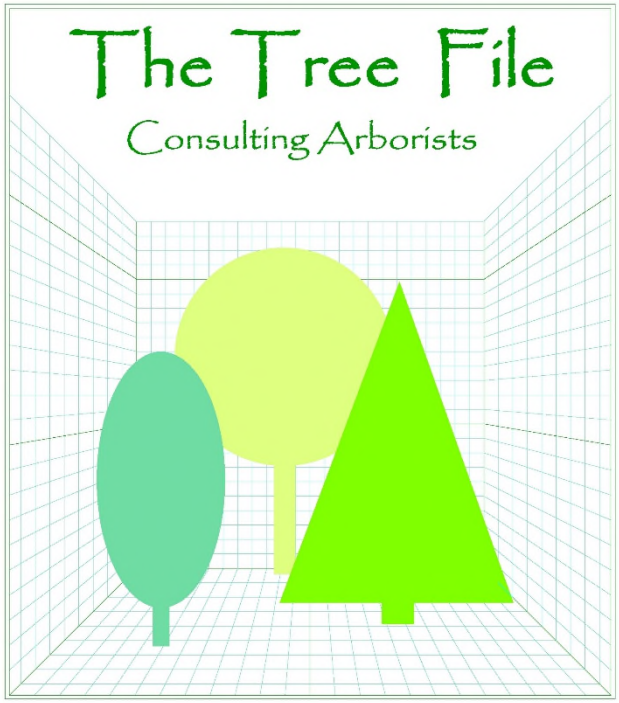

Arboricultural Report

Trees at Proposed Site at
Capdoo & Abbeylands
Clane
Co Kildare

December 2020

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Contents

Associated Drawings

This report should be read with the drawings noted below

	Drawing Title	Drawing Subject
1)	Capdoo Tree Constraints Plan	Tree Constraints Plan A plan depicting the predevelopment location, size, calculated constraints and simplified tree quality category system
2)	Capdoo Tree Impacts Plan	Tree Impacts Plan This plan represents the effects of the proposed development works on the above tree population and depicts trees to be retained and removed.
3)	Capdoo Tree Protection Plan	Tree Protection Plan This plan depicts the nature, location and extent of tree protection measures required to provide for sustainable tree retention.

Introduction

This report was commissioned by-
Westar Group

The survey has been prepared by-
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Report Brief and Context

This report was requested by "Landmark Designs" and comprises an Arboricultural review of the proposed development project. The various elements of this report provide an assessment of the sites existing trees in respect of suitability for retention and their sustainability in their current scenario, as well as an assessment of their potential for sustainable retention in the post development scenario. It also provides information in respect of necessary tree protection and the avoidance of damage to trees during the construction process, required to achieve sustainable tree retention.

This report is not a critique of the proposed development, only an impartial assessment of the development implications on the sustainable retention of trees currently on the site.

This assessment summarises the Arborists findings, results, and recommendations, arrived at after a review of the development details and considering the tree review as defined and described in the tree survey at "Appendix 2".

A Method Statement has been provided to indicate the requisite conservation and protection methodologies necessary to maintain tree sustainability during construction. If the development is permitted (amended or otherwise), it will be necessary to develop a "tree protection plan", applying the criteria set out in the method statement to generate an "on site" tree protection strategy that is envisaged to involve the substantive fencing-off during construction, of trees/hedges intended for retention.

This report should be read in conjunction with the three tree related drawings.

a) The "Tree Constraints Plan" drawing "Capdoo Tree Constraints Plan" that provides a graphic representation of tree survey data, depicting the constraints asserted by the site trees, as well as a categorisation of their condition and potential value.

b) The drawing "Arboricultural Impacts" drawing, "Capdoo Tree Impacts Plan" depicts the expected impacts by overlaying the tree information as depicted in drawing "Capdoo Tree Constraints Plan", with the architectural and engineering information.

c) The drawing "Tree Protection" drawing, "Capdoo Tree Protection Plan" depicts the location and extent of tree protection required during the construction period.

Report Limitations

This report is based on the Arborists interpretation of information provided to him prior to report compilation and gained from the site during the undertaking of the site review and tree survey. The site review data is subject to the limitations as set out under “Inspection and Evaluation Limitations and Disclaimers” in “Appendix 1” to the original tree report. The findings and recommendations made within this report are based upon the knowledge and expertise of the inspecting Arborist.

Regarding the Implication Assessment element of the report, the report necessarily comprises assumptions and estimates, particularly in respect to how the project might proceed on a day to day basis and considering the “design” stage of the project, as opposed to “detail design” or “construction” detail. In this respect, many elements of the “Method Statement” are deliberately broad and generic and will require review, amendment and consolidation at the construction stage, for example in respect of the size and nature of the equipment or plant that might be utilised by any potential building contractor and any details as may change at “detail design” or “construction detail” stages.

Accordingly, the accuracy of this assessment is based on all its elements and the omission or alteration of any part can radically alter outcomes in respect of tree sustainability.

Report Summary

This report provides an updated assessment of Arboricultural implications relating to a revised development proposal and after the preliminary 2020 application.

Development related Arboricultural impacts are small, with only 4no. category "C" and 4 category "U" trees being lost, and all hedges being retained at least in part, notwithstanding the shortening of some and the punctuation of others to facilitate works.

The overall review notes a broadly lapsed agricultural context with few tree or shrub specimens of note in respect of rarity or quality.

Whilst a small proportion of the material encountered may offer some potential to be retained, it's typically poor quality and its relationship to a prior landscape use may raise issues of contextual incompatibility. Such incompatibility is likely to relate particularly to issues surrounding retention and management over time and, for example, in respect of the potential size of trees such as Ash, the contextual compatibility, potential for growth and suitability for retention within the context of a close-knit development.

In respect of the above, much of the noted material may not be suitable for retention or sustainable within the proposed context.

This issue will include changes of context, occupation and use, growth and maintenance. Some hedge/tree lines may become inaccessible but may encroach upon residential properties. Similar issues may arise where potentially large growing species, Ash for example are retained close to homes or gardens.

Additionally, it must be noted that many trees are of particularly poor quality and are not suitable for retention. This issue would apply to the numerous emergent Elm noted about the site that are dying because of Dutch Elm disease. Many such trees are relatively small, though their composite numbers make them sometimes significant, for example in respect of the number of dead trees within Hedge 5, where the removal of dead and diseased Elms will result in a notable diminution of cover and continuity.

Additionally, some concern attached to the number of Ash about the site. These numbers include individually numbered trees as well as the large number of young trees arising from within prior hedge alignments. All these trees are at risk of contracting Chalara Canker, a pathological issue becoming more widespread across Ireland, and one that has the potential to see the loss of all Ash on the site. As symptoms including vigour loss and dieback have been noted on the within the site's Ash population, it is advised that sustainability will be subject to this disease and that all Ash should be monitored on a regular basis for this reason.

Note is also made that much of the development will result in amendments to ground levels or conditions, a factor that can readily undermine tree health. Accordingly, sustainable tree retention may be reliant on the ability to return ground levels to their original and native levels at distances that will not encroach upon root protection zones. It appears likely that this issue will relate equally to the granted nursing home facility to the east of the subject site, where buildings are proposed at even closer ranges to trees than on the subject site.

It is noted that many of the sites hedge lines are vastly overgrown and extended by adjoining

thicket growth that will require substantial cutting back if retention is intended and particularly where elements of the proposed development are intended at positions of close proximity to the hedge.

Site Description

The subject site consists of a large irregularly-shaped parcel of land, comprised of several undeveloped agricultural fields situated on the eastern side of Regional Road R403 in the eastern environs of Clane Town, c. 650m from the Town Centre. Vehicular access is provided to the site via the Brooklands Housing Estate and the existing Alexandra Walk/The Avenue roundabout.

The site abuts agricultural landholdings on its northern, eastern (partially) and western (partially) site boundaries, whilst existing residential developments, in the form of The Brooklands, Abbey Park and Alexander Walk Housing Estates, are located to the immediate south and partially abuts the subject sites eastern and western boundaries. The site has a significant frontage, extending to c. 225 metre, to the River Liffey on its eastern boundary.

The site appears to be broadly level and flat however topographical features are noted, particularly at some boundaries and comprising substantial ditch and embankment features.

For the most part, the site is devoid of vegetation of Arboricultural interest. Nonetheless, note is made of substantial field demarcation hedges and alignments that supports much larger vegetation and areas of natural regeneration that tends to be the basis for this report.

Note is made that substantial areas of the site and particularly the south-eastern area exhibits evidence of prior works and construction related activity and thus comprises a substantially more disturbed aspect than do the two fields to the north.

Pre-Development Tree Population

Because of its agricultural history, this report concentrates on what are in effect field boundaries. In this respect, the findings would suggest that all boundaries are likely to have been defined by Hawthorn-based, stock-proof Thorn hedges at history however, many of these have now been either disturbed, lost or overwhelmed by ongoing growth.

To the north of the site, “Hedge 1” exhibits the best evidence of continuous hedge management and to date, still comprises a broadly continuous and managed alignment. Elsewhere across the site, a similar scenario may pertain to hedge to but, across the rest of the site, there is little or no evidence to suggest any management input over time. And accordingly, all other hedgerows tend to be at differing stages of dereliction.

Some hedges, such as Nos 4, 5, 6, 10 and 16 still exhibit elements of the original Thorn bases however, most have become wholly dominated by Ash, or in some instances Wych Elm populations that through greater size and eventual overshadowing have served to suppress the Hawthorn. Additionally, and through the associated fields going out of use, note is made that in many instances, massive thicket development has occurred adjoining the hedges, typically dominated by Bramble and Blackthorn thus creating a far broader thicket context then relates to the original Thorn.

Whilst the survey has noted numerous specimens (individual trees and groups that might prove suitable for retention, it will be necessary to review the retention context in respect of sustainability and management. Whilst truly Thorn based hedges might be regarded as being relatively small and unlikely to outgrow a given scenario or encroach upon adjoining structures, associated thicket development and slow ongoing growth will nonetheless require periodic management over time and accordingly this must be considered in respect of access. Such hedges cannot readily be regarded as suitable for retention in what will become “no man's land” or isolated in narrow strips for example to the rear of houses as they would typically be inaccessible for management. Considering this and appreciating that typical hedge type management must be mechanised, typically in bolding tractor mounted flails then such material may best prove suitable for retention in broader and more extensive open spaces.

The tree survey has noted that many trees are of particularly poor quality and are not suitable for retention. This issue applies to many of the emergent Elm noted about the site Many are dead or dying because of Dutch Elm disease. Many such trees are relatively small, though their cumulative numbers make them sometimes significant, for example in respect of the number of dead trees within Hedge 5, where the removal of dead and diseased Elms will result in a notable diminution of cover and continuity.

Equally, note should be made of the numbers of typically young Ash on the site. This raises particular concern regarding the rapid spread of Chalara canker, an issue that could readily affect and destroy the sites Ash population. Already, unhealthy specimens are noted, particularly in hedges 5 and 6.

The cumulative affect of the above is that Hedge 5 is in particularly poor condition, with only a vestigial hedge remnant beneath a dead population of Elm and sickly Ash.

It is noted that many of the sites hedge are vastly overgrown and extended by adjoining thicket growth. Such spurious thicket will require substantial cutting back to create manageable hedge profiles. Additionally, many hedge sections are affected by suppression, either by the above thicket, or by the emergent tree population. Therefore, many of the hedges offer highly variable cover and continuity, and are at many localities, effectively defunct.

Where is might survive, Ash becomes a particularly large tree with time and therefore and within the context of a landscape scheme, would not normally be considered for use in anything other than the largest of open spaces and accordingly does not suit retention in enclosed or confined spaces. This issue is further compromised in that few if any of the ash specimens encountered on site were open to full review during the inspection, with most being wholly enveloped by dense Ivy cover that can readily obscure what might otherwise be obvious mechanical issues. Accordingly, and prior to any decision being made in respect of suitability for retention, I would advise that both the potential retention context be reviewed as well as any individual tree's suitability for retention, this being best gauged after the management and eventual shedding of the Ivy from the affected plants thereby allowing for further review.

To the east of the site and adjoining the River Liffey boundary, note is made of substantial areas of what appears to be natural regeneration, dominated by Common Alder and Goat Willow. The area shown no evidence of management and the population is overly dense, requiring population thinning if it is to be retained.

Nature of Proposed Works and Likely Impacts

The proposed development comprises-

An application for a Strategic Housing Development by Westar Investments Limited (the applicant) for a new residential development on lands measuring approximately 10.36 hectares at Capdoo & Abbeylands, Celbridge Road, Clane, Co. Kildare. The application is for a development that includes 333 dwellings consisting of: 121 no. 2, 3 & 4 bedroom housing units, 144 no. 1, 2 & 3 bedroom apartments, 68 no. 1, 2 & 3 bedroom duplex & maisonette type units, a crèche and a public park adjacent to the River Liffey with 3 no. vehicular/pedestrian accesses and site, landscaping and associated infrastructural works.

Whilst the footprint of the proposed structures and buildings, access roads, parking area and paths are readily understandable regarding the spatial requirements, additional and ancillary space is commonly required for construction works and associated activities. Additionally, note is made that the proposed development will require substantial amendments to current ground levels across notable areas of the site.

Considering the scope and scale of the propsed development, it is considered likely that mosofthe issues dealt with at "Construction Works and Trees" above, will apply at various points and particularly regarding-

a) Direct conflict with proposed structures, thus requiring tree removal.
b) A partial conflict where the "Root Protection Area" is encroached upon by works or ground amendments and cannot be preserved/protected in full.
c) Environmental damage e.g. compaction, capping, sealing – changing the existing ground environment to one that can no longer support tree root function.
d) Construction activity and the use of large plant and machinery that can denature the ground.
e) A change in site context or a change in occupation or use that makes a tree unsuitable for retention.

Identification of Impacts

Attention is drawn to the scope of the "Arboricultural Implication Assessment" as defined at "Appendix 1" to this report. This appendix outlines the extent and nature of consideration typically considered and reviewed during the assessment. In this respect, it is appreciated that not all elements apply to all development projects.

This report, its findings and recommendations have arisen from the scrutiny of development proposal drawings as provided by the developer in the form of AutoCAD drawing "P469-01_Rev1_CadIssue_09.12.2020.dwg", in conjunction with the most recent tree survey data (as appended to this report). The evaluation is primarily based on minimum protection ranges as extrapolated from the tree survey data in accordance with paragraphs 4.6.1, 4.6.2 and 4.6.3 of BS5837: 2012 and any element of the proposed development of works associated with is that affects the defined protection areas.

In respect of tree impacts, any structure, action or apparent need to enter or otherwise disturb/convert the "root protection area" of a site tree has been considered likely to have a

negative impact, with the potential to render a tree wholly unsuitable for retention, unsafe or unsustainable.

Additionally, the tree specimens have been evaluated in respect of health, sustainability and suitability for retention within the new context and adjoining the proposed development. Such considerations can readily affect the "predevelopment suitability for retention" scenario.

The perceived development impacts have been illustrated graphically on drawing "Capdoo Tree Impacts Plan", within which trees denoted with "Dashed Pink" crown outlines will be removed and those denoted with "Continuous Green" crown outlines will be retained.

Expected Development Impacts

In comparison to previous applications, tree and hedge losses are now limited to the removal of already poor or dead trees, and the punctuation or shortening of hedge lines to allow for buildings or roads.

The drawing "Capdoo Tree Impacts Plan" comprises the tree survey drawings overlaid by the development drawings, thus providing a graphic representation of the tree related impacts, with those trees that will be removed, being denoted by pink dashed outlines.

The nature and extent of the proposed development and its unavoidable need to convert or otherwise disturb much of the existing site conditions, effectively requires the removal of all site trees and/or hedges as outlined below

Several trees have been categorised as category "U" (unsustainable or unsuitable for retention) trees within the tree survey, including Nos.20, 21, 29 and 30 that are recommended for removal.

Additionally, 4no. category "C" trees will be lost, including nos.5, 14, 15 and 16.

Additionally and while not individually identified on the survey, the site area supports numerous, typically small, dead Elms, killed by Dutch Elm disease, all of which would be recommended for removal. Many of these are to be found within Hedge 5.

Of the site's hedges, no full hedges will be lost. Nonetheless, partial hedge removal will be required, typically relating to buildings or roads, often requiring simple punctuations. The largest loss relates to Hedge 8 where circa 60 metres will be lost to the west. Hedge 5 will see the loss of circa 25 metres for site works. Similarly, Hedges 4 will lose approximately 75 metres. Hedges 1, 9, 10, 15 ang 16 will also suffer smaller punctuations and losses.

Note should be made that as many of the site hedges support young, emergent trees, then where hedge loss is incurred, this will include the loss of the young trees arising from that hedge section.

As most hedges are overgrowth and support extensive adjoining thicket development, there will be an unavoidable need for cutting back, particularly where boundary treatments, roads, cycle parking or private open space would otherwise be encroached upon. In this respect, it is assumed that all spurious thicket will be removed and that the original and central thorn-based hedges only will be retained, together with their emergent tree population where this is contextually suitable.

Tree Protection within the Scope of a Development

The design and management recommendations as set out in "BS5837:2012" are considered as "best practice" regarding the selection, retention, protection, and management of tree within the scope of new developments.

In respect of tree protection, whether vertical or horizontal, all must conform or equate to the recommendations of Section 6, BS5837: 2012, must be fit for purpose and commensurate with the nature of development and the expected day-to-day activities of the site works.

This report provides a "Preliminary Arboricultural Method Statement" at "Appendix 1" to this report, as well as the associated "Tree Protection Plan" drawing "Capdoo Tree Protection Plan".

1In the drawing, the "Construction Exclusion Zone" is defined by an orange hatching with bold "Orange" lines representing the proposed location of the primary protective "Construction Exclusion Fencing".

The above drawing provides only a representation of the protection locations and extents that must be located, positioned and erected under the guidance of the project Arborist. This drawing may require referral to a figured and dimensioned, "construction stage" version of the "Tree Protection Plan" drawing. All recommended protection measures will be installed before the commencement of any site works and must remain in situ (unless under the guidance of the site Arborist) until the completion of all site works.

Preliminary Recommendations

Preliminary management recommendations have been put forward within the context of the survey table. Such recommendations are based on the current site scenario and pay no respect to any possible site developments or the effects that these may have on the trees. It will be necessary for the project Arborist to re-assess all retained trees after primary site clearance, so that changes in site usage, aspect and shelter loss can be better assessed and accounted for.

As shelter-loss is already an issue on this site, then it should be considered as likely that additional works will be recommended that are orientated towards addressing such issues, such as the application of crown-reduction type works.

In respect of this and regardless of any possible site development, it is advised that all trees be reviewed on regular basis and particularly, after any actions that may affect the trees, be those site development works, or tree management works that involve tree removal or pruning.

It should be appreciated that some of the concerns raised in the tree survey were based on evidence suggesting ongoing decline or mechanical failure. Such deterioration may well continue to a point where additional trees need to be removed. For this reason, trees must be reviewed regularly so that early intervention and action can be applied in a timely manner.

Additionally, many of the sites larger trees were affected by Ivy development. Whilst itself not an indicator of ill-health, Ivy cover can readily obscure signs and symptoms of ill-health or

physical defect. Therefore, and whilst nominal assessments have been made for the purposes of this survey, the true condition of trees affected by Ivy cover might not be fully known until Ivy cover has been dealt with, either by cutting resulting in shedding or by the undertaking of climbing inspections.

As much of the site's vegetation has not been managed in the past, a large proportion is substantially overgrown. What may have been narrow hedge alignments are now broad thicket belts, some of which will require substantial cutting back to allow for the positioning of boundary treatments. A similar scenario applies to tree specimens, particularly where they might be retained adjoining proposed homes and where some degree of cutting back may be required to address issues of encroachment and overhang.

Appendix 1
Preliminary Arboricultural Method Statement (and Tree Protection Plan)

Method Statement Outline

Set out below is a broad and prescriptive method statement, intended to provide advice and guidance for most events, occurrences and issues that arise in respect of trees on typical development sites. The intention of this statement is to instruct and to advise regarding the execution of the proposed development in a manner that will be least detrimental to the retained tree population.

It should be used under the direct guidance of the project Arborist, as site/project specific issues arise, and information becomes available, thus may be amended and adjust by him/her to address project specific issues. In this respect, it must be appreciated that limited "construction management" detail was available at compilation time and therefore this method statement deals with tree protection in its broadest terms and may require modification to deal with project specific details to this development, e.g. to account for specific plant/machinery/access issues.

In some situations, and with the adoption of specific ground protection procedures and structures, parts of the above defined "Construction Exclusion Zones" might still be utilised during the construction process. In respect of vehicular/plant/machinery access, the provision of suitable ground protection measures that avoid soil compaction and maintain drainage/percolation and breathability and are acceptable to the project Arborist and subject to engineering confirmation, can be utilised. Such might include the various form of "roll-out" temporary access surfaces or might include the "three-dimensional cellular confinement systems that utilise specific forms of confined hard-core. It must be noted that the effective use of either system is subject to the avoidance of excavation and level changes, by use upon existing ground surfaces. Where provided, the above systems would allow for the relocation of the "Construction Exclusion Fencing" to exclude and provide access to and across the newly protected areas.

In respect of any necessary and unavoidable structures required within the "RPA" zone, all efforts must be made to minimise impacts. Aerial elements may require access facilitation pruning or clearance pruning. Subterranean works that require excavation, must by design, location and action, minimise impacts to trees. This may require the adoption of "manual only" procedures so that root damage can be minimised, for example by hand digging or the use of "air-spades" for excavation or trenching. All such works must be undertaken under the guidance of the project Arborist who will advise on likely repercussions and necessary tree management issues.

If the proposed development proceeds, this method statement should commence with the development of a tree protection plan drawing and in respect of tree protection rages from any tree, reference must be made to the root protection area radius as defined for that tree within the tree survey table.

It must therefore be noted that many tree management recommendations, as stipulated within the "Preliminary Management Recommendation" section of the primary tree survey, were made prior to any grant of permission, may no longer be applicable, or may require modification to account for the changes that the built project will cause.

Note should be made that the inability to conform to the recommendations of this method statement or the associated tree protection plan could readily change the sustainability of trees and/or their suitability for retention.

1.0) Overview

1.1.1 This method statement will be addressed and discussed by all member of the construction team management, prior to any site works or construction/demolition related works

1.2 The method statements application must be discussed in detail in respect of expected site plant and equipment, access, activity, and procedures and how they will be affected by the proposed tree protection measures and particularly where issues of noncompliance are envisaged.

1.3 The project Arborist or other qualified person will oversee the application of all tree protection measures and any necessary modifications to this Method Statement to provide a basis upon which tree protection will be managed on the construction site.

1.4 This Method Statement is based upon the findings of the tree survey and Arboricultural Implication Assessment, carried out after the review of the proposed development plans.

1.5 This statement intends to address those items noted within the "Impact Assessment" as being potentially damaging to ongoing tree health and safety of retainable trees by the stipulation of methodologies and materials intended to mitigate such effects.

1.6 It deals with the execution of the works required for the proposed development regarding works access to areas within the "RPA" zones of retained trees.

1.7 This statement relates recommendations for both specific procedures as well as for unforeseen events or situations that have the potential to affect trees.

1.8 The tree constrains (radial range) associated with any tree to be retained on site is to be regarded as sacrosanct and is not to be entered for any reason without confirmation from the project Arborist.

1.9 Any situation that requires entry into the "root protection zones" of a tree intended for retention must be brought to the attention of the Project Arborist regarding the adoption/amendment of suitable tree protection measures

1.10 As unforeseen tree losses may compromise project planning permissions, it is imperative that issues relating to tree protection or tree damage be brought to the immediate attention of the project Arborist for review and possible discussion with the relevant planning authority.

2.0) Tree Protection

2.1 These notes must be read in conjunction with a specifically developed tree protection plan that relates all tree constraints, trees for retention and removal, as well as the location of all tree protection measures.

2.2 The positioning and location of all elements of tree protection including both "Exclusion Fencing" and "Ground Protection" (where required), will be indicated and confirmed by the project Arborist, in conjunction with submitted drawings and dimensions including but not limited to those defines in the "RPA" column of the primary tree survey and where not amended by the project Arborist.

2.3 Unless specifically stipulated by the project Arborist, the default minimum range of protective fencing or construction exclusion fencing is the range stipulated in the primary tree survey for that tree and within the "RPA" (root protection area) column.

2.4 Works access includes area outside only of the "Construction Exclusion Zone" and must provide for all required vehicular and pedestrian access as well as providing space for works, secure storage, deliveries, site management offices, parking, toilet facilities and all other facilities commensurate with the required works and to personnel and construction practice.

2.5 If entry into the "RPA" (Root Protection Area) zones becomes unavoidable, ground protection systems must be utilised. This practice will allow for the relocation of the "Construction Exclusion Fencing", thereby allowing for an extension of accessible ground space.

2.6 All construction, works or access areas must be enclosed and defined by protective fencing, this comprising the "Construction Exclusion Zone"

2.7 Such a fence must be fit for purpose and commensurate with the nature of activity expected upon the site.

2.8 The fence should be in accordance with the overall "Tree Protection Plan", at ranges/positions defined as "RPA" ranges in the original tree survey unless specifically agreed with the Project Arborist.

2.9 The fence should be 2.00 metres in height, constructed of robust materials and be suitably braced to withstand impact.

2.10 The fence may include sheet panels attached to timber posts or weld-mesh panels supported upon a scaffold bar system. All footings must be firm (no mobile rubber or cement footings), being installed with the aid of a post-hole driver, under the guidance of the Project Arborist.

2.11 An illustration (Fig 1-facsimile of BS5837: 2012) is appended to this document to illustrate a possible option for the construction of the protective fencing.

2.12 The fence should be affixed with notification signs such as "TREE PROTECTION AREA - KEEP OUT"

2.13 The position of all "Protective Fencing" must coincide with the edge of ground protection measures incorporated and exclude all site activities from the "Construction Exclusion Zone" or areas not provided with ground protection.

2.14 All protection measures must be installed in a manner that will cause least disturbance and under the guidance of the Project Arborist

2.15 Ground protection must be installed progressively, thereby allowing progressive access to the next area to be protected. No vehicles/plant will be allowed on unprotected ground.

2.16 Where applicable, structures such as "lock-ups", offices or other temporary site building, not requiring excavation or underground ducting, may be positioned such as to comprise part of the "Construction Exclusion Zone" fencing. All remaining fencing must be continuous with such features and effectively prevent access.

2.17 All tree protection measures must be verified by the Project Arborist prior to works commencement and regarding maintenance for the duration of site works

2.18 No amendment, alteration, relocation or removal of the tree protection fencing shall occur without prior liaison and approval from the Project Arborist.

3.0) Specific Methodology for Provision of Ground Protection (If Required)

3.1 Ground protection can comprise the use of proprietary materials/structures or procedures that avoid ground damage/disturbance/compaction, or the use of procedures

that avoid such effects e.g. manual/pedestrian installation procedures.

3.2 Such systems may include but would not be limited to the use of "roll-out" temporary vehicular access mating or the use of three-dimensional cellular confinement systems whose function results from the constrained use of hard-core.

3.3 Any system utilised must effectively spread load-weight, avoid compaction, maintain drainage/percolation/aeration and be installed in a manner that avoids these issues.

3.4 Where non-proprietary ground protection systems are to be used, specific installation methodologies must be agreed with the Project Arborist and project Engineer prior to commencement

3.5 Any area of ground protection must be regarded as part of the "Construction Exclusion Zone" until completed and as such must remain fenced-off from the general site.

3.6 Dependent upon the nature and durability of the ground protection, it may on completion of installation allow for construction related access if the perimeter of the new ground protected area is fenced-off, thereby preventing inadvertent access onto none protected ground of the remaining "Construction Exclusion Zone".

3.7 Where proprietary ground protection systems are utilised, it is imperative that manufacturer's specifications and recommendations are adhered to in full regarding the provision and installation of this type of ground protection.

3.8 It is appreciated that the nature of the materials involved may require mechanical assistance of a nature that has the potential to cause ground damage and disturbance.

3.9 The progressive laying down of ground protection, with previously laid material providing vehicular access to the next zone will be acceptable as an approved methodology.

3.10 No vehicular access whatsoever will be allowed onto unprotected ground.

3.11 The provision of construction exclusion fencing may require the assistance of machinery and vehicles. No such vehicles will be allowed on unprotected ground.

3.12 On completion of any area by way of the provision of ground protection systems then vehicular access will be allowed to deliver materials and machinery the erection of construction exclusion fencing.

3.13 Construction exclusion fencing must be undertaken using either pedestrian means where ground protection does not exist but may use vehicular and mechanical assistance where ground protection systems have been put in place.

3.14 No mechanical or vehicular access must be made to areas of unprotected ground within the root protection area of any tree intended for retention.

4.0) Works within "RPA" Zone

4.1 Only works and construction practices, agreed with the Project Arborist prior to commencement, will be allowed in the "RPA" area.

4.2 The "RPA" zone associated with all retained trees must be protected from the effects of construction works.

4.3 Amended tree protection measures as agreed with the Project Arborist and including the relocation of fencing and the provision of ground protection will be installed in accordance with the tree protection measures prior to commencement.

4.4 All works will be undertaken under the supervision and guidance of the Project Arborist who will have the authority to stop works if activities are considered such as to have the potential to damage trees.

4.5 Preference must be given to manual labour and techniques within the fenced "RPA" zone.

4.6 On completion of the required works, the area will be inspected by the Project Arborist

regarding the reinstatement of the original protection and the relocation of the protective fencing to a position relating to the original "RPA" area.

5.0) Service Installation

5.1 The "Project Arborist" must be consulted for advice, in respect of any installation of services within or requiring entry into the "Root Protection Area" of any tree intended for retention.

5.2 Any such works as may be identified in the future, must be undertaken with special care, incorporating the recommendations of both "BS5837: 2012 and the National joint utility groups, guidelines for the planning, installation and maintenance of utility services in proximity to trees (NJUG 10)

5.3 No open trenching will be allowed. All works must be commensurate with the preservation of the effected tree root system.

5.4 Preference will be given to trench-less techniques including Mole-piping, Directional-drilling manual hydro-trenching (high pressure water), "Air-Spade" or broken-trench techniques.

5.5 All works carried out within the "RPA" zone or "Construction Exclusion Zone" must be agreed with and supervised by the Project Arborist.

6.0) Tree Management

6.1 All tree works should be undertaken under the guidance of the project Arborist

6.2 It is advised that all tree removal works as identified within the Arboricultural Implication Assessment be undertaken at the earliest stage of the overall development works.

6.3 On completion of primary site clearance and felling, the Project Arborist must re-assess all ostensibly retainable trees in respect of possible amendments to the "Preliminary Management Recommendations"

6.4 Tree pruning works are likely to be modified from those originally defined within the "Preliminary management Recommendations" of the initial tree survey to account for changed land use, changed rates of occupation and use ad to account for potential impacts upon the newly built environment including encroachment on buildings, possible light ingress issues and any other tree safety/management issues as may come to light during the development process.

6.5 A safe works procedure must be adopted by trained and competent staff.

6.6 Whilst any safe felling methodology may be adopted for much of tree felling works, it will be necessary to dismantle in sections, all trees within falling range of trees intended for retention into the post-construction period.

6.7 It is recommended that all preliminary works defined within the original tree survey be undertaken regarding all retainable trees.

6.8 Where no specific works are defined, general Cleaning-Out works should be applied (section 12 - BS 3998: 1991 Recommendations for Tree Work)

6.9 On completion of felling works, all retained trees must be re-evaluated by the Project Arborist regarding the potential effects of exposure and isolation.

6.10 Additional works including formative pruning, crown reduction etc., may be nominated for various trees in the interests of mitigating the potential effects of exposure and isolation.

6.11 All additional works will be agreed with the local authority and/or other stakeholders and applied at the earliest possible opportunity.

6.12 All such works must be carried out by a competent Tree Surgeon, suitably trained for the purpose at hand and compliant with all legislative, safety and insurance requirements.

6.13 All Tree Surgery/Pruning works will be undertaken under the guidance of the Project Arborist; the precise nature and extent of work being agreed before commencement.

6.14 On completion of site works, the retained tree population will be reviewed and re-evaluated regarding ongoing condition and the likely requirements of any ongoing or future monitoring or management needs

7.0) Demolition

7.1 All demolition procedures must be agreed and overseen by the Project Arborist and other suitably skilled staff to monitor for damage and to protect exposed roots/cut-trim exposed roots/oversee backfilling of exposed roots.

7.2 No vehicle, plant or other machinery will be allowed on unprotected ground within the "RPA" of a tree to be retained.

7.3 Where access into unprotected "RPA" zone becomes unavoidable then suitable ground protection, provided in accordance with an engineer's direction and agreed with the Project Arborist will be installed.

7.4 Care will be taken to avoid damage to soil volumes beneath and adjoining demolished structures that may contain tree root material.

7.5 Whilst existing foundations/structures may provide temporary protected access to areas within the "RPA" zone, preference must be given to the location of demolition plant outside of the "RPA" zone.

7.6 Where tree exist near a structure to be demolished then the demolition should be undertaken inwards within the footprint of the existing building (Top Down, Pull Back).

7.7 Underground structures (services etc.) within the "RPA" zone should be reviewed with regards to retention in situ in the interest of avoiding tree damage.

7.8 Where underground structures (services etc.) within the "RPA" must be removed then the situation must be reviewed by the Project Arborist (and all other stakeholders) regarding the ongoing suitability of the affected tree for retention.

7.9 Preference should be given to the retention existing sub-bases where hard surfaces are removed, particularly if the hard surface is to be replaced.

8.0) Works Sequence

8.1 No construction related works will commence until the agreed level of tree protection, in accordance with the "Tree Protection Plan", is completed.

8.2 All site tree protection will be "signed-off" as complete by the Project Arborist.

8.3 The tree management plan will be reviewed by the Project Arborist concerning amendments necessary to address changed land use, changed rates of occupation and use. This may account for potential impacts upon the newly built environment including encroachment on buildings, possible light ingress issues and any other tree safety/management issues, thereby amending (if necessary) the "preliminary Management Recommendations" stipulated in the original Tree Survey.

8.3 All tree surgery and felling works will be undertaken under the guidance of the Project Arborist.

8.4 The Project Arborist will liaise with the tree works contractor regarding the nature and extent of woodland access to facilitate felling works.

8.5 This will include the nomination of “No Vehicular Access” zones in areas where tree retention is envisaged.

8.6 Whilst the timing of general tree pruning works is less critical, it is appreciated that the Tree Felling works must be completed prior to construction in the interest of providing works access and reducing the risk of impromptu damage.

8.7 On completion of the felling works, trees to be retained will be reviewed regarding the amending of tree pruning works orientated towards the mitigation of exposure and shelter loss.

8.8 Revised pruning works will be agreed with the local authority and applied at the earliest possibly opportunity.

8.9 After the completion of primary tree clearance but prior to the commencement of construction works, all “Construction Exclusion” and “Protective” fencing must be erected to the satisfaction of the Project Arborist.

8.10 On completion of construction works, all protective measure may be removed, but in a manner, that does not compromise the “Protection Zones”. This must be completed in a “Progressive” manner, with each section being removed whilst utilizing protection systems still in situ. Such works must be agreed and overseen by the Project Arborist.

8.11 On completion of construction works, all retained trees will be reviewed regarding condition and longer-term management recommendations and regarding site hand-over.

9.0) Ancillary Precautions

9.1 The methodologies as set out in this document apply to all undertakers of work upon or adjoining the site as may require access to the “Construction Exclusion Zone” or the “RPA” area of any tree.

9.2 This document will be disseminated to all persons requiring access to the work site.

9.3 All persons undertaking works either before or after the principal development (site investigation works, Landscape Contractors) are subject to the above requirements

9.4 Works outside the “Construction Exclusion Zone” must be controlled to create no potential secondary hazard to tree health.

9.5 Large loads accessing the site must be reviewed regarding clearance and potential tree damage.

9.6 Care must be taken regarding materials that may contaminate the ground. No concrete mixings, diesel or fuel, washings or any other liquid material may be discharged within 10 metres of a tree.

9.7 No fires can be lit within 5 metres of any tree canopy extent.

9.8 No tree will be used for support regarding cables, signs etc.

9.9 The trees should be reviewed on a regular basis throughout the development process and on completion. At that time, additional recommendations regarding tree management may be required.

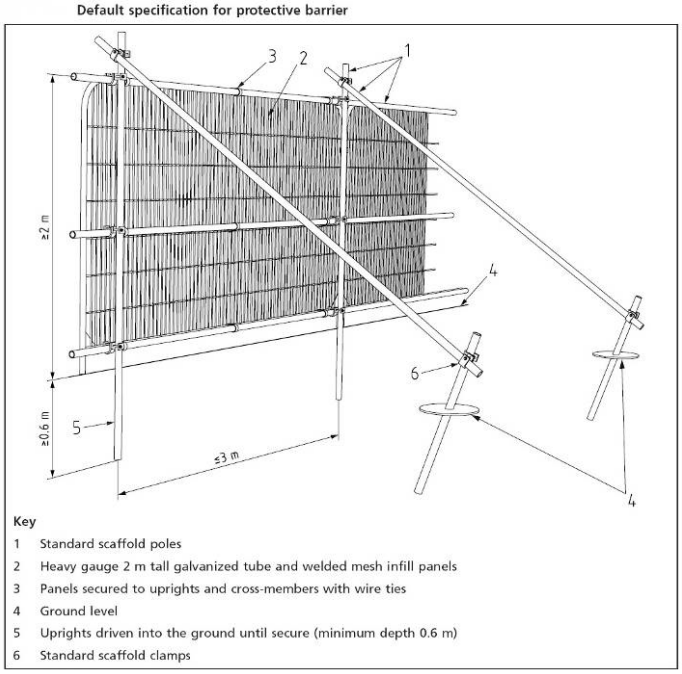
9.10 Any issue that has the potential to affect site trees must be brought to the attention of the Project Arborist for review and comment.

10.0) General

10.1 Any circumstances that become known whilst the development project is ongoing that either involves trees or access to/works within the construction exclusion zone must be brought to the attention of the Project Arborist for evaluation and advice regarding approach and methodology.

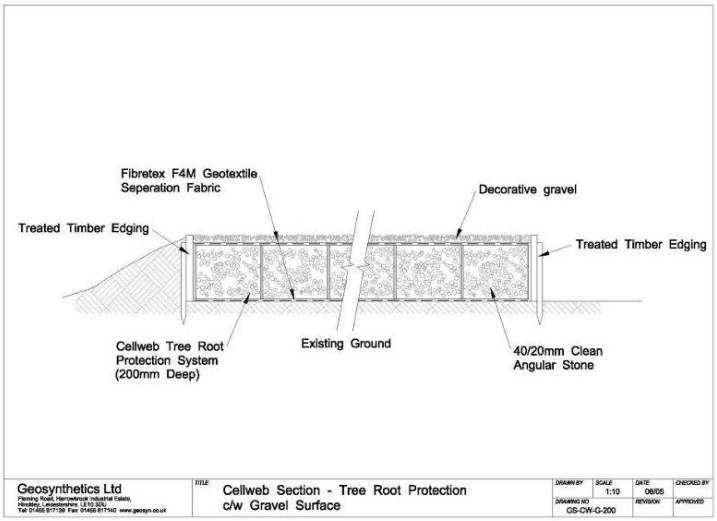
10.2 It is likely that liaison/agreement will be required with the Local Planning Authority regarding compliance with, as well as the verification of the required tree protection measures.

Fig 1



This image illustrates one possible option for the construction of the "Construction Exclusion Zone" protective fencing.

Fig 2



This image shows a proprietary brand of "Cellular Confinement" system that will provide load bearing capacity for vehicular passage whilst preserving the ground environment beneath the system.

Appendix 2 - Tree Survey

Nature of Survey

This survey has been based upon many of the criteria put forward in BS 5837: 2012 – Trees in Relation to Design, Demolition and Construction – Recommendations.

The data collected has been represented in table form as "Table 1" within "Appendix 1" to this report. This appendix includes a Survey Methodology, Survey Key, Survey Abbreviations, Condition Category Definitions and a brief resume of the typical application of Tree Protection measures as defined within the above standard and as relates to the "RPA" zones defined both within the survey table and on the "TCP" drawing.

The survey, its findings and management recommendations relate to the site and the conditions thereon at the time of the survey. It is likely that changes in site usage, development or other environmental changes will require an amendment of a tree's potential retention status and/or its preliminary management recommendations and in some instances, may require the re-classification of a tree's suitability for retention.

Drawing References

The survey should be read in conjunction with the "Tree Constraints Plan" drawing "Capdoo Tree Constraints Plan" regarding the representation of tree positions, crown forms, "RPA" extents and colour reference to category systems. Where tree positions were not indicated on the supplied drawing, their positions may have been given "sketched" locations within "Capdoo Tree Constraints Plan". It is advised that any such trees are accurately located by professional means so that the constraints such trees have upon the site can be accurately gauged.

Each tree is represented by a coloured circle, scaled to represent the north, east, south and west crown radii as denoted in the survey table. Each tree (categories A-green, B-blue and C-grey only) have been apportioned a "Root Protection Area" (RPA) denoted as a dashed orange circle. This circle represents the minimum area requiring protection from the effects of development activity. For the purposes of design, it should be considered as approximating the position of the tree protection fencing that must be erected prior to the commencement of any site works, thus excluding all site activities other than those dealt with by way of the "Arboricultural Implication Assessment" and "Arboricultural Method Statement"

The development of a Tree Constraints Plan (TCP) provides a design tool regarding tree retention. Such a plan combines the topographical land survey drawing with additional information as provided by the tree survey. The aspects of the tree's existence recorded on the "TCP" are, firstly, the tree canopies, represented in accordance with the four cardinal compass point radii (Sp: R in survey Table 1). Secondly, each tree's Root Protection Area (RPA) is represented in accordance with paragraphs 4.6.1, 4.6.2 and 4.6.3 of BS5837: 2012.

The "Tree Constraints Plan" (TCP) depicts the extent and location of constraints, placed upon the site by the trees. The "TCP" represents both the true canopy form (north, east, south and west radii) but also the "RPA" as defined above. These constraints must be considered regarding the design and layout of a proposed development.

Survey Intent and Context

Intention of this document is to highlight the extent and nature of material of Arboricultural interest on the site in question.

Survey Data Collection and Methodology

The Survey
The original survey was carried out in July 2018 and updated in March and August of 2019. This survey portion of the overall report is not an Implication Assessment though but provided some of the basic information regarding its compilation. The survey has been undertaken under the recommendations of BS 5837: 2012. This survey includes only tree of a stem diameter exceeding 150mm at approximately 1.50 metres from ground level. The survey relates to current site conditions, setting and context.

Identification
Each of the trees described within the text has been affixed with a consecutively numbered, alloy disk that relates directly to the survey text, positioned at approximately 1.50m from ground level.

Measurements
Measurements are metric and defined in metres and millimetres. All trees referred to in the survey text have been measured to provide information regarding canopy height and canopy spread (north, east, south and west radii), level of canopy base and stem diameter at 1.50 meters from ground level. The dimensions provided are intended to provide a reasonable representation of a trees size and form. Whilst efforts are made to maintain accuracy, visual obstruction, especially regarding trees in groups, requires that some tree dimensions are estimated only.

Inspection and Evaluation Limitations and Disclaimers
The information set out in this report relates to the review of a tree population on the site in question. As such, the information provided is based on a general review of trees and does not constitute a detailed review of any one of the individual specimens. Such an evaluation (tree report) would require the gathering of substantially more information than that dealt with in this survey.

The survey is not a safety assessment and the parameters reviewed within this survey context would be substantially deficient in extent to provide for a reliable safety assessment. The survey is intended to provide a general and qualitative review to assist in gauging the suitability of an individual tree for retention within a development context. All trees are subject to impromptu failure and damage and the assessment of risk as may be presented by a tree requires the review of numerous factors more than those noted herein and as such, remains outside the scope of this document and any attempt to use the information herein for such proposes will render the information invalid.

All inspection and tree assessment has been completed by a competent and experienced Arborist. The inspection involves visual assessment only, which has been carried out from ground level. No below ground, internal, invasive or aerial (climbing) inspection has been carried out.

Trees are living organisms whose health, condition and safety can change rapidly. It is recommended that all trees should be re-evaluated regarding their condition on an annual basis or after substantial trauma such a storm event, other damage or injury. It is advised that the results and recommendations of this survey will require review and reassessment after one year from the date of execution. This survey does not constitute a review of tree or site safety.

Attempts to use the contents herein for such purposes will render the contents invalid. Throughout the undertaking of the survey, several factors acted against the inspectors, contriving to reduce the accuracy of the survey.

Seasonality

The primary survey was commenced during the summer period. Some of the signs, typically symptomatic of ill-health or defect within a tree, may not have been available to view at the time of the survey or may have been obscured by seasonality related factors. Some of the fruiting bodies of various fungi, parasitic upon or causing decay or disease in trees, may have been out of season and unavailable to view. This survey can only comment upon symptoms of ill-health or defects visible at the time of the inspection.

Survey Key

Species.....	Refers to the specific tree species
Age……	Referred to in generalized categories including: -
Y - Young……..…	A young and typically small tree specimen.
S/M - Semi-Mature……....	A young tree, having attained dimensions that allow it to be regarded independently of its neighbours but typically, would be less than 50% of its ultimate size.
E/M - Early-Mature……....	A specimen, typically 50% - 100% of ultimate dimensions but with substantial capacity for mass and dimensional increase remaining.
M - Mature…….	A specimen of dimensions typical of a full-grown specimen of its species. Future growth would tend to be extremely slow with little if any dimensional increase.
O/M - Over-Mature……....	An old specimen of a species having already attained or exceeded its naturally expected longevity.
V - Veteran…….	An extremely old, veteran specimen of a species, usually of low vigour and typically subject to rapid decline and deterioration or of very limited future longevity.
Tree Dimensions …….	All dimensions are in meters. See notes regarding limitation of accuracy.
Ht.……..…….	Tree Height
CH…….	Lowest canopy height
N, E, S, W…….	Tree Canopy Spread measured by radii at north, east, south and west
Dia.……	Stem diameter at approx. 1.50m from ground level.
RPA……...	Root Protection Area, as a radius measured from the tree's stem centre.
Con	Physical Condition
G Good…….	A specimen of generally good form and health
G/F Good/Fair…….	
F Fair……	A specimen with defects or ill health that can be either rectified or managed typically allowing for retention
F/P Fair/Poor……...	
P Poor……...	A specimen whom through defect, disease attack or reduced vigour has a limited longevity or may be un-safe
D Dead…….	A dead tree
Structural Condition	Information on structural form, defects, damage, injury or disease supported by the tree
PMR – Preliminary Management Recommendations	Recommendation for Arboricultural actions or works considered necessary at the time of the inspection and relating to the existing site context and tree condition. Note is also made of works considered as urgent.
Retention Period	
S – Short……	Typically, 0 -10 years
M – Medium…….	Typically, 10 -20 years
L – Long……	Typically, 20 – 40 years

L+…….	Typically, more than 40 years
Category System…….	The Category System is intended to quantify a tree regarding its Arboricultural value as well as a combination of its structural and physical health. Note should be made of the fact that tree categorization relates to the current site and tree locations therein. As site changes occur, it may become necessary to re-evaluate trees regarding their relationship to new features.
Category U……	Typically relates to trees that are dead, dying or dangerous. Such trees may present a threat of suffer from a defect or disease that is considered irremediable.
Category A……	A typically a good quality specimen, which is considered to make a substantial Arboricultural contribution
Category B…….	Typically including trees regarded as being of moderate quality
Category C…….	Typically including generally poor-quality trees that may be of only limited value. The above categories (A, B and C) will be further subdivided regarding the nature of their values or qualities. A tree may be awarded one or more value categories as below, but such attributes do note infer any additional value and it may be possible for a tree may qualify for one or more of the categories as below.
Sub-Category 1…….	Values such as species interest, species context, landscape design or prominent aspect.
Sub-Category 2…….	Mainly cumulative landscape values such as woods, groups, avenues, lines.
Sub-Category 3…….	Mainly cultural values such as conservation, commemorative or historical links.

Appendix 1 – Tree Data Table

No.	Species	Age	Con	Ht	CH	N	E	S	W	Stm	Dia	RPA	Structural Condition	PMR	Yrs	Cat
1	Ash *(Fraxinus excelsior)*	E/M	G/F	12.00	2.50	5.00	5.00	5.00	5.00	3	477	5.73	A relatively young, emergent specimen arising naturally from within hedge profile. Remains broadly vigorous at present though much of crown is obscured by dense Ivy cover.	Cut Ivy and rereview.	M	B2
2	Ash *(Fraxinus excelsior)*	E/M	G/F	12.00	2.50	3.50	3.50	3.50	3.50	1	493	5.92	A relatively young, emergent specimen arising naturally from within hedge profile. Remains broadly vigorous at present though much of crown is obscured by dense Ivy cover.		M	B2
3	Ash *(Fraxinus excelsior)*	E/M	F	10.00	2.00	4.00	4.00	4.00	4.00	1	452	5.42	A relatively young, emergent specimen arising naturally from within hedge profile. Remains broadly vigorous at present though much of crown is obscured by dense Ivy cover.		M	B2
4	Ash *(Fraxinus excelsior)*	E/M	F	16.00	2.00	7.00	5.50	6.00	6.00	1	914	10.96	Originally a multi-stem specimen, this tree appears to have sustained recent mechanical failure and limb loss. Extent of Ivy cover and inaccessibility prevents visual review at present.		S	C2
5	Ash *(Fraxinus excelsior)*	E/M	F	13.00	2.00	1.50	3.00	3.50	2.00	1	344	4.13	Suppressed and distorted because of position beneath crown of No.6. Is of dubious retention merit.		S	C2
6	Ash *(Fraxinus excelsior)*	E/M	F	15.00	2.50	3.00	3.50	3.50	3.00	1	449	5.39	Appears to be of reduced vigour possibly suggesting prior disturbance.	Review regularly regarding suitability for retention.	M	C2

No.	Species	Age	Con	Ht	CH	N	E	S	W	Stm	Dia	RPA	Structural Condition	PMR	Yrs	Cat
7	Ash *(Fraxinus excelsior)*	E/M	F	15.00	2.00	5.00	6.00	5.00	4.00	1	487	5.84	Appears to be of reasonable vigour but is affected by substantial Ivy cover that prevents detailed review at present.	Cut Ivy and rereview.	M	C2
8	Ash *(Fraxinus excelsior)*	E/M	F	16.00	5.00	2.00	4.00	5.00	4.00	1	388	4.66	Supports notable imbalance through suppression. Is effectively obscured by Ivy cover.		M	C2
9	Ash *(Fraxinus excelsior)*	M	F/P	9.00	2.00	6.00	5.00	4.00	5.00	1	592	7.10	Appears to be of reduced vigour raising some concern regarding suitability for retention over time.	Cut Ivy and rereview.	S	C2
10	Ash *(Fraxinus excelsior)*	E/M	F	14.00	3.00	4.00	5.00	4.50	1.00	1	439	5.27	Heavily suppressed as result of proximity to near neighbours and obscured by dense Ivy cover.	Review regarding retention context.	M	C2
11	Ash *(Fraxinus excelsior)*	E/M	F	16.00	5.00	4.00	4.50	3.50	4.00	1	420	5.04	Appears to be of broadly good vigour and vitality.	Review regarding retention context.	M	C2
12	Ash *(Fraxinus excelsior)*	E/M	F	13.00	4.50	5.00	5.00	4.50	5.00	1	436	5.23	Squat and spreading becoming multi-stemmed at low level. Appears be maintaining good general vigour and vitality.	Review regarding retention context.	M	C2
13	Ash *(Fraxinus excelsior)*	E/M	F	15.00	4.00	1.00	4.50	4.50	4.00	1	449	5.39	One-sided and unbalanced as result of suppression. Primary stem and middle crown are obscured by dense Ivy cover.	Cut Ivy and review.	M	C2
14	Ash *(Fraxinus excelsior)*	M	F	18.00	1.00	4.00	6.00	5.00	5.00	1	592	7.10	Large but distorted specimen heavily obscured by dense Ivy cover.	Cut Ivy and review.	M	C2
15	Ash *(Fraxinus excelsior)*	M	G/F	18.00	3.00	6.00	6.00	6.00	6.00	1	719	8.63	Of apparently good vigour and vitality but obscured by dense Ivy cover.	Review regularly. Cut Ivy and rereview.	M	C2
16	Ash *(Fraxinus excelsior)*	E/M	F	13.00	5.00	5.00	4.00	0.00	3.00	1	407	4.89	Heavily suppressed as result of proximity to and position beneath canopy of nearest neighbours. Is of dubious retention context.		S	C2

No.	Species	Age	Con	Ht	CH	N	E	S	W	Stm	Dia	RPA	Structural Condition	PMR	Yrs	Cat
17	Ash *(Fraxinus excelsior)*	E/M	F	13.00	2.50	5.00	5.00	5.00	5.00	1	548	6.57	Apparently vigorous but arising from areas of disturbed ground on southern side of apparent ditch alignment. Crown of tree is heavily affected by Ivy cover preventing detailed review at present.		M	C2
18	Ash *(Fraxinus excelsior)*	M	F	13.00	1.50	7.00	5.50	6.00	6.00	1	688	8.25	Large specimen with minor imbalance to north. Arises from southern side of substantial ditch feature. Appears to be broadly vigorous at present but lower stem is obscured by dense Ivy cover.	Review regarding retention context.	L	B2
19	Wych Elm *(Ulmus glabra)*	E/M	F/P	13.00	4.00	2.50	2.00	2.50	3.00	1	385	4.62	Young but not vigorous, supporting much peripheral crown deadwood possibly indicative of early Dutch Elm disease attack.	Review during growing season of 2019 regarding suitability for retention.	S	C2
20	Ash *(Fraxinus excelsior)*	M	P	16.00	3.50	1.00	3.00	7.00	5.50	1	780	9.36	Wholly one-sided and unbalanced to South through severe cutting on northern side regarding clearance of high-tension power cables. Tree arises from raised embankment. On balance nature suggests minimal suitability for retention.	Consider early removal.	N/A	U
21	Ash *(Fraxinus excelsior)*	M	P	15.00	3.50	1.00	6.00	5.00	3.50	1	535	6.42	Wholly unbalanced to South after cutting to provide clearance from adjoining high tension cables to North. Is considered of dubious sustainability or suitability pretension.	Consider early removal.	N/A	U
22	Ash *(Fraxinus excelsior)*	S/M	F	6.00	1.50	2.00	2.00	2.00	2.50	3	271	3.25	Young and vigorous but of poor physical form being heavily divided from low level forms. Comprises typical element of natural regeneration.		M	C2

No.	Species	Age	Con	Ht	CH	N	E	S	W	Stm	Dia	RPA	Structural Condition	PMR	Yrs	Cat
23	Ash *(Fraxinus excelsior)*	M	G/F	15.00	2.50	5.50	7.00	7.50	7.00	1	780	9.36	Has developed a broad and spreading crown. Appears to be vigorous but supports developing Ivy cover. Has suffered localised storm damage.	Clean-out.	L	B2
24	Ash *(Fraxinus excelsior)*	M	F	14.00	2.50	7.00	7.00	6.50	6.50	3	621	7.45	A multi-stemmed community combining to create a singular crown form. Appears to be of good vigour and vitality but supports extensive Ivy cover.	Cut Ivy and review regularly.	L	B2
25	Ash *(Fraxinus excelsior)*	M	F	12.00	2.50	5.50	5.00	5.00	4.50	4	748	8.98	Multi-stemmed and distorted community likely to comprise a remnant of a previously failed tree. Appears be maintaining reasonable vigour and vitality.		M	C2
26	Common Alder *(Alnus glutinosa)*	M	D	12.00	3.00	4.50	5.00	2.00	1.50	2	493	5.92	Twin-stemmed and completely dead. Is unbalanced towards river. Collapse is inevitable.	Remove.	N/A	U
27	Common Alder *(Alnus glutinosa)*	E/M	F	13.00	1.25	3.50	3.00	3.00	3.00	2	407	4.89	Young and vigorous but heavily divided from low level. Supports extensive Ivy cover.		L	B2
28	Ash *(Fraxinus excelsior)*	M	F	16.00	4.00	5.00	4.50	5.50	5.50	1	589	7.07	Supports minor imbalance but is of good vigour and vitality. Is developing extensive Ivy cover.	Cut Ivy and review.	L	B2
29	Wych Elm *(Ulmus glabra)*	S/M	D	10.00	2.50	4.00	2.50	2.50	3.00	1	248	2.98	Completely dead, killed by Dutch Elm disease.	Remove immediately.	N/A	U
30	Ash *(Fraxinus excelsior)*	E/M	P	10.00	2.00	4.50	4.00	3.50	4.50	5	462	5.54	A particularly poor quality, multi-stemmed group showing extensive dieback throughout higher crown.	Remove immediately.	N/A	U

Hedges and Alignments										
H1	Hedge 1 Hawthorn *(Crataegus monogyna)* Bramble *(Rubus fruticosus)* Ash *(Fraxinus excelsior)* Goat Willow *(Salix caprea)* Dog Rose *(Rosa canina)*			1.00-4.00	0.00	Spread 3.50-4.00m	m/s	n/a	2.50	Comprises a thorn based agricultural field boundary now somewhat dilapidated and discontinuous with a small number of gaps. The original Thorn though broadly continuous where the hedge exists, is becoming dominated by invasive plants including ash, goat willow and Bramble. The hedge exhibits evidence of prior cutting/flailing with current dimensions and format resulting from sucker regrowth since the most recent cutting.	C
H2	Hedge 2 Hawthorn *(Crataegus monogyna)* Bramble *(Rubus fruticosus)* Ash *(Fraxinus excelsior)* Goat Willow *(Salix caprea)* Dog Rose *(Rosa canina)* Blackthorn *(Prunus spinosa)*			1.00-4.00	0.00	Spread 3.50-4.00m	m/s	n/a	2.50	Is broadly like Hedge 1. Is generally continuous but is dominated more than “Hedge 1” by an influx of Bramble throughout the alignment length. The remaining Thorn is now substantially recessive.	C

H3	Hedge 3 Hawthorn *(Crataegus monogyna)* Blackthorn *(Prunus spinosa)* Bramble *(Rubus fruticosus)* Ash *(Fraxinus excelsior)* Ivy *(Hedera helix)*			3.00-5.00	0.00	Spread 4.00-5.00m	m/s	n/a	2.50	A lapsed element of hedging exhibiting no evidence of recent cutting. The original Hawthorn element is now discontinuous with broader continuity been provided for by thicket development dominated by Bramble. The hedge is intermittently suppressed by emergent early-mature Ash.	C
H4	Hedge 4 Hawthorn *(Crataegus monogyna)* Bramble *(Rubus fruticosus)* Ash *(Fraxinus excelsior)* Goat Willow *(Salix caprea)* Ivy *(Hedera helix)* Dog Rose *(Rosa canina)* Elder *(Sambucus nigra)* Wild Cherry *(Prunus avium)*			5.00-13.00	0.000.00	Spread 10.00m	m/s	n/a	3.00	This lapsed hedge was originally dominated by Hawthorn that is now wholly dominated by a massive emergent population of ash. The ash trees effectively provide a contiguous high-level hedge profile over a recessive and suppressed Hawthorn base and Bramble dominated thicket layer. The hedge line appears to be associated with a substantial ditch and embankment profile with all dominant vegetation arising from the raised embankment to the South of the ditch profile. In broad terms, the vegetation appears to be of good health, however, is of hugely disparate growth rates with the typically early mature ash profile likely to dominate over time. Current levels of continuity will be substantially diminished if the invasive Bramble element is managed/removed. The quality of the emergent ash is highly variable ranging from small number of well-formed individuals, through to multi-stemmed and drawn up specimens. Accordingly, various trees within the group will be of differing suitability is for retention within a context of increased use and occupation.	C

H5	Hedge 5 Hawthorn *(Crataegus monogyna)* Elder *(Sambucus nigra)* Ash *(Fraxinus excelsior)* Wych Elm *(Ulmus glabra)* Wild Cherry *(Prunus avium)*			4.00-16.00	0.00	Spread 6.00-12.00m	m/s	n/a	3.00	A highly variable hedgerow now dominated by emergent ash and Wych Elm. Review of the hedge profile reveals what appears to be an original Hawthorn alignment that is now wholly dominated by the larger growing Ash and Elm. Accordingly, the Hawthorn is now heavily suppressed with only a small number of specimens remaining throughout the alignment. The overall hedge line now is now dominated at higher levels by Ash and Elm however, note is made of massive and almost complete dieback of the elms, associated with Dutch Elm disease. Accordingly, circa 25 – 30% of the higher hedge line will be lost to this disease thus creating somewhat more irregular form. Most of emergent ash appear to be of reasonably good condition with some excellent specimens however, a proportion are of poor quality, having been suppressed during their younger age, being multi-stemmed or drawn up. Accordingly, the suitability for retention of individual trees will be dependent on any future context. Note should be made that management including the curtailment of lower level scrub including Ivy and Bramble will have a massive effect on visual appearance and continuity of this hedge line.	C
H6	Hedge 6 Hawthorn *(Crataegus monogyna)* Elder *(Sambucus nigra)* Ash *(Fraxinus excelsior)* Wych Elm *(Ulmus glabra)*			4.00-16.00	0.00	Spread 6.00-12.00m	m/s	n/a	3.00	This hedge is a continuation of Hedge 5 and suffers the same issues. Unfortunately, a higher proportion of Elm in this area and its demise because of Dutch Elm disease has left a more fragmented affect with fewer emergent ash. Nonetheless, much of the original and underlying Hawthorn is now effectively defunct with hedge continuity being best provided for by a low-level Bramble thicket. Accordingly, the boundary supports circa 10 emergent Ash, one of which is already noted to be of particularly poor condition. Note should be made of the repercussions of clearance of emergent scrub such as Ivy and Bramble in respect of losing existing continuity and additional caution should be exercised in respect of the smaller number and more exposed nature of any of the emergent trees.	C

H7	Hedge 7 Hawthorn *(Crataegus monogyna)* Bramble *(Rubus fruticosus)* Ivy *(Hedera helix)* Ash *(Fraxinus excelsior)* Dog Rose *(Rosa canina)* Goat Willow *(Salix caprea)*			5.00-13.00	0.00	Spread 5.00-12.00m	m/s	n/a	3.00	A highly variable and intermittent hedge originally dominated by Hawthorn but now substantially lapsed and broken. Note is made of the hedge currently arises from position West of a palisade railing and thus may be construed as being within the jurisdiction of the adjoining development. Only a small number of original Hawthorns remain with broader low-level continuity being best provided for by Bramble thicket. The boundary supports several emergent Ash of highly variable condition with many being affected by chronic Ivy cover thereby preventing detailed review at this time. Such trees would require Ivy severance and re-review after Ivy shedding if they are to be retained near areas intended for increased occupation and usage.	C
H8	Hedge 8 Hawthorn *(Crataegus monogyna)* Bramble *(Rubus fruticosus)* Ivy *(Hedera helix)* Ash *(Fraxinus excelsior)* Blackthorn *(Prunus spinosa)*			5.00-18.00	0.00	Spread 5.00-12.00m	m/s	n/a	3.00	This hedge remains dominated by its originally intended Hawthorn base that might be regarded as being broadly continuous along much of its length excepting a few areas of decline and dieback at its Western end and where dominated by emergent ash towards the centre and eastern end. Many Hawthorne specimens are encroached upon now at lower levels by Bramble thicket and throughout canopies by massive Ivy invasion. Nonetheless, much of the Hawthorn appears to be of good health and thus may offer some degree of sustainability notwithstanding the fact that a small number of specimens appear to have died at its western end. At present, the hedges arising from position wholly to the south of an existing palisade rail raising some question in respect of jurisdiction. Additionally, note is made that the alignment supports several emergent Ash. Most to be of typically good vigour and vitality however structural form differs greatly with some pain potentially compromised by multi-stem statures. Most trees are affected by substantial Ivy cover that would require re-review after Ivy management.	C

H9	Hedge 9 Hawthorn *(Crataegus monogyna)* Bramble *(Rubus fruticosus)* Ash *(Fraxinus excelsior)* Blackthorn *(Prunus spinosa)* Ivy *(Hedera helix)*			6.00-18.00	0.00	Spread 5.00-12.00m	m/s	n/a	3.00	A highly variable and substantially overgrown hedge associated with a large and deep ditch and embankment scenario. All vegetation appears to arise from the embankment to the south-east of the ditch. The alignment exhibits much evidence of once having comprised a deliberately planted and continuous Hawthorne hedge however, at present the Hawthorn is now discontinuous and sporadic with the mid-level continuity becoming dominated by Blackthorn and lower level continuity being dominated by Bramble. Note is made of Blackthorn thicket development in a south-easterly direction with the thicket currently attaining ranges of 6.00 and 8.00 metres from the original ditch embankment position. This hedge alignment is dominated by a substantial number of emergent Ash. For the most part, these trees appear to be of good general condition however, they vary greatly particularly in respect of mechanical form, an issue further complicated at present in that all tree support extensive Ivy cover that prevents detailed visual review at this time. Nonetheless, the trees would appear to offer some potential for retention however the hedge and the fact that it has deteriorated into a broad thicket like mass raises greater concerns regarding the potential to retain and manage into the future.	C

H10	Hedge 10 Hawthorn *(Crataegus monogyna)* Blackthorn *(Prunus spinosa)* Bramble *(Rubus fruticosus)* Ivy *(Hedera helix)* Ash *(Fraxinus excelsior)* Dog Rose *(Rosa canina)* Goat Willow *(Salix caprea)*			6.00-20.00	0.00	Spread 6.00-12.00m	m/s	n/a	3.00	Within the western half of the hedge there remains much evidence of the original Hawthorn however, for the most part and particularly the eastern extent of the hedge has been wholly dominated by an emergent ash population that is greatly suppressed the underlying Hawthorn. Nonetheless, a broad thicket remains though this tends to be dominated lower levels by Bramble with an equal number of Elder and Goat Willow comprising the middle levels. Nonetheless, there is little remaining of any true hedge within the northern half of the alignment. Many of the ash appear to be of broadly good condition most exhibiting evidence of good vigour and vitality at present. Nonetheless, many are compromised by multi-stem statures that may raise mechanical issues however these cannot be reviewed at present because of massive Ivy growth. Therefore, and regarding potential for retention, Ivy severance and subsequent review will be necessary.	C
H11	Hedge 11 Hawthorn *(Crataegus monogyna)* Bramble *(Rubus fruticosus)* Ivy *(Hedera helix)* Wych Elm *(Ulmus glabra)* Elder *(Sambucus nigra)*			7.00-12.00	0.00	Spread 5.00-12.00m	m/s	n/a	3.00	This hedge retains much of its original Hawthorn base however, and regarding its northern half this has been wholly dominated by Wych Elm development that is now dead or dying as result of Dutch Elm disease attack. Accordingly, and whilst some Thorn hedge remains it is limited and somewhat intermittent. Where it remains, it is heavily encroached upon by substantial thicket dominated by Bramble at lower levels but with Ivy penetrating many crown forms.	C

H12	Hedge 12 Hawthorn *(Crataegus monogyna)* Blackthorn *(Prunus spinosa)* Ivy *(Hedera helix)* Bramble *(Rubus fruticosus)* Ash *(Fraxinus excelsior)* Wych Elm *(Ulmus glabra)*			5.00-13.00	0.00	Spread 5.00-9.00m	m/s	n/a	3.00	A broadly poor and intermittent hedge exhibiting an original alignment of Hawthorn but now wholly intermittent and comprising more sporadic individuals. Note is made of an emergent ash towards the southern end of the alignment of this is exhibiting evidence of chronic decline would not be regarded as suitable for retention. The Hawthorn hedge is lapsed and dilapidated though individuals appear to be broadly healthy notwithstanding massive encroachment by Bramble and Ivy.	C
H13	Hedge 13 Hawthorn *(Crataegus monogyna)* Blackthorn *(Prunus spinosa)* Ivy *(Hedera helix)* Bramble *(Rubus fruticosus)* Ash *(Fraxinus excelsior)* Elder *(Sambucus nigra)*			5.00-12.00	0.00	Spread 5.00-8.00	m/s	n/a	3.00	A highly variable hedge that at its eastern end exhibits evidence of once having been dominated by Hawthorn but as one progresses in a westerly direction, becomes more variable changing to dominance by Blackthorn and then goat willow and then ash. In this respect, it appears the westerly end of the hedge lapsed many decades ago and at this time comprises little more than a highly variable thicket. Accordingly, the suitability of this material for retention is considered highly limited	C

H14	Hedge 14 Goat Willow *(Salix caprea)* Ash *(Fraxinus excelsior)* Hawthorn *(Crataegus monogyna)* Ivy *(Hedera helix)*			5.00-10.00	0.00	Spread 5.00-8.00	m/s	n/a	3.00	This hedge exists not as an agricultural field boundary hedge but more as spurious vegetation arising after a hiatus in management. Whilst a small number of Hawthorne suggest that once having been a hedge on southern embankment of the substantial ditch, most of the vegetation associated with this boundary now comprises suckering goat willow and ash, the majority of which is of poor condition and would be regarded as unsuitable for retention.	C
H15	Hedge 15 Hawthorn *(Crataegus monogyna)* Blackthorn *(Prunus spinosa)* Goat Willow *(Salix caprea)* Ash *(Fraxinus excelsior)* Bramble *(Rubus fruticosus)* Ivy *(Hedera helix)* Elder *(Sambucus nigra)*			5.00-8.00	0.00	Spread 5.00-8.00	m/s	n/a	3.00	A lapsed and overgrown hedge exhibiting evidence of once having been dominated by Hawthorn. Whilst numerous Hawthorns remain, they tend to be intermittent and dominated by emergent ash and suppressed by competitive thickets comprising Blackthorn, elder, goat willow and Bramble. Many of the emergent ash appear to be of reasonable vigour and vitality however, structural forms tend to be poor with many specimens being multi-stemmed. Accordingly, the sustainability over time may prove to be limited.	C

H16	Hedge 16 Hawthorn *(Crataegus monogyna)* Blackthorn *(Prunus spinosa)* Elder *(Sambucus nigra)* Hazel *(Corylus avellana)* Bramble *(Rubus fruticosus)* Ivy *(Hedera helix)* Dog Rose *(Rosa canina)*	E/M	F/P	2.50-4.00	0.00	Spread 4.00-6.00m	m/s	n/a	3.00	A broadly continuous thicket effect supporting a small proportion of Hawthorne considered likely to be the original hedge material. At this time, continuity is best provided by a combined thicket dominated by Bramble and elder. The hedge exhibits evidence of historic management but is now substantially outgrown. Hedges associated with a substantially raised embankment attaining circa 600 – 700 mm above average field levels. Hedge is of questionable suitability for retention.	C
WRA	Woodland Regeneration Area	S/M	G/F	4.00-8.00	0.00	Contiguous	m/s	n/a	3.00	This is an area of natural woodland regeneration towards the east of the site and along the River Liffey boundary. The population is dominated by young Common Alder but also supports several Goat Willow. All specimens are young suggesting seeding at a similar time. For the most part, individual specimens are of good health however, development densities are particularly high with canopy competition already apparent. Therefore, and if tree retention is envisaged, it would be relied upon some degree of management including population thinning.	