete or a post mix, then line the sides but not the base of the post holes with a geotextile to prevent concrete constituents mixing with soils
5. Work closest to the trees first and move away from them so they receive the minimum of alteration/compaction

8.0 Responsibilities and Order of Works

8.1 Responsibilities

All enquiries relating to trees should be addressed to the Project Arboriculturist, no matter how trivial. Consultation is time well spent.

Responsibility	Title	Name	Organisation	Contact
Building design	Architect		Knapton & Knapton	01422 380047
Local Planning Authority (LPA)	Arboricultural Officer (Planning)		Kirklees Council	trees.planning@kirklees.gov.uk
Trees in relation to development	Project Arboriculturist	Ross Cannon Craig Flowerdew	Aire Valley Tree Consultancy Ltd	07599 358056 07711 374028
Protective fencing, tree work, groundworks & build	Developer		ROUSE HOMES LTD	info@rousehomes.co.uk

8.2 Order of Tree Related Works

This list **must** be followed to ensure the health and longevity of the retained trees. Where operations need to be carried out that are not listed here then consideration should be made to the retained trees. Contact the Project Arboriculturist if in any doubt.
Keep this document, in its entirety in site office so it can be reviewed, and an auditable series of operations is maintained.
Abbreviations – AMS = Arboricultural Method Statement. TPP = Tree Protection Plan. LPA = Local Planning Authority

Stage	Operation detail	Responsible person	Completion signature & date
1	Undertake tree works Also remove shrubs in the footprint of Temporary Tree Protective Fence and Temporary Ground Protection	Developer	
2	Install Phase 1 Tree Protective Fence and Temporary Ground Protection as per TPP and sections 7.6 and 7.8 of AMS. Inform and invite Project Arboriculturist to check fence type and location	Developer to install and liaise with Project Arboriculturist	
3	Once ensuring Fence and Ground Protection is fit for purpose - Photograph and email LPA to inform them of development stage. Invite LPA to inspect location	Project Arboriculturist	
4	Confirm acceptance of Fence and Ground Protection from LPA	Project Arboriculturist	
5	Undertake demolition	Developer	
6	Update Temporary Tree Protective Fence to Phase 2 location as per TPP	Developer	
7	Undertake groundworks and construction	Developer	
8	Project Arboriculturist to supervise ground alteration/precautionary area adjacent tree 3.12 as per section 7.11 of AMS and TPP	Developer to liaise with Project Arboriculturist	
9	Project Arboriculturist to inspect fencing to ensure it is maintained fit for purpose after Phase 2 installation and on a monthly basis. email to LPA to inform of development stage and inspection	Developer to liaise with Project Arboriculturist	
10	Undertake landscaping	Developer	
11	email to LPA to approve removal of protective fence when build, hard & soft landscaping and plant/machinery are completed or removed.	Developer to liaise with Project Arboriculturist	
12	Planting to be monitored, managed and maintained for 5 years and replaced if removed or dies	Developer	

Appendix A: Tree Constraints, Arboricultural Impact, Shade & Tree Protection Plan

Tree Constraints Plan – Pre-development site layout, tree locations, root protection areas and canopy spreads

Arboricultural Impact Plan - Tree locations, root protection areas and canopy spreads with the proposed layout of the site superimposed upon it

Shade Plan – Shade cast from significant retained trees on proposed dwellings

Tree Protection Plan – A copy of the Arboricultural Impact Plan or Tree Constraints Plan with locations of tree protective fencing labelled upon it

Appendix B: Authors Qualifications & Experience – Ross Cannon

1. Qualifications

In 2001 I was awarded a National Diploma in Urban Forestry.

In 2006 I was awarded the Arboricultural Associations Technicians Certificate.

In 2011 I became a Technical Member of the Arboricultural Association.

2. Experience

I have been working and studying within the field of arboriculture since 1999, first as a tree surgeon and latterly in an advisory capacity. Between 2001 and November 2007 I was a tree surgeon for a large local authority. Between November 2007, and December 2008 I worked as a Tree Surveyor and then Arboricultural Officer for Leeds City Council. This involved various large-scale tree condition and management surveys and carrying out detailed tree inspections. Between December 2008 and December 2011, I was a Trees & Woodlands Officer for the Yorkshire Dales National Park Authority administering tree preservation orders, trees in conservation areas and providing advice to the development control section on matters relating to trees in relation to proposed development. From December 2011 to present I have been undertaking independent tree consultancy services.

3. Continuing professional development

I attend courses, conferences, seminars and workshops run by land management, forestry and arboricultural organisations, colleges and universities.

All information given in this report is based upon the experience of the author and backed up with relevant arboricultural knowledge available at the date of inspection

Appendix C: Tree Details & Site Photographs

Tree No: Each tree/group has been given a unique number, which coincides with the site plan located in Appendix A. Where instructed small mounted numbered metal ID tags will be applied to each tree surveyed.

Tree Type/Common name: Where a cultivar, variety or species cannot be accurately given the genus name only will be given.

Height (m): This is measured approximately to the nearest 1m.

Stem Diam /DBH (mm): The Diameter at Breast Height of the given tree at 1.5m above soil level, (On sloping ground taken on the up-slope side of the tree base). Where the tree is multi-stemmed measurements will be taken below the junction where possible.

RPA Radius: The radius and area around each tree in metres which must be prepared in order to give the necessary RPA

Crown Spread: Describes the crown radius from the base of the tree in four compass directions, recorded to the nearest half meter.

Low Canopy Height & First Significant Branch and Direction: In m to aid management options

Age Class: Is described (or abbreviated) as newly planted, young, semi-mature, early mature, mature, or over mature.

Health: Physiological condition gives an assessment of the tree's health and vitality, die back and the presence of disease. It is described as **Good** – no significant health problems, **Fair** – Tree less than optimal condition, small buds/internodal distance, early decline or **Poor** = significant ill health/in decline.

Comment: Narrative comment on general tree condition, significant defects and overall appearance, for example presence of pathogens and structural condition, it is described as **Good** – no significant defects, **Fair** – significant defects that can be remediated or **Poor** – significant defects which cannot be remediated.

Management: Work recommended or required to implement the development or for good arboricultural practise.

Retention Category: Each tree/group is identified with a retention category in accordance with BS 5837,

Abbreviations: figures suffixed with a '**#**' indicate that the value is estimated rather than measured due to site constraints. All measurements in this survey/report should be considered estimates.

Tree No.	Tree Type	Height (m)	Stem Diam (mm)	RPA (r, m)	North (m)	South (m)	East (m)	West (m)	Low Canopy	First Branch	Age	Health	Comment	Management	BS Category
Area 1 to the south east of the site (W2 of TPO No.21 2014)															
1.1.	Holly	6	150	1.80	as	plan			0	0	EM	G	Good form	None	C
1.2.	Sycamore	18	570	6.84	6	7	7	6	6	5	M	G	Tag 226, edge tree of group, weight biased to east, base obscured	None	B
1.3.	Beech	9	300	3.60	2.5	6	4.5	3	6	6	EM	G	Tag 227, <1m from kerb, canopy suppressed, weight biased to south	None	C
1.4.	Chestnut	15	460	5.52	4.5	6	4	6	1	5	EM	G	Tag 229, <1m from kerb, weight biased to south, mechanical damage to base, branch stubs	None	B
1.5.	Oak	7	100	1.20	1	1	2.5	1	2	2	Y	G	Tag 223, mechanical damage to stem	None	C
1.6.	Oak	14	250	3.00	5	3.5	5	3.5	3	5	EM	G	Tag 222, suppressed, stem wound	None	B
1.7.	Oak	10	180	2.16	3	2	4	5	4	5	EM	G	Tag 212, suppressed, dead branches in canopy	Remove dead branches	B
1.8.	Ash	19	520	6.24	9	4.5	5	9	9	5	M	G	Tag 224, exposed to south due to removal of adjacent tree, sub stem removed historic branch failure wounds at 5 and 10m, dead branches in upper canopy	None	B
1.9.	Chestnut	12	620	7.44	5	4.5	5	6	2	3	M	G	Tag 225, large stem removal wound, compression fork, stable, previously crown reduced to 12m	None	C
1.10.	Lime	16	400	4.80	5	3	6.5	1	6	12	M	F	Tag 211, stem wound to west, occluding, branch removal and failure wounds, weight biased to east, dead branches	Remove dead branches	C
1.11.	Lime	16	320	3.84	6	3.5	5.5	5	3	4	EM	G	Tag 210, mechanical damage to base/buttress roots, compression fork at 4m, stable	None	B
1.12.	Holly	7	238	2.85	2.5	2.5	2.5	2.5	1	0.5	M	P	Tag 205, rabbit damage, sparse canopy, irreversible decline	If permission given remove to enable development	U
1.13.	Ash	18	500	6.00	5	7	7.5	5.5	10	5	M	F/G	Tag 204, exposed to south west due to removal of adjacent tree, weight biased to north east, dead branches in canopy	If permission given remove to enable development	B
1.14.	Lime	15	380	4.56	5	2	8.5	1	3	3	M	F/G	Tag 203, edge tree weight biased to north east, possibly early decline	If permission given remove to enable development	C
1.15.	Ash	16	550	6.60	10	4.5	8.5	5.5	4	4	M	G	Tag 200, edge tree, weight biased to north	If permission given remove to enable development	B

Tree No.	Tree Type	Height (m)	Stem Diam (mm)	RPA (r, m)	North (m)	South (m)	East (m)	West (m)	Low Canopy	First Branch	Age	Health	Comment	Management	BS Category
1.16.	Lime	17	480	5.76	9	3	3	7.5	2	6	M	G	Tag 199, weight biased to north west, dead branches in canopy	If permission given remove to enable development	B
1.17.	Ash	15	250	3.00	6	1	1	8	6	6	M	F/G	Tag 201, significant weight bias to north west, dead branches in canopy	If permission given remove to enable development	C
1.18.	Beech	15	250	3.00	4	4	3	5	3	3	M	D	Dead	If permission given remove to enable development	U
1.19.	Lime	15	370	4.44	6	3	3	6	3	7	M	G	Tag 200, weight biased to north	If permission given remove to enable development	B
1.20.	Beech	16	560	6.72	10	3	6	10	1	5	M	G	Tag 208, weight biased to north west, suppressed to south east	If permission given crown lift pendulous growth to north west to 5m, reduce canopy to west between heights 6m and 15m by 3m to appropriate side branch (see photo below)	B
1.21.	Oak	4.5	110	1.32	3	3	3	3	2	2	Y	G	Tag 213, mechanical damage to base and canopy, hanging branch	Remove hanging branch	C
1.22.	Sycamore	16	530	6.36	6	6	6.5	8.5	4	5	M	G	Tag 214, edge tree, third branch to west at 8m poorly attached,	If permission given remove poorly attached third branch to west and two lower ones below it, also to west	B
1.23.	Beech	15	310	3.72	3.5	4	7.5	5.5	4	6	EM	G	Tag 215, crossing branches/leading branches in upper canopy	None	B
1.24.	Sycamore	6.5	380	4.56	3.5	3.5	4	5	9	9	EM	G	Tag 216, Branch removal wounds on stem, socket decay, dead branches in canopy	Remove dead branches	B
1.25.	Beech	6	220	2.64	6.5	5	3	7	1	3.5	EM	G	Tag 217, suppressed, will not mature to be a structurally sound tree	If permission given reduce length of lateral growth to west by 3m to suitable side branches	C
1.26.	Sycamore	16.5	520	6.24	4.5	4.5	3.5	5.5	3	8	M	G	Tag 218, Branch failure point, branch stubs	If permission given crown lift to 8m, remove dead branches and branch stubs, first large lateral branch to west at 9m, reduce this in length by 1.5m to suitable side branch (see photo below)	A
1.27.	Sycamore	15	400	4.80	5	5.5	4.5	4	5	9	M	G	Tag 221, mechanical damage to base, suppressed canopy	None	A
1.28.	Beech	14	260	3.12	3.5	5.5	6	5	2.5	3.5	EM	G	Tag 220, suppressed to north and west	None	B

Tree No.	Tree Type	Height (m)	Stem Diam (mm)	RPA (r, m)	North (m)	South (m)	East (m)	West (m)	Low Canopy	First Branch	Age	Health	Comment	Management	BS Category
1.29.	Lime	11	200	2.40	2.5	2.5	1	3	3	4	EM	G	Tag 219, stem wound at 4m	Remove dead branches	C
1.30.	Chestnut	16	370	4.44	4	4	4	3	2	5	EM	G	Tag 239, historic bleeding canker wound to south, occluding	None	B
1.31.	Sycamore	16	420	5.04	7	4.5	2.5	6	5	4	M	F/G	Tag 238, weight biased to west, branch stubs, dead branches in canopy	Remove dead branches	C
1.32.	Beech	14	240	2.88	5	4	3	4.5	3	3	EM	D	Dead	If permission given remove tree	U
1.33.	Sycamore	15	330	3.96	3	4	4.5	3	0	5	M	G	Tag 233, mechanical damage to buttress root, dead branches in canopy	Remove dead branches	C
1.34.	Norway Maple	15	340	4.08	3.5	4.5	4	3	4	4	EM	G	Tag 232, mechanical damage, bleeding lesions on scaffold branch to east at 6m	None	C
1.35.	Sycamore	8	390	4.68	5	4.5	4.5	3.5	4	4	M	G	No tag, mechanical damage, suppressed to west and south	None	B
1.36.	Hawthorn	7.5	110	1.32	1.5	1.5	1.5	1.5	1	0	EM	G	No tag	None	C
1.37.	Cherry	6	172	2.06	3.5	2	2	4	0	0	M	G	Main stem failed at 1.5m	If permission given remove tree	U
1.38.	Apple	8	453	5.44	6	5.5	5.5	6.5	3	0.5	M	P	Tag 198, sparse lower canopy	If permission given remove to enable development	C
1.39.	Ash	10	390	4.68	5.5	5	5.5	4.5	1	3	EM	F	Tag 184, short internodal distance	If permission given remove to enable development	C
1.40.	Sycamore	14	560	6.72	7	7.5	7.5	7.5	2.5	2	M	G	Tag 183, heavily branched open grown specimen	If permission given remove to enable development	B
Area 2 - trees to the west of the site															
2.1.	Elm	10	270	3.24	3	4	5	3	2	3	EM	G	Tag 181, compression fork at base, stable	If permission given remove to enable development	C
2.2.	Whitebeam	10	390	4.68	4	6	6.5	3	3	2.5	M	G	Tag 180, weight biased to east, suppressed	If permission given remove to enable development	C
2.3.	Whitebeam	10	390	4.68	3	3.5	5.5	6	3	3	M	G	Tag 303, fire damaged branches to east and south, mechanical damage to base	If permission given remove to enable development	C
2.4.	Sycamore	17	580	6.96	4	4.5	6	4	6	6	M	G	Tag 304, weight biased to east, mechanical damage to base	If permission given remove to enable development	B
2.5.	Sycamore	17	500	6.00	4	4	7	4	5	5	M	G	Tag 306, good form	If permission given remove to enable development	A
2.6.	Holly	9	382	4.59	3	3	3	3	3	0	M	G	Tag 306, rabbit damage to base	None	B
2.7.	Norway Maple	12	419	5.03	4	5.5	3.5	4.5	3	0	EM	G	Tag 315, mechanical damage to main stem and base, twin stem from base, stable, poor form	None	C
2.8.	Sycamore	17	610	7.32	5	4.5	3.5	5	3	6	M	G	Tag 313, Good form	None	A

Tree No.	Tree Type	Height (m)	Stem Diam (mm)	RPA (r, m)	North (m)	South (m)	East (m)	West (m)	Low Canopy	First Branch	Age	Health	Comment	Management	BS Category
2.9.	Whitebeam	9	400	4.80	5	4	5.5	5.5	3	2	M	G	Tag 311, weight biased to north	None	C
2.10.	Lime	13	476	5.72	5	5	5	5	4	5	EM	G	Tag 178, twin stem from base, union sound, mechanical damage to stem at 2m to south	If permission given remove to enable development	C
2.11.	Norway Maple	10	200	2.40	2.5	3.5	3	3	3	2.5	EM	G	Tag 177, suppressed, mechanical injury to south at 3m	None	C
2.12.	Ash	10	210	2.52	3	4	3	3.5	4	4	EM	G	No tag, mechanical damage to base and main stem at 2.5m west	If permission given remove to enable development	C
2.13.	Elm	7	190	2.28	4	5	4	4	2	2	EM	G	Tag 175, reasonable form	If permission given remove to enable development	C
2.14.	Oak	9	560	6.72	3	4.5	4.5	4	1	2.5	M	G	Tag 174, previously pollarded at 3m, presumably due to basal cavity	If permission given remove to enable development	C
2.15.	Lime	15	410	4.92	5	2.5	4	6	3	3	EM	G	Tag 171, Mechanical damage to south at 2m, suppressed to south, weight biased to north	None	C
2.16.	Sycamore	17	680	8.16	6	7	5	7	4	9	M	G	Tag 172, good form	If permission given remove to enable development	A
2.17.	Holly	7	160	1.92	2	4	2	2	1	3	M	G	Tag 173, significant rabbit damage	If permission given remove to enable development	C
2.18.	Sycamore stump	4	110	1.32	2.5	2.5	2.5	2.5	0	0	M	G	No tag, regrowth from coppiced stump	If permission given remove to enable development	U
2.19.	Ash	19	690	8.28	8	10.5	11	6.5	4.5	6	M	G	Tag 170, historic wound to north, strip of wound wood 1-2.5m to east (longitudinal split?), historic branch failure to central canopy, north east, wide spreading canopy, unsuitable for small garden	If permission given remove to enable development	B
2.20.	Lime	17	460	5.52	3	6	6	4	2	8	M	G	Tag 169, weight biased to east, exposed due to adjacent tree removal	If permission given remove to enable development	B
2.21.	Beech	16	710	8.52	6	7	9	6	2	5	M	G	Tag 167, minor cavity to base, to north, good wound wood, weight biased to north east	None	A
2.22.	Norway Maple	8	250	3.00	1	4.5	3.5	4.5	3	3.5	EM	G	Growing in off-site narrow strip of land between concrete hard standing areas	None	C
2.23.	Sycamore	9	480	5.76	4.5	4	4.5	4.5	4	4	M	G	Growing in off-site narrow strip of land between concrete hard standing areas, upper canopy in decline	None	C
2.24.	Norway Maple	7	250	3.00	4.5	4.5	4.5	4.5	2.5	2.5	EM	G	Growing in off-site narrow strip of land between concrete hard standing areas	None	C

Tree No.	Tree Type	Height (m)	Stem Diam (mm)	RPA (r, m)	North (m)	South (m)	East (m)	West (m)	Low Canopy	First Branch	Age	Health	Comment	Management	BS Category
Area 3 - Trees to centre of site															
3.1.	Lime	19	790	9.48	4	9	4	10	4	5	M	G	Tag 185, edge tree of group, dead branches in canopy	If permission given remove to enable development	B
3.2.	Lime	19	530	6.36	4.5	5.5	4	9	3	6	M	G	Tag 186, edge tree of group, dead branches in canopy	If permission given remove to enable development	B
3.3.	Lime	19	530	6.36	6	4	4.5	4	2	7	M	G	Tag 190, edge tree of group, dead branches in canopy	If permission given remove to enable development	B
3.4.	Lime	19	510	6.12	5	4	6.5	1	6	6	M	G	Tag 189, edge tree of group, dead branches in canopy	If permission given remove to enable development	B
3.5.	Lime	19	630	7.56	2.5	7.5	7	3	6	6	M	G	Tag 188, edge tree of group, dead branches in canopy	If permission given remove to enable development	B
3.6.	Sweet Chestnut	7	190	2.28	3	1	1	3	1	3	EM	P	Tag 191, mechanical damage to base	If permission given remove to enable development	U
3.7.	Oak	11	330	3.96	4	8.5	3.5	7	2	2.5	EM	G	No tag, mechanical damage, suppressed, will not mature to be a structurally sound tree	If permission given remove to enable development	C
3.8.	Oak	12	530	6.36	6	5.5	5.5	6.5	3	2	EM	G	Tag 193, Minor dead branches, heavily branched	If permission given remove to enable development	B
3.9.	Oak	16	630	7.56	7	11	6	8	5	2	EM	G	Tag 194, mechanical damage to base, compression fork at 2m, stable, heavily branched	If permission given remove to enable development	B
3.10.	Oak	14	570	6.84	8	4	7	5	1.5	1.5	EM	G	Tag 195, mechanical damage to structural branches, heavily branched	If permission given remove to enable development	B
3.11.	Oak	15	490	5.88	5	6	7.5	4	2.5	2.5	EM	G	Tag 196, heavily branched although reasonable form	If permission given remove to enable development	A
3.12.	Oak	13	720	8.64	7.5	9.5	7	9.5	2.5	3	M	G	Tag 197, burrowing animals under root plate, minor dead branches, historic road and parking area in rooting area	If permission given remove dead branches, crown lift to 5.5m over current and proposed road	A
Area 4 - Trees to north west of site (W4 of TPO No.21 2014)															
4.1.	Sycamore	15	450	5.40	3.5	7	3	7.5	5	3	M	F/G	Tag 166, weight biased to west, exposed, recent tree removed adjacent	None	B
4.2.	Sycamore	16	480	5.76	4	4.5	4	5	5	4	M	G	Tag 165, good upright form, no root buttress evident - ground levels raised?	None	A
4.3.	Beech	15	560	6.72	6	5	6	6	2	5	EM	G	Tag 164, compression fork at 6m, stable, weight biased to north	None	B

Tree No.	Tree Type	Height (m)	Stem Diam (mm)	RPA (r, m)	North (m)	South (m)	East (m)	West (m)	Low Canopy	First Branch	Age	Health	Comment	Management	BS Category
4.4.	Sycamore	15	830	9.96	6	6.5	7	7	7	4	M	F/G	Tag 163, possibly sparser canopy to north, previously crown lifted site side	If permission given reduce length of lateral branches to east by 2.5m to previous pruning point. Remove epicormic growth to crown break (see photo below)	B
4.5.	Group 2 Norway Maple 1 Sycamore	13	190	2.28	3	3	3	3	2	2	EM	G	No tags, suppressed by adjacent trees	None	C
4.6.	Beech	13	390	4.68	6	6	6.5	5	3	4	EM	G	No tag, burrowing animals under root plate, suppressed to north	If permission given remove epicormic growth to crown break, remove first branch to east at 4m, reduce remaining full canopy above (to east) in length by 2.5m to suitable side branch (see photo below)	B
4.7.	Beech	17	690	8.28	6	7.5	8	6	5	5	M	G	Tag 161, mechanical damage to base, branch removal wound to east at 7m, occluding, little apparent decay	If permission given remove lateral branch at 8m to east (5cm Diam) that has pendulous growth to proposed site, reduce full canopy to east in length by 2.5m to suitable side branch/previous reduction points (see photo below)	A
4.8.	Field Maple	7	140	1.68	3	3	3	3	2.5	2.5	Y	G	Tag 160, suppressed	None	C
4.9.	Oak	9	300	3.60	7	2.5	2	5	5	5	EM	G	Tag 159, suppressed, weight biased to north	None	C
4.10.	Ash	15	450	5.40	8	4.5	2.5	7	8	5	EM	G	Tag 157, storm damage at 9m, occluding, woodpecker hole at 8m, risk of further failures	If permission given crown reduce all leading branches by approx. 5m to suitable side branches	C
4.11.	Lime	11	200	2.40	5	1	3	3	3	3	EM	G	Tag 155, suppressed	None	C
4.12.	Ash	19	460	5.52	8	5.5	8	5	7	7	M	G	Tag 156, weight biased to north, hanging branch in canopy	Remove hanging branch	B
4.13.	Group 4 Field Maple	7	140	1.68	2.5	2.5	2.5	2.5	2	2	EM	G	No tags, suppressed by adjacent trees	None	C
4.14.	Cotoneaster	7	140	1.68	4	4.5	5	3	0.5	0	M	G	No tag, overgrown shrub	If permission given remove	C

Tree No.	Tree Type	Height (m)	Stem Diam (mm)	RPA (r, m)	North (m)	South (m)	East (m)	West (m)	Low Canopy	First Branch	Age	Health	Comment	Management	BS Category
4.15.	Beech	19	670	8.04	4	9	8.5	4	3	8	M	G	Tag 152, mechanical damage to base, weight biased to east, minor bleeding lesions to west at base, stem wound to south at 5m, minor decay, occluding	If permission given crown lift to east, to 6m, retain branches on stem that grow to the west, reduce length of lateral branches to east by 1.5/2m to suitable side branches (see photo below)	B
4.16.	Sycamore	10	240	2.88	2	3	3	4	3	3	EM	G	Tag 153, basal cavity	None	C
4.17.	Beech	12	300	3.60	5	3	3	6	2	2.5	EM	G	Tag 154, basal wound occluding, weight biased to north west	None	B
4.18.	Beech	10	580	6.96	6	3.5	5	5	3	2	EM	G	Tag 150, compression fork at 1.5m, union stable, weight biased to north west	None	B
4.19.	Lime	12	370	4.44	2.5	4.5	8	2.5	3	6	M	G	Tag 151, suppressed, weight biased to south east	If permission given remove	C
4.20.	Sycamore	18	610	7.32	4.5	7	7	5	8	3	M	G	Tag 149, weight biased to south, adjacent tree removed, branch removal wound to south occluding, dead branches in canopy	Remove dead branches	B
4.21.	Beech	10	390	4.68	6	6	7.5	3	3	5	EM	G	Tag 148, suppressed	If permission given reduce length of branch to east - remove lowest sub stem 4m along its length, reduce length of remaining to upright 5m along its length	C
4.22.	Beech	20	820	9.84	6	8.5	12	3	5	6	M	G	Tag 147, mechanical damage to base, wound to south west at 1m, occluding, little apparent decay	None	B
4.23.	Oak	9	260	3.12	3.5	5.5	4	4	0	2	EM	G	Tag 146, weight bias to south, redundant tree stake	If permission given remove to enable development	B
4.24.	Cherry	8	220	2.64	3	5	5	4	1	2	EM	G	Tag 145, good form	If permission given remove to enable development	B
4.25.	Sycamore	9	200	2.40	1	3	3	1	6	4	EM	G	Off-site tree, not fully inspected	None	C
4.26.	Sycamore	13	300	3.60	3	6	4	5	3	4	EM	G	Off-site tree, not fully inspected, suppressed	None	C
4.27.	Sycamore	19	450	5.40	5	9	5	8	3	4	EM	G	Off-site tree not fully inspected, canopy weight biased to site	If permission given crown lift site side to south west to enable construction of adjacent dwelling (see photo below)	B
4.28.	Ash	18	450	5.40	7	7	7	7	6	7	M	F	Off-site tree not fully inspected, previously pollarded at 8m, numerous re-growth points with associated decay and hollowing at pollard points	If permission given prune close to the boundary at most suitable pruning point	C

Tree No.	Tree Type	Height (m)	Stem Diam (mm)	RPA (r, m)	North (m)	South (m)	East (m)	West (m)	Low Canopy	First Branch	Age	Health	Comment	Management	BS Category
4.29.	Beech	12	450	5.40	5	8	5	6	3	3	EM	G	Off-site tree, not fully inspected, heavily 'topped' and poorly pruned in the past	If permission given prune close to the boundary at most suitable pruning point	C
4.30.	Beech	12	450	5.40	5	6	5	4.5	3	3	EM	G	Off-site tree, not fully inspected, heavily 'topped' and poorly pruned in the past	If permission given prune close to the boundary at most suitable pruning point	C
4.31.	Cypress Hedge	7	150	1.80	as	plan			0	0	EM	G	Partially maintained boundary hedge	If permission given remove to enable development	C
4.32.	Norway Maple	6	90	1.08	2	2	2	2	1.5	1.5	Y	G	Good form	If permission given remove to enable development	C
4.33.	Norway Maple	6	120	1.44	3	3	3	3	1.5	1.5	Y	G	Good form	If permission given remove to enable development	C
4.34.	Birch	11	333	4.00	3.5	4	4	4	2	0	M	G	Tag 144, multi-stemmed from base	If permission given remove to enable development	C
4.35.	Birch	8	250	3.00	4	5	4.5	2.5	2	0	M	G	Tag 143, multi-stemmed from base	If permission given remove to enable development	C
Area 5 - Trees to north east of site (Trees 5.3 onwards within W1 of TPO No.21 2014)															
5.1.	Rowan	6	220	2.64	3	4	3	3	1	1	M	G	Tag 142, good form	If permission given remove	C
5.2.	Birch	12	300	3.60	4.5	3.5	3	4	0.5	4	M	G	Tag 141, good form	If permission given remove	C
5.3.	Alder	8	367	4.41	4	4	4	4	0	0	EM	G	Tag 140, three stems from base, compression fork, stable	If permission given remove	C
5.4.	Birch	13	330	3.96	4	4	4	3.5	3	6	M	G	Tag 139, good form	None	C
5.5.	Sweet Chestnut	12	510	6.12	5	6.5	5.5	6	0	4	EM	G	Tag 136, weight bias to west	None	B
5.6.	Rowan	6	200	2.40	2.5	2.5	2.5	2.5	1	1	EM	G	Tag 137, good form	None	C
5.7.	Sweet Chestnut	12	390	4.68	7	6	4	5	0	2	EM	G	Tag 136, branch stubs from fence installation, canopy weight bias to west	Remove branch stubs	B
5.8.	Hawthorn	8	327	3.92	2	4	3	4.5	1.5	0	M	G	Tag 135, cavity at base, heavily pruned to north, stable	None	C
5.9.	Elm	16	500	6.00	5	6	8.5	6	3	4	M	G	Tag 134, fence installed to north in lifetime of tree, possible root severance, branches to east growing through phone lines and street light	If permission given prune to clear street light, pole and phone wires by 2m	B
5.10.	Whitebeam	11	300	3.60	3.5	2.5	5	2	1	4	M	G	Tag 133, weight bias to east	None	C
5.11.	Chestnut	10	420	5.04	5	3	6.5	4.5	0	2.5	EM	G	Tag 132, active bleeding canker to north east structural limb, canopy weight biased to north east, canopy recently exposed by removal of adjacent tree	None	C

Tree No.	Tree Type	Height (m)	Stem Diam (mm)	RPA (r, m)	North (m)	South (m)	East (m)	West (m)	Low Canopy	First Branch	Age	Health	Comment	Management	BS Category
5.12.	Lime	19	430	5.16	5	5	6	4.5	12	12	M	G	Tag 130, canopy recently exposed by removal of adjacent tree	If permission given remove to enable development	C
5.13.	Chestnut	16	690	8.28	4.5	7	8.5	1	0	6	M	G	Tag 129, historic bleeding canker wound, occluding, stem and canopy weight biased to east	If permission given remove to enable development	C
5.14.	Sycamore	13	270	3.24	4	3	2.5	5	8	6	M	G	Tag 126, narrow tapered specimen, canopy recently exposed by removal of adjacent tree	If permission given remove to enable development	C
5.15.	Sycamore	13	430	5.16	6	3	2.5	9.5	4	6	M	G	Tag 127, canopy recently exposed by removal of adjacent tree	If permission given remove to enable development	B
5.16.	Hawthorn	7	180	2.16	4	1	1	3.5	0	2	M	G	Tag 128, normal form	If permission given remove to enable development	C
5.17.	Group 3 Hawthorn	9	270	3.24	1	1	1	4.5	0	0	M	G	Tags 123, 124, 125, group of three with one aerodynamic canopy	If permission given remove to enable development	C
5.18.	Chestnut	16	600	7.20	4.5	5	4.5	5.5	1	4	M	G	Tag 122, good form	If permission given remove to enable development	A
5.19.	Chestnut	7.5	190	2.28	3	3	3	3	1	3.5	EM	G	Tag 120, suppressed	None	C
5.20.	Lime	19	550	6.60	4	6	4	7.5	1	5	M	G	Tag 119, good form	If permission given remove to enable development	A
5.21.	Hawthorn	4	120	1.44	1	2.5	0	2	1	2	M	G	Tag 118, loose root plate, stem cavities	If permission given remove	U
5.22.	Sycamore	18	760	9.12	6.5	6.5	8.5	6.5	4	4	M	G	Tag 121, root buttresses buried under composted leaves, apparent good form	None	A
5.23.	Lime	10	210	2.52	2.5	3.5	3	4	0	4	EM	G	Tag 117, suppressed, canopy weight biased to west	None	C
5.24.	Sycamore	6	210	2.52	3.5	3.5	4.5	2.5	0	0	EM	G	Tag 115, suppressed, will not mature to be a structurally sound tree	None	C
5.25.	Sycamore	16	710	8.52	5	5	9.5	5	0	5	EM	G	Tag 114, root buttresses obscured, canopy weight biased to east	None	A
5.26.	Beech	13	360	4.32	6	5	8	4	2	3	EM	G	Tag 113, canopy weight biased to east, suppressed to north	None	C
5.27.	Beech	12	270	3.24	3.5	1	7.5	0	2	2.5	EM	G	Tag 107, canopy weight biased to east, suppressed to west	None	C
5.28.	Sycamore	8	310	3.72	4.5	3	4.5	3	4	4	EM	G	Tag 105, suppressed	None	C
5.29.	Ash	17	610	7.32	5	7	10	8	9	4	M	G	Tag 104, good form	None	B

Tree No.	Tree Type	Height (m)	Stem Diam (mm)	RPA (r, m)	North (m)	South (m)	East (m)	West (m)	Low Canopy	First Branch	Age	Health	Comment	Management	BS Category
5.30.	Sycamore	8	450	5.40	3	4	1	6	5	4	EM	G	Off-site tree not fully inspected, branch removal wound at 1.5m, weight bias to north west	None	C
5.31.	Ash	15	500	6.00	1	6	5	3	6	10	M	G	Off-site tree not fully inspected, previously pollarded at 14m	None	C
5.32.	Group of Ash	10	100	1.20	2.5	2.5	2.5	2.5	1	0	Y	G	Group of self-seeded stems, will not mature to be structurally sound group	None	C
5.33.	Chestnut	14	500	6.00	6	5.5	6	9.5	0.5	3	M	G	Tag 106, large lateral scaffold branch to west	None	B
5.34.	Hawthorn	6.5	200	2.40	1	4.5	1	5	1	0	M	G	Tag 108, three stems, weight biased to west, previously topped at 3m	None	C
5.35.	Beech	15	640	7.68	5	9	5	8	2	6	M	G	Tag 109, storm damaged branch at 10m to north, dead bark on other side of branch failure point, if leader failed likely to land in wood	None	A
5.36.	Sycamore	14	420	5.04	3.5	7	0	9	6	4	M	G	Tag 110, canopy weight biased to west, previously crown lifted	If permission given remove to enable development	B
5.37.	Beech	9	210	2.52	5	3.5	3.5	3.5	2	4	EM	G	Tag 112, stem wound at main fork at 4m	None	C
5.38.	Oak	12	430	5.16	6	5	0	10	3.5	4.5	EM	G	Tag 111, significant weight bias to west, previously crown lifted	If permission given remove to enable development	C
5.39.	Beech	15	330	3.96	6	3.5	2	8.5	2	4	EM	G	No tag, significant weight bias to west	If permission given remove to enable development	B

Yellow lines show approximate recommended pruning locations

Tree 1.26 foreground and Tree 1.20 to rear	Tree 4.4
	
Tree 4.6	Tree 4.7
	

Tree 4.15	Tree 4.27
	

Appendix D: Trees & Planning Process – Extracts from BS 5837: 2012

Trees and the Planning System (Development)

A copy of table B.1 from BS 5837 is found below. Trees whether subject to statutory protection or not are material considerations taken into account when dealing with planning applications. Table B.1 provides some advice to both developers and local planning authorities (LPA) on the appropriate amount of information required during the application process. Minimum detail includes information that is expected, additional information identifies further details that might be reasonable be sought by the LPA.

Table B.1 – Delivery of tree-related information into the planning system

Stage of process	Minimum detail	Additional information
Pre-application	Tree survey	Tree retention/removal plan (draft)
Planning application	Tree survey (in the absence of pre-application discussions) Tree retention/removal plan (finalised) Retained trees and RPA's shown on proposed layout Strategic hard and soft landscape design, including species and location of new planting Arboricultural impact assessment	Existing and proposed finished levels Tree protection plan Arboricultural method statement – heads of terms Details for all special engineering within the RPA and other relevant construction details
Reserved Matters/ Planning conditions	Alignment of utility apparatus (including drainage), where outside the RPA or where installed using a trenchless method. Dimensioned tree protection plan Arboricultural method statement – detailed Schedule of works to retained trees, e.g. access facilitation pruning Detailed hard and soft landscape design	Arboricultural site monitoring schedule Tree and landscape management plan Post-construction remedial works Landscape maintenance schedule

Appendix E: Authors Signature & Declaration

It is trusted that this report provides the necessary information for the client and LPA to make an informed decision regarding tree management on the site, but should any further advice be required please do not hesitate to contact the author.

It is understood that due to the unpredictable and constantly changing nature of trees growing in environments where no two situations are the same, this report is valid for one year after the date of inspection (8 February 2016)

Signed Tuesday, 20 March 2018

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Ross Cannon ND (Urb. For.). Tech. Cert. (Arbor. A.). Tech. Arbor A

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