Arboricultural Impact Assessment

Prepared for:

Alanna Homes and Alcove Ireland Four Ltd

Proposed site:

Barnhill, Hansfield Dublin 15

Prepared by:

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1. Introduction

1.1 Background

Arbor-Care Ltd (Professional Consulting Tree Service) was retained by Alanna Homes and Alcove Ireland Four Ltd to undertake an Arboricultural Impact Assessment, and a Tree Protection Plan identifying the trees, groups of trees that may be impacted on by the proposed development. The surveyed trees contained within this report are located within or adjacent to the proposed development- (Figure 1.0 below). The objective of the impact assessment was to identify the areas that contained trees, groups of trees, and to ensure where possible that these areas would be retained and to identify the trees that are to be removed to facilitate the development.

The below impact assessment report is based on the British standard *BS 5837:2012 Trees in relation to design, demolition and construction recommendations*, this standard gives recommendations and guidance on the principles to be applied to achieve a satisfactory juxtaposition of trees, including shrubs, hedges and hedgerows, with structures. It sets out to assist those concerned with trees in relation to construction to form balanced judgements. This impact assessment report will be accompanied by an inventory of trees and hedgerows on site and a tree protection plan. The Arboricultural Impact Assessment and a tree protection plan was prepared for the site identifying trees that may be impacted on by the proposed development based on the proposed design.

This report includes:

- an assessment of the trees, their quality and value in accordance with BS 5837:2012 - Trees in relation to design, demolition and construction;
- the site context and observations on the trees;
- local planning policies relevant to the consideration of trees on the site;
- the impact of the proposed development upon the tree population in and around the site;
- methods of reducing impacts on trees; and
- measures to be taken to protect trees during the proposed works.

2.0 Methodology

An initial tree survey and visual condition assessment was on the 24th of July 2021. The purpose of this report and in accordance with *BS 5837: 2012 Trees in relation to design, demolition and construction*. *Recommendations* only trees with diameters of 75mm or greater were surveyed. Also in accordance with section 4.4.2.3 of the British standard document where trees formed obvious groups these were assessed and recorded as groups. All trees were individually tagged with a metal disc. This was placed on the northern side of the tree where practical.

> *Section 4.4.2.3 of BS 5837: 2012 states:*
>
> *Trees growing as groups or woodland should be identified and assessed as such where the arboriculturist determines that this is appropriate. However, an assessment of individuals within any group should still be undertaken if there is a need to differentiate between them, e.g. in order to highlight significant variation in attributes (including physiological or structural condition).*
>
> *NOTE: The term "group" is intended to identify trees that form cohesive arboricultural features either aerodynamically (e.g. trees that provide companion shelter), visually (e.g. avenues or screens) or culturally, including for biodiversity (e.g. parkland or wood pasture), in respect of each of the three subcategories.*

The survey concentrated primarily on the significant trees/ groups located within and adjacent to the proposed development area and has been based on the topographical survey plan provided. The objective of this survey was to gather information regarding the trees within or adjacent to the development area and the impact the proposed scheme may have on the trees.

Please refer to Appendix A for the tree inventory.

Significant trees can be equated as those trees whose visual importance to the surrounding area are sufficient to justify special efforts to protect/preserve and whose loss would have an irremediable adverse impact on the local environment. Significance can also be placed depending on the trees age, another variable to imply significance can be the aesthetic merit of the tree based on its unusual size, intrinsic physical features or outstanding appearance or occurring in a unique location or context, and thus provides a special contribution as a landmark or landscape feature.

All above parts of the trees were visually examined. Tree diameters (DBH) were estimated at 1.5 meter

above grade as per standard arboricultural practice. Tree height was measured with the use of a clinometer (Where practical). A generalised system was employed to describe the overall health of the trees. The system uses a three tier rating scale with the following descriptors:

Specimen condition 5-tier rating system

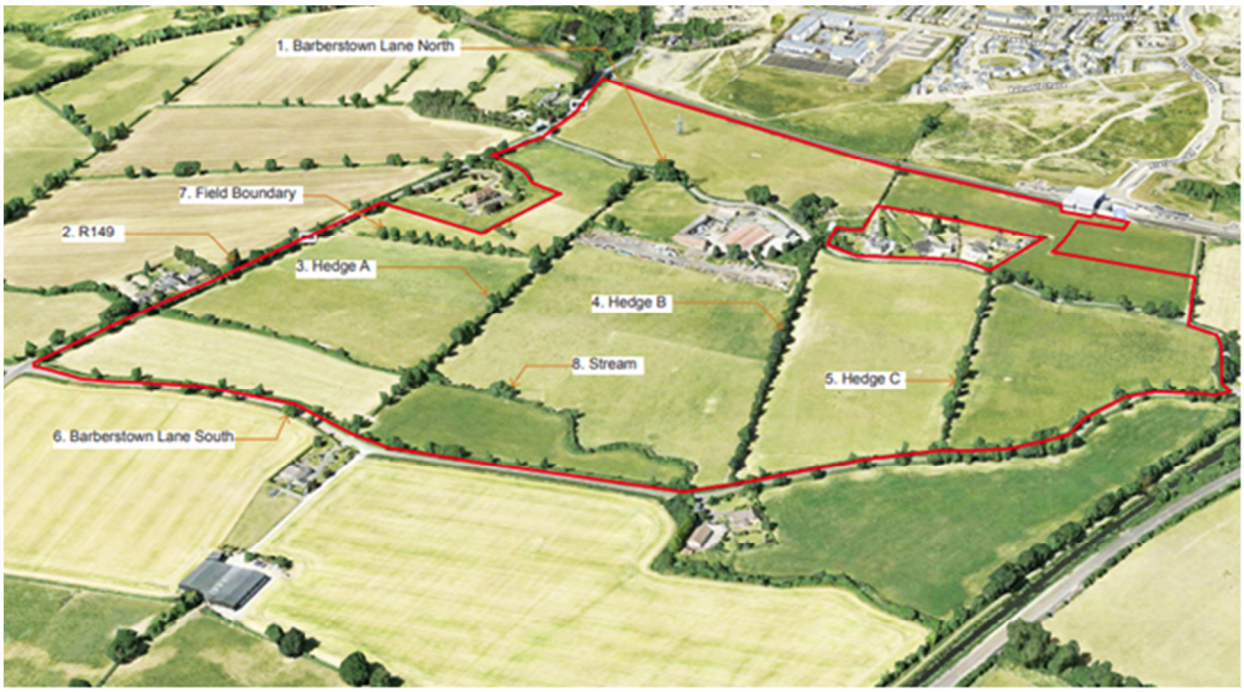
- Poor-1-30%
- Fair- 31-70%
- Good- 71-100%

3.0 Initial Tree Survey Overview

3.1 The Site

The site is a series of large green field that are sub-divided with hedgerows there are few internal trees within the site and all larger trees are located along the roadside and or within the hedgerows.

Figure 1.0 Overall Proposed site.



4.2 The Trees.

A total of 125 trees plus hedgerows were surveyed for the entire site. A breakdown of the Tree Categories for Phase 2 as per BS 5837 2012 is set out in the table below:

Category	Quantity	Category %
A-Tree of high quality	3	2.4%
B-trees of good quality	109	87%
C (Low quality or trees less than 75mm diameter)	12	9.6%
U (remove due to poor condition)	1	1%
Total Trees surveyed	125	100%

5. Statutory and Non-Statutory Designations

The National Planning Framework (NPF) seeks to ensure that new development is sustainable and underlines the importance of Green Infrastructure, of which trees form an integral part. This encompasses recognition of the importance of trees in relation to the management of air, soil and water quality along with other associated ecosystem services and climate change adaption. The NPF also seeks to achieve the protection and enhancement of landscapes and a net gain in biodiversity.

The site is located within the jurisdiction of Fingal Council. The Local Planning Authorities have a statutory duty to consider both the protection and planting of trees when considering planning applications. The potential impact of development on all trees (including those not protected by a Tree Preservation Order or other statutory designation) is therefore a material consideration. I have reviewed *Fingal County Development Plan 2017-2023 Tree Preservation Orders (TPO's)* . There are no TPO's identified within the development site.

6. The Proposed Development (figure 2)

Development Description

A proposed Strategic Housing Development to consist of approximately 1,300 residential units, a creche, village centre (with commercial units), railway plaza providing access to Hansfield railway station, land set aside for a 16-classroom school, a public park of approx. 5.4 ha and a series of pocket parks. The proposed development includes the demolition of existing farmyard / shed complex and the provision of an internal road and cycle / pedestrian access network, incorporating the existing Barberstown Lane North.

Figure 2. The Proposed Development

7.0 Arboricultural Impact Assessment

This impact assessment sets out the likely principal direct and indirect impacts of the proposed development on the trees within the site and suitable mitigation measures to allow for the successful retention of significant trees or to compensate for trees to be removed, where appropriate. The impact of the development is moderate. The design has been cognisant of the trees and hedgerows on the site and as a result it has allowed for the retention of the majority of the trees and hedgerows.

A brief summary of trees to be removed, related to the proposed development are detailed within the table below.

Table 1: Schedule of trees and hedgerows to be removed to accommodate the design (To be read in conjunction with Appendix 1 and the Tree Protection Plan

Tree number	Species	Age Class	Tree category
3401	Sycamore	Mature	B2
3402-3403	Ash x 5	Mature	B2
3404-3405	Ash	Mature	B2
3406-07	3 x sycamore	Mature	B2
3408	2 x ash	Mature	B2
3409-10	6 x ash	Mature	B2
3421	Sycamore	Mature	B2
3422	Ash	Mature	C2
3426-27	Norway maple x 5	Early- mature	C2
3429	Ash	Mature	U
3432	Ash	Mature	B2
3433	Ash	Mature	B2
3434	Ash	Early-mature	C2
3436-3437 x 3	Ash x 3	Early mature	C2
3439	Elm	Early Mature	c2
Hedgerow 1	Hawthorn-partial removal	Mature	B2
Hedgerow 2	Hawthorn-partial removal	Mature	B2
Hedgerow 4	Hawthorn-partial removal	Mature	B2

Total tree loss= 33 individual trees and small sections of 3 hedgerows. To compensate for this 1,500 trees are to be planted within the site and the fragmented sections of the Baberstown lane north will be enhanced to improve their aesthetic and biodiversity rating

Arboricultural Impacts

7.1 Loss of trees – Please review table 1and the tree protection plan

7.2 **Arboricultural works** – No pruning works have been recommended at this stage

7.3 Following the completion of the development, a tree condition assessment should be carried out on all retained trees for health and safety purposes.

7.4 Tree protection measures - All retained trees and hedgerows can be successfully protected during the proposed development by using robust fencing which complies with the recommendations outlined within BS5837:2012. There may be minor ingress to the root protection areas of certain trees but no more that 20% all works within these areas are to be supervised by the project arborist

7.5 No materials or equipment other than those required to install tree protection will be delivered to the site until all fencing is in place.

7.6 For details of the tree protection measures required during construction, please refer to the Tree Protection Plan.

7.7 Compound area – The proposed site compound area has not yet been designed; however, there is sufficient space available throughout the site to avoid any unnecessary impacts to retained trees, provided the tree protection measures as detailed within this report are carried out.

7.8 Site access – The site is easily accessible through existing internal roads

7.9 Daylight and sunlight levels - Shading by trees has been assessed and is not considered a significant issue in relation to this proposal.

7.10 Drainage and services – All new service runs should be located outside the RPAs of retained trees to avoid impacting their condition. If it is found necessary to locate services within tree RPAs, it is recommended that these works are carried out under arboricultural supervision. Methods of work should follow the recommendations in the NJUG guidance. BS5837 (2012) recommends the NJUG guidance as a normative reference to be used in these circumstances.

7.11 Boundary treatments – Please review landscape plan for further information.

7.12 Any working operation within the RPAs of retained trees must be carried out manually

using hand tools only. Fencing posts must be positioned at least 50 cm from the outer stems of each retained tree in order to allow for future incremental stem growth and to avoid structural roots during excavation works. The excavation for pits to install posts will be carried out using hand tools only. All roots above 25mm in diameter will be retained within the pits or alternative locations which do not contain roots above 25mm will be found. All fence post pits will be lined with 1000-gauge polythene to prevent phytotoxic effects of cement products impacting trees. The final location of the fence should be agreed by the arboricultural consultant prior to works commencing.

7.13 Landscape operations - Landscaping operations will typically take place at the end of the construction period. These works will normally require the removal of protective fencing to facilitate access for works. There is a risk that plant and machinery may damage soil structure where tree roots are growing. These risks can be managed by maintaining good professional standards of work and working to a method statement. The principle of avoiding soil disturbance or changes in levels within the RPAs of retained trees should be followed unless arboricultural advice has been sought.

Arboricultural mitigation

7.14 A comprehensive landscape plan will form part of the proposed scheme and has been designed as part of the proposal and will include 1,500 of new high-quality trees. The proposed planting will mitigate the loss of trees and hedgerows on site (if so determined) and will have a positive impact on local tree population. The number trees proposed to be planted will ensure that local canopy cover will gradually increase over the years and surpass the existing canopy cover within this area. A greater diversity of tree species has also been selected and will ensure that the tree population is less vulnerable to the risks posed by climate change and pests and diseases in the future. Please refer to the landscape plan and report for further information

Discussion & Conclusion

General Change

8.1 My assessment is that there will be a low number of trees loss and therefore the impact on the character and appearance of the immediate surrounding landscape will be minimal. The proposal provides a good opportunity to carry out new high quality tree planting that will significantly enhance the tree population and have a positive impact on the visual appearance of the site and the local area in the future.

Proposal in relation to local planning policy

8.2 The proposed development complies with local planning policy as it relates to trees. A tree survey has been carried out in accordance with best practice and where possible trees have been retained and can be successfully protected during construction.

8.3 A landscape plan which includes new high quality tree planting will form part of the proposal. New planting will mitigate the loss of trees and enhance the visual appearance of the site in the future. Please review the landscape plan for further information

Conclusion

8.4 The proposal has been assessed in accordance with BS5837:2012 and special working methods have been recommended to minimise tree impacts.

8.5 Retained trees have been assessed and can be successfully protected during development by following the information provided within this report and adhering to industry best practice.

8.6 Provided the recommendations and methods of work, as outlined within this report, are adhered to, the proposed development can be successfully carried out without having a negative impact on the character or appearance of the surrounding landscape.

Recommendations

9.1 The proposal should be carried out in accordance with the recommendations outlined within this report.

9.2 The positioning of tree protective barriers should be installed as detailed within the Tree Protection Plan.

9.3 Site supervision should be carried out by an arboricultural consultant at key stages of the project to ensure that retained trees are successfully protected during the development. Details of supervision are included within the Arboricultural Method Statement at Section 2 of this report

Appendix A: Key to Abbreviations Used in the Survey

Ref No	Specific identification number given to each tree or group. T=Tree/H=Hedge/G=Group/W=Woodland/S=Shrub.	
Tag No.	Tree marked with individual tree tag of this reference number on site.	
Species	Common name followed by botanical name shown in *italics*	
RPA	Root Protection Area (As defined by BS5837)	
Stem diameter	Diameter of main stem, measured in millimetres at 1.5 m above ground level. (MS = Multi-stem tree measured in accordance with BS5837 Annexe C)	Av / Average: indicates an average representative measured dimension for the group or feature
Spread	The width and breadth of the crown. Estimated on the four compass points in metres.	
Crown clearance	The estimated height (in metres) above ground level of the lowest significant branch attachments.	
#	Estimated dimensions	
*	Indicates estimated position of tree (not indicated on topographical survey).	
P	Privately owned tree (e.g. tree not located in the public highway or adjacent public land).	
Category	Categorisation of the quality and benefits of trees on Site as per Table 1 and 2 of BS5837:2012. 1=Arboricultural quality/value 2=Landscape quality/value 3=Cultural quality/value (including conservation)	
	A=High quality/value 40yrs+ (light green). B=Moderate quality/value 20yrs+ (mid blue) C=Low quality/value min 10yrs/stem diameter less than 150mm (grey). U=Unsuitable for retention (dark red).	
Life stage	**Young (Y):** Newly planted tree 0-10 years. **Semi-Mature (SM):** Tree in the first third of its normal life expectancy for the species (significant potential for future growth in size). **Early Mature (EM):** Tree in the second third of its normal life expectancy for the species (some potential for future growth in size) **Mature (M):** Tree in the final third of its normal life expectancy for the species (having typically reached its approximate ultimate size). **Over Mature (OM):** Tree beyond the normal life expectancy for the species. **Veteran (V):** Tree which is of interest biologically, aesthetically or culturally because of its condition, size or age.	
Structural condition	**Good:** No significant structural defects **Fair:** Structural defects which can be resolved via remedial works. **Poor:** Structural defects which cannot be resolved via remedial works. **Dead:** Dead.	
Physiological condition	**Good:** Normal vitality including leaf size, bud growth, density of crown and wound wood development. **Fair:** Lower than normal vitality, reduced bud development, reduced crown density, reduced response to wounds. **Poor:** Low vitality, low development and distribution of buds, discoloured leaves, low crown density, little extension growth for the species. **Dead:** Dead **Fair/Good** = Indicates an intermediate condition **Fair – Good** = Indicates a range of conditions (e.g. within a group)	
Preliminary management recommendations	Works identified during the tree survey as part of sound arboricultural management, based on the current context of the Site (where relevant reference has been made to tree management based on the potential future context of the site).	
Works to facilitate the development	Tree works identified as necessary to facilitate the Proposed Development following a desk top analysis of the proposals in relation to tree constraints.	

Appendix A: Tree Survey Schedule Barnhill

Tree	Species Botanical Name	Age class	Size (mm)	Height (M)	Crown Sp. (M)	Crown Cl.(M)	Condition	Structural/Physiological Observations	Category	R.P.A. Meters Radius	Impact of the development
3401	*Acer pseudoplatanus* Sycamore	M	900	18	N=4 S=4 E=4 W=4	2	Good	A large mature sycamore contained within the farm yard	B2	11m	Remove to facilitate the development
3402-3403	*Fraxinus excelsior* (Ash) *Quercus robur* (Oak) Sycamore	M	400	16	N=4 S=4 E=4 W=4	1	Good	A row of 8 mature deciduous trees contained within a hedgerow, with an understorey of hawthorn.	B2	5m	5 to be removed
3404-3405	Hedgerow 1 5 x Ash	M	400	16	N=3 S=3 E=3 W=3	1	Good	A row of 5 mature ash contained within Hedgerow 1 with an understorey of Hawthorn	B2	5m	1 ash tree to be removed
3406-3407	*Hedgerow 1* Sycamore x 6	M	380	12	N=3 S=3 E=3 W=3	4	Good	A row of 6 mature sycamores contained within hedgerow 1 displaying a good overall condition	B2	5m	3 sycamore to be removed
3408	Ash x 2	M	500	16	N=3 S=3 E=3 W=3	3	Good	Two mature roadside ash trees displaying good overall condition	B2	6m	Remove to facilitate the development

Tree	Species Botanical Name	Age class	Size (mm)	Height (M)	Crown Sp. (M)	Crown Cl.(M)	Condition	Structural/Physiological Observations	Category	R.P.A. Meters Radius	Impact of the development
3409-3410	Hedgerow 2 Ash Sycamore	M	350	14	N=3 S=3 E=3 W=3	2	Good	Hedgerow 2 consists of 20 mature trees consisting of ash and sycamore with an understorey of hawthorn. Displaying a good overall condition	B2	4.5m	6 ash trees to be removed and a portion of the hedge to be removed
3411	Ash	M	450	12	N=4 S=4 E=4 W=4	1	Good	A mature ash displaying a good overall condition	B2	5.5m	No impact
3412-3413	12 x Ash	M	380	12	N=3 S=3 E=3 W=3	1	Good	A row of 12 mature ash contained within Hedgerow 1 with an understorey of Hawthorn	B2	5m	No impact
3419	Common oak	M	600	16	N=5 S=5 E=5 W=5	3	Good	A large mature oak tree contained within hedgerow 4 due to its roadside location it will have a high amenity value	A2	7m	Retain
Hedgerow 4	Ash hawthorn	M	300	12	N=3 S=3 E=3 W=3	2	Good	A hedgerow consisting of individual ash trees with an understorey of branble	B2	4n	Two small sections to be removed

Tree	Species Botanical Name	Age class	Size (mm)	Height (M)	Crown Sp. (M)	Crown Cl.(M)	Condition	Structural/Physiological Observations	Category	R.P.A. Meters Radius	Impact of the development
3420	Ash	OM	1000	22	N=6 S=6 E=6 W=6	2	Good	A large over-mature ash tree displaying a good overall condition	B2	11m	No impact
3421	Sycamore	M	700	16	N=6 S=6 E=4 W=4	2	Good	A large mature sycamore displaying a good overall condition	B2	8m	Remove to facilitate the development
3422	Ash	M	550	20	N=3 S=3 E=3 W=3	1	Fair	A large mature ash displaying a fair overall condition. It is in decline in the upper canopy	C2	7m	Remove to facilitate the development
3423	*Aesculus hippocastanum* Horse chestnut	M	1000	20	N=8 S=8 E=8 W=8	3	Good	A large mature roadside chestnut displaying a good overall condition	A2	11m	No impact
3424	Sycamore	M	800	20	N=8 S=8 E=6 W=6	3	Good	A large mature roadside sycamore displaying a good overall condition	A2	9m	No impact

Tree	Species Botanical Name	Age class	Size (mm)	Height (M)	Crown Sp. (M)	Crown Cl.(M)	Condition	Structural/Physiological Observations	Category	R.P.A. Meters Radius	Impact of the development
3425	Sycamore cluster	M	300	14	N=3 S=3 E=3 W=3	2	Good	A cluster of 4 mature sycamores displaying a good overall condition	C2	4m	No impact
3426-3427	*Acer platanoides 'Crimson King'* Norway maple 'Crimson King'	EM	300	10	N=2 S=2 E=2 W=2	2	Good	A row of early mature Norway maple located along the avenue to the farm yard	C2	4m	Remove to facilitate the development
3428	Hedgerow 3 Ash x 10	M	500	16	N=4 S=4 E=4 W=4	1	Good	Hedgerow 3 represents a row of 10 mature ash displaying a Good overall condition with an understorey of hawthorn	B2	6m	No impact
3429	Ash	M	1000	16	N=3 S=3 E=3 W=3	3	Good	A large mature ash displaying fair overall condition it is in decline in the upper canopy and has suffered livestock damage to its basal area	U		Remove to facilitate the development
3430-3431	Ash x 11	M	400	16	N=3 S=3 E=3 W=3	3	Good	A row of 11 roadside ash trees displaying a good overall condition	B2	5m	3 to be Remove to facilitate the development

Tree	Species Botanical Name	Age class	Size (mm)	Height (M)	Crown Sp. (M)	Crown Cl.(M)	Condition	Structural/Physiological Observations	Category	R.P.A. Meters Radius	Impact of the development
3432	Ash	M	400	18	N=3 S=3 E=3 W=3	3	Good	A mature ash displaying a good overall condition	B2	5m	Remove to facilitate the development
3433	Ash	M	400	18	N=3 S=3 E=3 W=3	3	Good	A mature ash displaying a good overall condition	B2	5m	Remove to facilitate the development
3434	Ash	EM	220	6	N=3 S=3 E=3 W=3	2	Fair	An early mature ash displaying the early onset of decline	C2	3.2m	Remove to facilitate the development
3435 x 2	*Acer pseduoplatanus* Sycamore	EM	240	10	N=2 S=2 E=2 W=2	1.5	Good	Displays two early mature multi-stemmed sycamore	C2	3.4m	No impact
3436-3537 x 5	Ash	EM	240	10	N=3 S=3 E=2 W=2	1	Fair	A group of 5 early mature ash trees that have been severely pruned to accommodate an overhead power line	C2	3.4m	Remove 3 to facilitate the development
3438	*Ulmus procera* Elm	M	350	14	N=4 S=4 E=4 W=4	1	Good	A mature Elm displaying a good overall condition	B2	4.5m	No impact
3439	Elm	EM	220	8	N=2 S=2 E=2 W=2	3	Fair	A mature Elm displaying a good overall condition engulfed with ivy	C2	3.2m	Remove to facilitate the development

Section 2: Arboricultural Method Statement

Introduction

This report has been prepared in accordance with British Standard 5837: Trees in relation to design,demolition and construction – Recommendations (2012) which provides a methodology for the assessment and protection of trees and other significant vegetation on development sites.

Sequence of Operations

- Carry out the proposed tree works.
- Installation of tree protection measures.
- Enabling works.
- Construction of proposal and the installation of drainage and services.
- Landscaping.

Alternative sequences can be discussed and agreed with the local authority and project manager if required.

Supervision

All key / critical activities that will affect trees during construction will be inspected and monitored bythe approved arboricultural consultant *if so requested by the local authority.*

- Pre-commencement meeting with site manager and local authority to confirm location of treeprotection measures.
- Inspection of all tree works and tree protection measures prior to the commencement ofworks.
- Supervision during the excavation works within the RPAs of retained trees.
- Supervision during the installation of all services within tree RPAs.
- Supervision during any other works that may affect retained trees.
- Inspection upon completion.

Arboricultural Method Statement	
Scope	**Methodology**
Pre-commencement meeting	Prior to the commencement of works, a meeting between the arboricultural consultant, local authority and the site manager will be held in order to discuss the tree protection measures and proposed works required in closeproximity to trees. (if requested) Contact details of all parties will be circulated to ensure all team membersare able to communicate correctly. The site manager will be responsible for the protection of all retained trees for the duration of the project. Whenever necessary, the site manager will engage the arboricultural consultant to ensure trees are adequately protected. The appointed arboricultural consultant will be available for verbal advice throughout site works.
Tree Works	Please refer to the Tree Work Schedule at Appendix A for a list of all proposed tree works. The location of trees to be removed are highlighted on the Tree Protection Plan at Appendix B. It is the responsibility of the Site Manager to ensure all tree works have been approved by the local planning authority. All tree works will be carried out by a reputable arboricultural contractor inaccordance with the recommendations given in BS 3998:2010 – Tree Work Recommendations. All tree works should be carried out in accordance with Section 40 of the Wildlife Act 1976 and Section 46 of the Wildlife (Amendment) Act 2000. It is the responsibility of the arboricultural contractor to ensure that no protected species are harmed whilst carrying out site clearance or tree surgery works.

Tree Protection	The position of protective fencing for construction is shown on the Tree Protection Plan. Protective fencing will be constructed and installed using fencing in accordance with BS5837:2012, please refer to the attached Tree Protection Plan for the specification. Alternatives to those shown must be agreed in advance by the client approved, arboricultural consultant.

	Any machinery / site operative within tree RPAs must operate on the appropriate ground protection at all times, this will include the installation and removal of ground protection. Ground protection measures must be installed in accordance with industry best practice guidance as stated within Section 6.2.3.3 of BS 5837:2012. They must be fit for purpose and capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil. No materials or equipment other than those required to erect protective fencing will be delivered to the site before the fencing is installed. Signs will be fixed to every third panel stating, *'Tree Protection Area Keep Out – Any incursion into the protected area must be with the agreement ofthe local authority or arboricultural consultant'*. The main contractor will inform the local authority and the arboricultural consultant that tree protection is in place before site clearance works commence. No alteration, removal or repositioning of the tree protection will take placeduring construction without the prior consent of the arboricultural consultant.
Compound Area	The proposed site compound area has not yet been designed; however, the considerations below must be followed: The site compound must be located outside the designated TPZs as highlighted on the Tree Protection Plan at Appendix B. No excavation works within tree RPAs are permitted to install temporary services for site cabins and facilities. Any temporary services within tree RPAs must be above ground and protected accordingly. No operating generators or toxic liquids will be stored within the RPAs of retained trees during construction. Overhanging tree canopies must be taken into consideration when transporting, installing and removing site cabins near tree crowns. A banksman will be present during this process to ensure that all operations are carried out in a controlled manner and no part of the

	cabin meets overhanging tree crowns.

Installation of fencing within RPAs	The installation of fencing within the RPAs of retained trees will be carriedout using the following methodology: Post holes will be carefully positioned as far away from the stem of trees as possible (minimum 50 cm) to minimise contact with tree stems and significant tree roots. Holes will be manually excavated with the use of hand tools only and where roots greater than 25mm in diameter or large fibrous roots are present, theposition of the hole will be slightly altered to avoid potential root damage. If the position of the hole cannot be altered, roots greater than 25mm in diameter or large fibrous roots will be protected with flexible plastic pipes and retained within the pit. In some cases, individual roots less than 25mm in diameter may be pruned, making a clean cut with a suitable sharp sterile tool (e.g. secateurs or handsaw). Once the required depth has been excavated, the hole will be lined using 1000-gauge polythene and filled with the appropriate concrete mix.
Landscape Operations	All landscape operations within the protected area will be carried out by hand, using hand tools only, unless otherwise agreed with by the arboricultural consultant.

	No dumping of spoil or rubbish, parking of vehicles or plant, storage ofmaterials or temporary accommodation will be undertaken within the TPZs. All tree roots within the RPAs greater than 25mm diameter will be retainedand worked around. Soil levels will not be increased or reduced within the RPAs of trees without prior agreement from the arboricultural consultant.
General Principals to Avoid Damage to Trees	All tree works will be carried out in accordance with the recommendationsgiven in BS 3998 (2010). No fires will be permitted within 20m of the crown of any tree. No materials, vehicles, plant or personnel will be permitted into the tree protection zones at any time without the prior consent of the arboriculturalconsultant. Any liquid materials spilled on site will be immediately cleared up and removed from the site. If liquid fuel or cement products are spilled within 2m of the tree protection zone, the contractor will report the incident to thearboricultural consultant immediately. The contractor will report any damage to trees or shrubs, whether caused by construction activities or from any other cause, to the arboricultural consultant immediately.

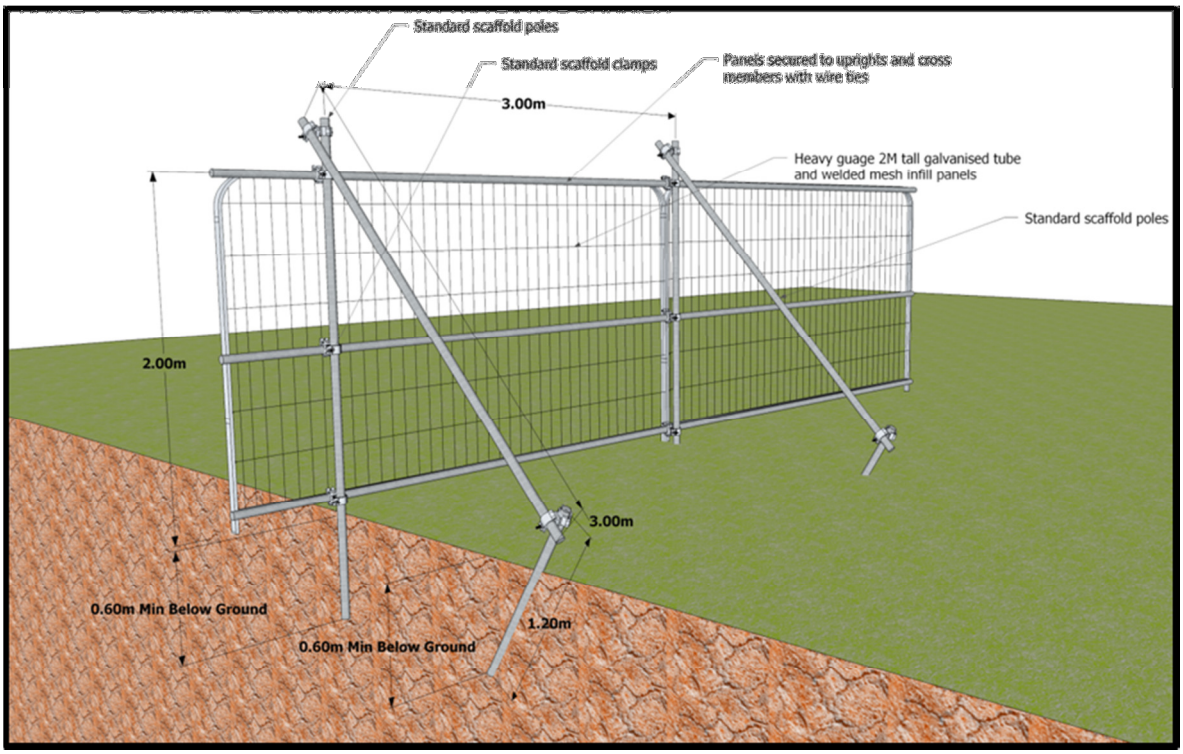
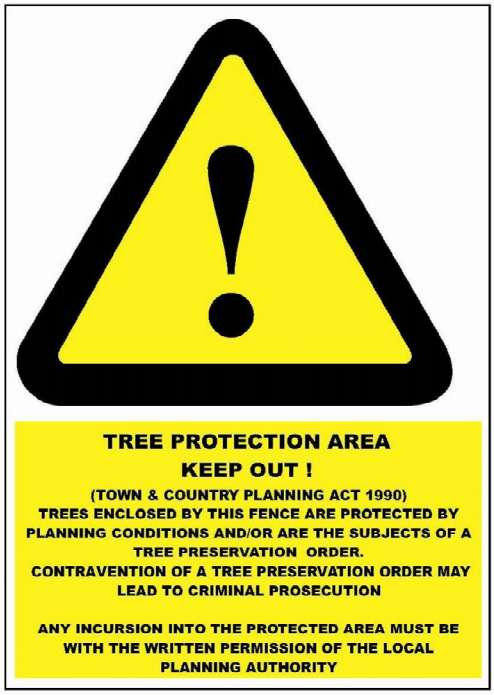


Figure 3 Default specification for tree protection barrier in accordance with BS5837:2012



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Yours in Conservation,
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