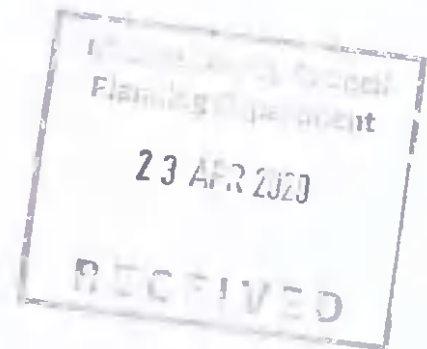


The Tree File

Consulting Arborists



**Arboricultural Report
Proposed Development at
Crodaun
Celbridge
Co Kildare**

March 2020

**The Tree File Ltd
Consulting Arborists
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Kildare Coounty Council - Inspection Purposes Only

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Associated Drawings

This report must be read in conjunction with the drawings noted below

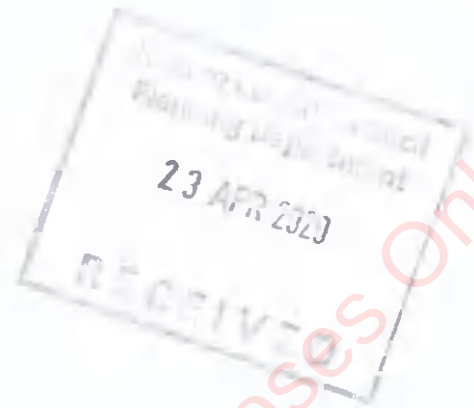
<u>Drawing Title</u>	<u>Drawing Subject</u>
1) D1-TCP-Crodaun-03-20	Tree Constraints Plan A plan depicting the predevelopment location, size, calculated constraints and simplified tree quality category system
2) D2-AIA-Crodaun-03-20	Tree Impacts Plan This plan represents the effects of the proposed development works on the above tree population and depicts trees to be retained and removed.
3) D3-TPP-Crodaun-03-20	Tree Protection Plan This plan depicts the nature, location and extent of tree protection measures required to provide for sustainable tree retention.

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Introduction

This report was commissioned by-
Crodaun Development Company Ltd.

This report has been prepared by-
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Report Brief

An Arboricultural report has been requested in respect of the proposed development. As “BS5837: 2012 Trees in Relation to Design, Demolition and Construction – Recommendations” is the broadly accepted frameworks for such reports, then its composition, inclusions and recommendations have been followed as a general basis for such reporting.

Report Context

This report comprises an Arboricultural review of the proposed development project. This includes an assessment of the sites existing tree population within its current context, as well as an assessment of their potential for sustainable retention in the post-development scenario and the likely effects and repercussions of the development and construction process upon those trees. It also provides information regarding the necessary tree protection and the avoidance of damage to trees during the construction process, necessary to achieve sustainable tree retention.

This assessment summarises the Arborists findings and recommendations, arrived at after reviewing the proposed project details as provided, and after an evaluation of trees as defined and described in the tree survey at “Appendix 2”. This report also includes a preliminary “Arboricultural Method Statement” at “Appendix 1” as well as a Tree Protection Plan that illustrates the requisite conservation and protection methodologies necessary to maintain tree sustainability. This report is not intended as a critique of the proposed development but is an impartial assessment of the development implications relating to the sustainable retention of trees, whether that be any, some or all trees. This report is for planning purposes only and may be deficient for construction phase use.

Report Limitations

This report relates the Arborists interpretation of information provided to him before the report compilation and gained by him 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 2" of this report. The findings and recommendations made within this report are compiled, based upon the knowledge and expertise of the inspecting Arborist.

The "Implication Assessment" element of the report builds on assumptions and estimates, particularly in respect of how construction works might proceed on a day to day basis and appreciates the "design" stage of the project, as opposed to "detail design" or "construction" detail. Many elements of the "Arboricultural Method Statement" are deliberately broad and generic. They will require review, amendment and consolidation at the construction stage, for example in respect of the size and nature of the equipment, plant and machinery 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 premised on all its elements/recommendations, and the omission or alteration of any part can radically alter outcomes in respect of sustainable tree retention.

Report Summary

this report has, during its undertaking of the tree survey, identified a diverse tree and vegetation population, typically orientated to its prior agricultural usage. The tree population tends to be dominated numerically by relatively young Ash and Sycamore, typically naturally arising from hedge thickets. Note is however made of a small number of larger, more mature trees, often dominated by oak typically noted along the western edge of the site.

In line with its typically young age, many of the younger trees tend to be of broadly good condition however, the survey has noted that many of the older trees exhibit evidence of decline, deterioration prior damage that may undermine sustainability and would require regular review over time.

The nature of the proposed development, its shape and form within the overall site space means that much of the site perimeter can remain undisturbed.

For this reason, tree, hedge and vegetation losses are minimal and typically restricted to site central field demarcation hedges, two hedgerow emergent trees and a single young tree located at the edge of the site and on the grass verge. Additionally, it is noted that the previously cut, scrub thicket located to the south-east of the site will be cleared and replaced with a new landscape scheme.

Site Description

The site is substantially agricultural in format, effectively comprising several adjoining fields. The vegetation with which this report arises tends to be associated with the boundaries of those fields.

The north-eastern eastern boundary of the site appears to be relatively young, having been planted possibly within the last decade. While the southern and western boundaries as well as the bisecting internal hedges that appear to be more historic in context. The land remains under agricultural use (grazing) and appears in the broader sense to be generally level. Whilst there was no direct evidence of waterlogging or standing water on the site at the time of the review, the land was wet, but this is likely to relate to recent heavy rainfall.

The site supports a number of topographical features of interest including two bisecting but effectively defunct ditches crossing the central portion of the site whilst the southern site supports a particularly deep stream cutting. Equally, there appears to be a drainage ditch and embankment scenario for the southern part of the western boundary plus the northern part comprises a notable embankment that divides it from the adjoining sports pitches.

Pre-Development Arboricultural Scenario

Tree survey review has revealed nothing of great interest and indeed a large proportion of quite mediocre and oftentimes, poor quality material. The exception to this would relate primarily to the site's western boundary where several mature Oaks exist. Unfortunately,

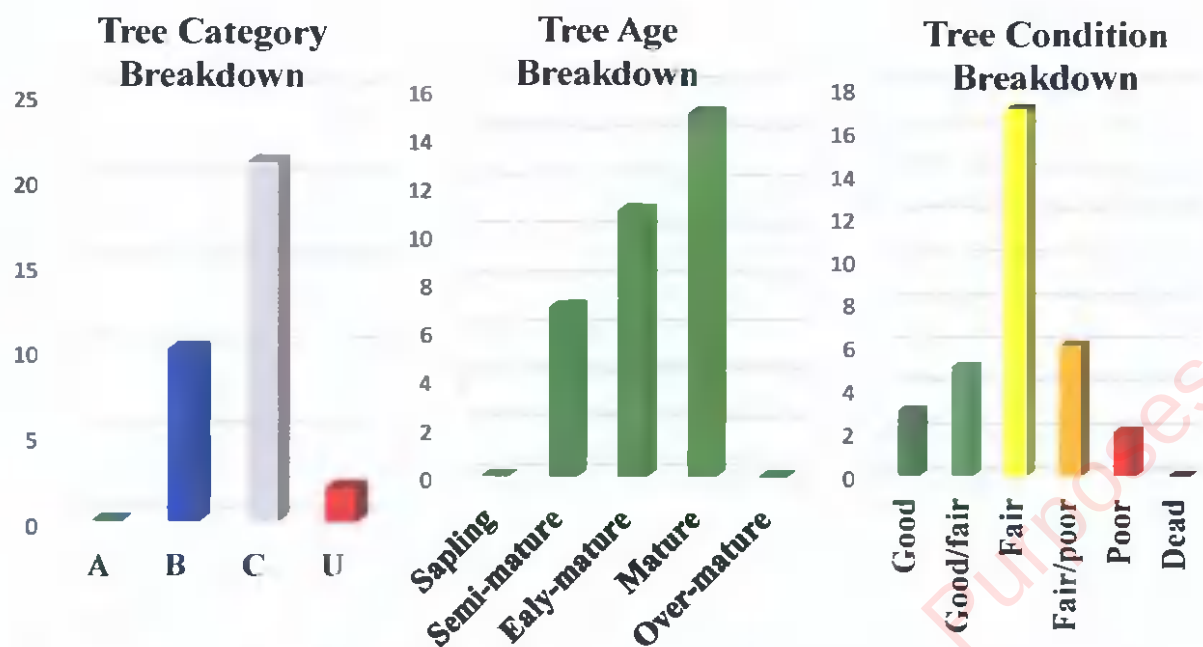
many of these trees tend to be in poor condition, many showing signs of widespread mechanical failure, others are showing signs of decline and deterioration. Many also are of peculiar form with canopy structures being asymmetric with stem sizes suggesting possible early life intervention and cutting or traumatic crown loss. Whilst this may not be an outright condemnation of tree conditions, it does raise concern in respect of the nature of the wound and any deterioration/decay having occurred since its being actioned. In this respect and in conjunction with the fact that many of these trees are wholly obscured by dense Ivy cover then some concerns remain.

Elsewhere on site, much of the tree population tends to relate to naturally arising and emergent young trees, typically including Ash and Sycamore. Many of these remain vigorous in line with their young age however, many are equally compromised by poor form, many being heavily divided or multi-stemmed, suggesting possible cutting or intervention in early life and re-suckering. Such specimens offer some degree of sustainability, that sustainability might be limited and therefore such trees might best be regarded in respect of their interim as opposed to long-term value.

The site supports several hedges, notable to the east of the site is a relatively recent addition including a planting of young trees and Hawthorn. The quality and nature of this belt is considered good and its retention would be considered well worthwhile if the retention context prove suitable. Elsewhere on site, the more historical Thorn based hedges are often of mediocre or poor quality. To the north-west of the site we see arguably the best quality with the northern portion of "Hedge 5" following close behind. Elsewhere, extreme variability and a diminution in the original Thorn content means that hedges tend to be sporadic and broken, with the original alignment often only being provided by Bramble thicket. Equally, and applicable to both "Hedge 5" and "Hedge 3", we note that the original drainage ditch appears to be defunct with the original ditch profile now being heavily eroded and intending to retain water creating a very buggy scenario about the hedge base

To the south of the site the cumulative effect of the roadside hedge and the north of stream thicket development is quite significant. Whilst a strong alignment of Thorn adjoining the road suggests an original Hawthorn hedge at this position, much of it has been usurped by emergent trees including Ash particularly, but together with Sycamore and Elm. Many of the elms are now being lost as result of Dutch Elm disease. To the north of the stream, there is far less evidence to suggest an original planting of the hedge and indeed, much of the material arises from an asymmetrical pattern and over a broad corridor to the south of what is the current electric fenced field margin. Much of this material is young and vigorous comprising typical thicket species including Hawthorn, Blackthorn, Bramble, Ivy, Hazel and Elder and is of small stature. Whilst apparently continuous across the entire southern boundary of the site, note is made that the thicket development north of the stream is of substantially poorer quality to the east of "Hedge 5" where prior intervention and cutting to facilitate the clearance of overhead power cables appears to have resulted in the removal of many trees and the Decapitation of those that remain meaning that much of the thicket development in this area comprises low level Bramble only with a number of sucker bearing stumps.

As can be seen from the graphs below, the site's tree population tends to be broadly older and this issue appears to reflect on a tree categorisation dominated by "C" grade trees. Nonetheless, the greater proportion of trees on site can be regarded as being of fair condition.



Construction Works and Likely Impacts

Crodaun Development Company Ltd intend to apply to An Bord Pleanála for permission for a strategic housing development on lands west of the Maynooth Rd (R405) and north of the Kilwoghan Stream running to the north side of Kilwogan Lane, Celbridge, Co. Kildare (c.12.93Ha).

The development will consist of a residential development consisting of 467 no. dwelling units (216 apartments, 199 houses and 52 duplexes) along with ancillary childcare facility (776sq.m), gym (320sq.m), café (123sq.m) and retail unit (119sq.m).

The residential units consist of the following:

216 no. apartments (184 no. 2 beds, 32 no. 3 beds) contained in 4 no. blocks to the east side of the site. (Blocks A, B, C & D), ranging from 5 to 6 storeys high. Blocks A, B & C have basement car parking. 251 no. houses and duplexes as follows:

20 no. 5 Bed semi-detached 3 storey houses

69 no. 4 Bed semi-detached 2.5 storey houses

23 no. 4 Bed terraced 3 storey houses

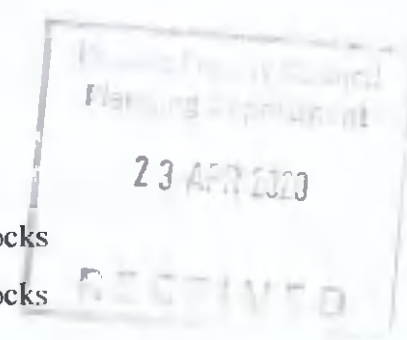
38 no. 3 Bed semi-detached 2 storey houses

49 no. 3 Bed terraced 2-storey houses

18 no. 1 Bed apartment units within 2.5 storey duplex blocks

26 no. 2 Bed apartment units within 2.5 storey duplex blocks

8 no. 3 Bed apartment units within 2.5 storey duplex block



The proposed ancillary childcare facility, gym, café and retail unit will all be located on the ground floor of apartment block D.

The proposed development includes the provision of a landscaped 2.068 ha. public park to the north.

All associated site and infrastructural works, including open space, landscaping, boundary treatment, roads, paths, cycle paths, car and cycle parking (including basement parking under the apartment blocks), foul and surface water drainage, 2 no. substations and 2 no. vehicular entrance/egress points off the Maynooth Road.

The application also involves works on lands in the ownership of Kildare County Council.

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 and access.

Site trees can readily be affected by one or more primary impacts including-

- 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. A change in site context or a change in occupation or use that makes a tree unsuitable for retention.

It is noted that the development proposals include features and structures within the nominal root protection areas associated with trees arising within and adjoining the site. Examples of this include various elements of the development proposals towards the West of the site where minor encroachments will be required on elements of hedging and some trees. Such encroachments are considered tolerable and whilst having the potential to affect longer term tree health, would not warrant tree removal at this time.

It will however be necessary to maximise tree protection and minimise tree encroachment during construction by positioning the tree protection fencing at the furthest possible position from trees/hedges to be retained and at a position as close as is practicably possible to the preferred root protection area margin.

Design Iterations and Arboricultural Considerations

This report relates to clause 4.4.2.1 of BS5837-2012 in that its finding relate to a predefined concept that was issues for review. Accordingly, the report assesses Arboricultural implications

and impacts of the proposals, making recommendations in respect of tree protection relating to those trees that might be retained and as outlined below.

Identification of Impacts

The review of likely Arboricultural implications is based upon the recommendations and criteria as defined within BS5837: 2012 Trees in Relation to Design, Demolition and Construction – Recommendations. The assessment attempts to consider both direct and indirect implications, based on construction requirements in respect of tree constraints, the effects of services provision and how these will affect tree retention. Additional considerations would include how trees will likely interact with the development over time in respect of growth, hazard development, light blockage and other social concerns in respect of the changing use of the space that supports the trees, including its effect on tree amenity value. The design process is also considered in respect of its adoption of potentially mitigating amendments, as well mitigation by way of new planting.

This report, its findings and recommendations have arisen from the scrutiny of development proposal drawings including architectural information in the form of AutoCAD drawing “19080-SIT-PLAN-0000_Draft 2020.02.24.dwg” and Engineering and drainage information in the form of drawing “P-1504-C-1000.dwg” and its associated “xrefs”. 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 it 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 “D2-AIA-Crodaun-03-20”, where trees denoted with “Broken Red” crown outlines will be removed and those denoted with “Continuous Green” crown outlines will be retained.

Arboricultural Implications of Proposed Development

The proposed development and its constituent parts, that are intended to comply with current development expectations and planning densities, require the unavoidable consumption of space to provide for the proposed apartment blocks, houses, access roads and

paths, as well as various other services and facilities. Accordingly, the development will result in the unavoidable loss of trees as outlined below.

Nonetheless, the fact that for much of its extent, the proposed development retains a margin about its edges means that all trees and hedges, excepting those located towards the centre of the site can effectively be retained. One exception to this involves the loss of one specimen from "Tree line 1" arising from the roadside margin to the east of the site.

Accordingly, it appears that the development impacts will be limited to the loss of "Hedge 3" and "Hedge 5", the punctuation of the mid-southern element and loss of the northern portion of "Hedge 1" and the loss of tree Nos.9 and 10 as well as the above mentioned single specimen of "Tree line 1".

The extent of tree planting envisaged across the site will in part mitigate the above losses. Details have been provided within the proposed landscape plans as provided by Kevin Fitzpatrick Landscape Architecture.

Tree Retention and Loss

The drawing "D2-AIA-Crodaun-03-20" 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 red dashed outlines.

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

The review area supports a total of 24No. individual trees and 9No. groups/hedges lines/groups, totalling some 33No. items, including

- 0 category "A" trees,
- 7No. category "B" trees, and 3No. groups/hedges
- 15No. category "C" trees and 6No. Groups/hedges
- 2No. category "U" trees.

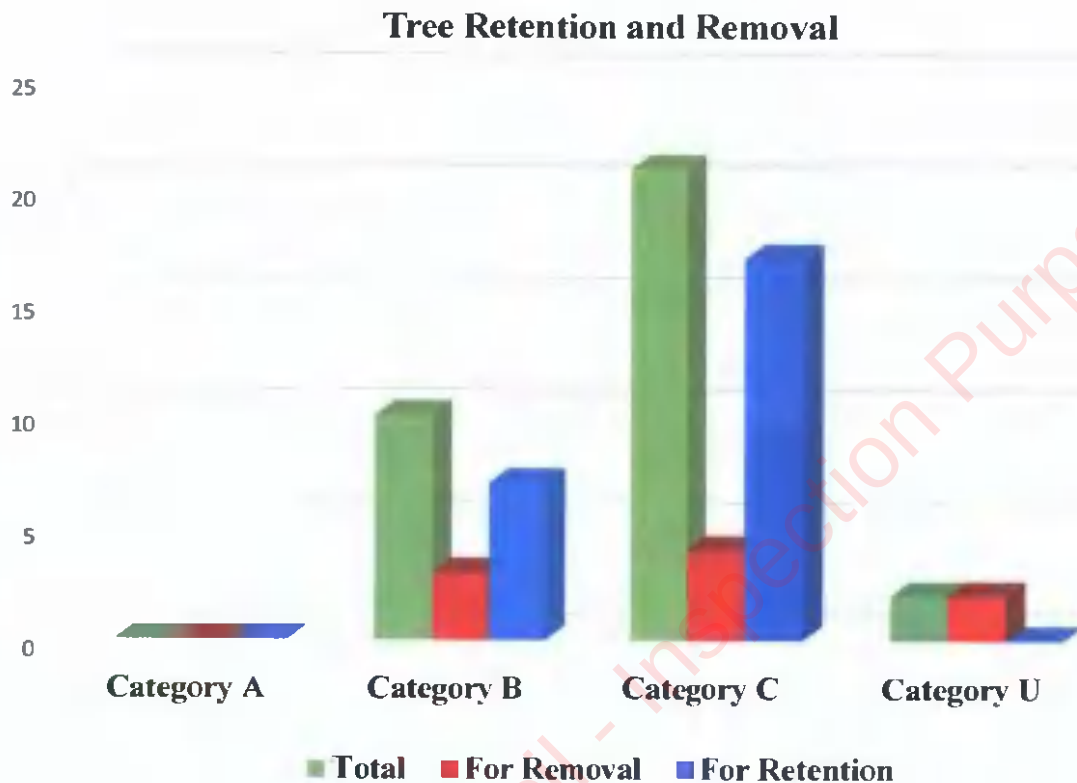
Normally, all category "U" trees will be removed (many need removal regardless of development) (Nos.2 and 7)

Of the site's "fair" quality, category "B" trees, the development works will require the removal of only one specimen of "Tree Line 1"

f the site's category "poor" quality "C" trees, the development works appears to require the removal of Nos. 9 and 10, as well as "Hedge 3" and "Hedge 5".

The tree loss breakdown for the site will be-

- 2No. Category U trees
- 1No. Category B tree, as well as part of “Hedge 1”
- 2No. category C trees, as well as “Hedge 3” and “Hedge 5”.



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 9, 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 “D3-TPP-Crodaun-03-20”.

In this drawing, the edges "Construction Exclusion Zone" is defined by the bold "Orange" lines that represent the proposed location of the primary protective "Construction Exclusion Fencing", with the "Orange" hatched area representing the primary "Construction Exclusion Zone".

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 and may require referral to a figured and dimensioned 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 Management Recommendations

Provided in the tree survey table (Table 1) are "Preliminary Management Recommendations". These recommendations relate to the trees as they existed at the time of the tree review and therefore and in line with the changing context of the site, such recommendations may no longer apply. Examples include where the felling of trees or other specific works are necessary to facilitate development requirements.

Many of the concerns raised in the tree survey relate to evidence suggesting mechanical failure to trees, ill-health or contextual issues that may continue to a point where a trees suitability for retention may change over time.

Additionally, the proposed development and particularly its unavoidable loss of trees will raise exposure and shelter loss issues in respect of those trees that will remain. For this reason, all retained trees should be reviewed immediately after the primary site clearance works with a view to updating and amending the "preliminary management recommendations" provided in the original tree survey and intending to address such issues as may arise. On an ongoing basis, all retained trees must be reviewed regularly so that early intervention and action is applied promptly.

Appendix 1 - 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 and tree protection on typical development sites. This statement intends to instruct and to advise regarding the execution of the proposed development works in a manner that will be least detrimental to the retained tree population.

Drawings

This Arboricultural Method Statement must be read with the associated "Tree Protection Plan" drawing, "D3-TPP-Crodaun-03-20". This drawing must be updated and confirmed for "Construction" stage purposes, for example by the inclusion of specific tree protection ranges and dimensions. Accordingly, and in respect of tree protection ranges from any tree, reference must be made to the root protection area radius as defined for that tree within the tree survey table.

Method Statement Use

This Method Statement should be used under the direct guidance of the project Arborist. As limited "construction stage" detail was available at compilation time then as site/project specific issues arise, and as new information becomes available, it may require amendment and adjustment to address project-specific issues.

Amendments and Modifications

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, that 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. 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.

Works Related Impacts

In respect of any necessary and unavoidable structures required within or entry into the "RPA" zone, all efforts must be made to minimise impacts. Aerial issues may require "access facilitation pruning" or clearance pruning. Subterranean works that require excavation must, by design, location and action, minimise impacts to trees. 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, may be required. All such works must be undertaken

under the guidance of the project Arborist who will advise on likely repercussions and necessary tree management issues.

Tree Works Specification Updates

It must 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, relate to a changing site context and may no longer be applicable, or may require modification to account for the changes that the built project will cause.

General Method Statement

Any 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 and Implementation

- 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 or access.
- 1.2 A review must be undertaken to identify any issues as may have arisen in respect of planning conditions or details as may have changed between the design stage and construction stage development details.
- 1.2 The project Arborist or another 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.
- 1.3 The tree constraints (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 by, and agreement with, the project Arborist.
- 1.4 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.
- 1.5 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) Works Sequence

- 2.1 No construction related works or mechanised site access will occur until the agreed level of tree protection, in accordance with the "Tree Protection Plan", is completed.
- 2.2 The only exception to the above will relate to the undertaking of tree works including tree felling and cutting as defined in the Arboricultural report.
- 2.3 The Project Arborist will oversee and liaise with the tree works contractor regarding the nature and extent of tree/woodland access to facilitate felling works.
- 2.4 On completion of the felling works, the tree management plan will be reviewed by the Project Arborist to address changed context, land use, rates of occupation and use and to account for potential impacts upon the newly built environment, thereby amending

- (if necessary) the “preliminary Management Recommendations” stipulated in the original Tree Survey.
- 2.5 Any revised pruning/cutting works will be agreed with the local authority and applied at the earliest possible opportunity.
 - 2.6 After the completion of primary tree clearance but prior to the commencement of construction works, all “Construction Exclusion” and “Protective” fencing must be erected and “signed-off” as complete by the Project Arborist.
 - 2.7 Only on completion of all construction works will any/all tree protective measures be removed, and only then 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 Project Arborist.
 - 2.8 At construction works completion stage, all retained trees will be reviewed regarding the condition and longer-term management recommendations and regarding site hand-over.

3.0) Tree Protection

- 3.1 All tree protection measures must be agreed, overseen and verified by the Project Arborist prior to works commencement and regarding maintenance for the duration of site works
- 3.2 Tree protection will be based upon drawings “D3-TPP-Crodaun-03-20” (Construction version) that relates to all trees for retention, as well as the location of all tree protection measures.
- 3.3 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.
- 3.4 If entry into the “RPA” (Root Protection Area) zones becomes unavoidable, ground protection systems agreed with the project Arborist, that allow for the relocation of the “Construction Exclusion Fencing”, will provide for an extension of accessible ground space.
- 3.5 All construction, works or access areas must be enclosed and defined by protective fencing, this comprising the “Construction Exclusion Zone”
- 3.6 Such a fence must be fit for purpose and commensurate with the nature of activity expected upon the site and should be 2.00 metres in height, constructed of robust materials and be suitably braced to withstand impact and may include sheet panels attached to timber posts or weld-mesh panels supported upon a scaffold bar system. All footings must be firm and immobile and must not use mobile rubber or cement footings, (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)
- 3.7 The fence should be affixed with notification signs such as “TREE PROTECTION AREA - KEEP OUT”
- 3.8 Where applicable, structures such as “lock-ups”, offices or other temporary site building, not requiring excavation or underground ducting, might be positioned such as to comprise part of the “Construction Exclusion Zone” fencing. All remaining fencing must be continuous with such features and effectively prevents access to protected ground.
- 3.9 No amendment, alteration, relocation or removal of the tree protection fencing shall occur without prior liaison and approval from the Project Arborist.

4.0) Provision of Ground Protection (If Required)

- 4.1 No vehicular/mechanised access whatsoever will be allowed onto unprotected ground.
- 4.2 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.
- 4.3 Any system utilised must effectively spread load-weight, avoid compaction, maintain drainage/percolation/aeration and be installed in a manner that avoids these issues.
- 4.4 Newly provided access will be strictly limited to the area of the new structure
- 4.5 Where proprietary ground protection systems are utilised, it is imperative that the manufacturer's specifications and recommendations are adhered to in full regarding the provision and installation of this type of ground protection.
- 4.6 Protection installation will require a progressive laying down of ground protection, with previously laid material providing vehicular access to the next zone will be accepted as an approved methodology.

5.0) Works within "RPA" Zone

- 5.1 Only works and construction practices, agreed with the Project Arborist prior to commencement, will be allowed in the "RPA" area.
- 5.2 The "RPA" zone associated with all retained trees must be protected from the effects of construction works.
- 5.3 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.
- 5.4 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.
- 5.5 Preference must be given to manual labour and techniques within the fenced "RPA" zone.
- 5.6 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.

6.0) Service Installation

- 6.1 The "Project Arborist" must be consulted for advice and procedural recommendations, in respect of any installation of services within or requiring entry into the "Root Protection Area" of any tree intended for retention.
- 6.2 Any such works found to be unavoidable, 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)
- 6.3 No open trenching will be allowed. All works must be commensurate with the preservation of the affected tree root system.
- 6.4 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.

- 6.5 All works carried out within the “RPA” zone or “Construction Exclusion Zone” must be agreed with and supervised by the Project Arborist.

7.0) Tree Management and Works

- 7.1 All tree works should be undertaken under the guidance of the project Arborist
- 7.2 The primary site clearance and felling should be undertaken at the earliest stage of the overall development works, to enable the re-assessment of all ostensibly retainable trees in respect of possible amendments to the “Preliminary Management Recommendations” and to account for context changes and construction access and/or other issues coming to light.
- 7.3 All Tree Works must adopt safe work procedures and must be undertaken by staff suitably trained for the purpose at hand and compliant with all legislative, safety and insurance requirements.
- 7.4 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.
- 7.5 All additional works will be agreed with the local authority and/or other stakeholders and applied at the earliest possible opportunity.
- 7.6 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.
- 7.7 On completion of site works, the retained tree population will be reviewed and re-evaluated regarding its ongoing condition and the likely requirements of any ongoing or future monitoring or management needs.

8.0) Demolition

- 8.1 All demolition procedures must be agreed and overseen by the Project Arborist or other suitably skilled staff to monitor for damage and to protect exposed roots/cut-trim exposed roots/oversee backfilling of exposed roots.
- 8.2 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.
- 8.3 Care will be taken to avoid damage to soil volumes beneath and adjoining demolished structures that may contain tree root material.
- 8.4 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.
- 8.5 Where tree(s) 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).
- 8.6 Underground structures (services etc.) within the “RPA” zone should be reviewed with regards to decommissioning and retention in situ in the interest of avoiding tree damage.
- 8.7 Preference should be given to the retention existing sub-bases where hard surfaces are removed, particularly if the hard surface is to be replaced.

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.
- 9.11 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.
- 9.12 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.

Appendix 2 - Tree Survey

Nature of Survey

The criteria put forward in “BS5837:2012 – Trees in Relation to Design, Demolition and Construction – Recommendations” have provided a basis for this report.

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 relates to a “do nothing” or “as is” scenario and intends to provide an impartial representation of the sites tree population, regardless of any possible development works. 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 its preliminary management recommendations and in some instances, may require the re-classification of a tree’s suitability for retention.

Drawing References

The survey must be read with the “Tree Constraints Plan” drawing “D1-TCP-Crodaun-03-20” regarding the representation of tree positions, crown forms, “RPA” extents and colour reference to category systems. Trees omitted from the supplied drawing may be “sketched in” to “D1-TCP-Crodaun-03-20”. Any such trees should be located and plotted by professional means to identify the constraints such trees have upon the site.

A green coloured outline represents each tree crown. It is 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 see below) denoted as a dashed orange circle.

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 by the four cardinal compass point radii (Sp: R in survey Table 1). Secondly, and following paragraphs 4.6.1, 4.6.2 and 4.6.3 of BS5837: 2012, we represent each tree’s “Root Protection Area” (RPA). For design purposes, it approximates the position of the tree protection fencing to be erected before 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 “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 are provided to advise regarding the design and layout of a proposed development.

Survey Intent and Context

This document intends to highlight the extent and nature of the material of Arboricultural interest on the site in question.

Survey Data Collection and Methodology

The Survey

The original survey was carried out in October 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 compilation of this survey was guided by the recommendations of BS 5837: 2012. This survey typically includes trees of stem diameters exceeding 150mm at approximately 1.50 metres from ground level. The survey relates to current site conditions, setting and context.

Each tree in the survey has been afforded a consecutive number that relates directly to the survey text. 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 tree's size and form. While 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. 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.

A competent and experienced Arborist has completed all inspection and tree assessment. 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. 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. 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 original survey was carried out during the autumn 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 limited longevity or maybe 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. Works considered as urgent will be noted.

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.

Category U.....

Typically relates to trees that are dead, dying or dangerous. Such trees may present a threat or 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 are further subdivided regarding the nature of their values or qualities.

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.

Table 1 – Tree Data Table

No.	Species	Age	Con	Ht	CH	N	E	S	W	Stm	Dia	RPA	Structural Condition	PMR	Yrs	Cat
1	Ash (<i>Fraxinus excelsior</i>)	E/M	F	11.00	1.00	4.50	4.50	4.50	4.50	5	471	5.65	Multi-stemmed from low levels creating impaired mechanical form. Crown appears vigorous.	Review regarding retention context.	M	C2
2	Oak (<i>Quercus robur</i>)	M	P	17.00	2.50	5.00	5.00	4.50	4.50	1	1038	12.45	In an advanced state of decline and deterioration with widespread dieback throughout crown. Lower stem exhibits visually obvious element of decay and cavity development. Is unsuitable for retention in areas of increased use or occupation.	Remove.	N/A	U
3	Ash (<i>Fraxinus excelsior</i>)	S/M	F	9.00	2.00	4.00	4.50	3.50	4.00	1	430	5.16	Distorted but remains vigorous.		M	C2
4	Ash (<i>Fraxinus excelsior</i>)	E/M	G/F	11.00	3.00	4.00	4.50	4.50	4.00	1	471	5.65	Vigorous but multi-stem from low level.	Review regarding retention context.	M	B2
5	Oak (<i>Quercus robur</i>)	M	F	19.00	2.50	11.00	12.00	12.00	11.00	1	1101	13.22	A large, spreading specimen of reasonable but variable crown vigour. Entire stem and middle crown region are obscure by dense Ivy cover however, evidence of both deadwood development, dieback and storm damage is visible.	Cut Ivy and rereview.	L	B1-2
6	Oak (<i>Quercus robur</i>)	M	F	12.00	2.00	5.00	5.00	4.50	4.50	1	844	10.12	Squat and suppressed but appears be maintaining reasonable vigour and vitality. Crown supports some deadwood with ivy development on principal stem.	Cut Ivy and cleanout. Rereview	L	B2

No.	Species	Age	Con	Ht	CH	N	E	S	W	Stm	Dia	RPA	Structural Condition	PMR	Yrs	Cat
7	Oak (<i>Quercus robur</i>)	M	P	10.00	2.00	3.00	4.00	2.50	2.00	1	770	9.24	Appears to comprise a remnant of a once larger tree with much of crown now lost. Remaining stump and crown form cannot be reviewed because of Ivy cover. Tree appears to be a particularly poor quality and is unlikely to be sustainable.	Cut Ivy and rereview.	N/A	U
8	Oak (<i>Quercus robur</i>)	M	F/P	16.00	2.25	6.00	12.00	8.00	7.00	1	1130	13.56	Squat and spreading, highly suggestive of having lost its crown apex. Middle crown is heavily obscured by dense Ivy cover, preventing detailed review at present. Vigour and vitality are variable with notable deadwood developer throughout crown suggesting potential pathological issues.	Cut Ivy, cleanout and rereview regarding ongoing suitability for retention within developed context.	M	C2
9	Ash Group (<i>Fraxinus excelsior</i>)	S/M	F	8.00	2.00	3.50	3.50	3.50	3.50	1	462	5.54	Young and vigorous though compromised by multi-stem stature from ground level. Appears to be arising naturally from original hedge thicket profile.		M	C2
10	Ash (<i>Fraxinus excelsior</i>)	S/M	F/P	7.50	2.25	3.00	3.00	3.00	3.00	3	430	5.16	Appears to comprise sucker regeneration from stump of previous tree. Is of reduced vigour raising concerns regarding sustainability.		M	C2
11	Oak (<i>Quercus robur</i>)	M	F	16.00	3.00	7.00	7.00	7.00	7.50	1	1041	12.49	Large, spreading specimen of variable crown vigour with deterioration noted about southern crown. Middle crown is wholly obscure by dense Ivy cover that effectively prevents detailed review at present. Crown supports a visually obvious deadwood and evidence of localised storm damage.	Cut Ivy and cleanout. Re-review subsequent to Ivy shedding and on regular basis with regard to possible retention.	M	C1-2

No.	Species	Age	Con	Ht	CH	N	E	S	W	Stm	Dia	RPA	Structural Condition	PMR	Yrs	Cat
12	Oak (<i>Quercus robur</i>)	E/M	F	8.50	1.50	5.00	5.00	2.50	4.50	1	398	4.77	Squat suppressed and unbalanced. General vigour and vitality appear good though much of crown is obscured by dense Ivy cover.	Cut Ivy and rereview.	M	B2
13	Oak (<i>Quercus robur</i>)	M	G/F	16.00	2.50	5.50	5.00	6.00	6.00	1	1089	13.06	Broad and spreading, divided from low level. Canopy form appears disproportionate to stem, suggesting possible early life dramatic failure and crown loss, followed up by crown rejuvenation and re-suckering. Middle crown is heavily obscured by Ivy cover preventing detailed review.	Cut Ivy and rereview.	M	C1-2
14	Ash (<i>Fraxinus excelsior</i>)	E/M	G	13.00	2.00	4.00	4.00	1.00	4.00	1	439	5.27	A young and vigorous specimen compromised by proximity to power cables and having had southern canopy removed to provide minimum clearance. Tree is now unbalanced to North. Tree sustainability may relate to overhead power cables.		M	C2
15	Oak (<i>Quercus robur</i>)	M	G/F	17.00	3.00	6.00	7.00	7.00	6.00	1	993	11.92	Tree appears to be in reasonable health though does support some deadwood that may be indicative of pathological issues. Much of primary stem and middle crown is obscured by developing Ivy cover. Activity from burrowing animals at north-eastern stem base suggests potential for hollowed near ground level.	Cut Ivy and cleanout. Review with regard retention context and on regular basis.	M	C1-2
16	Sycamore (<i>Acer pseudoplatanus</i>)	M	F	16.00	2.50	5.00	7.00	6.50	5.50	1	929	11.15	A broad and spreading specimen whose middle and higher canopy appears disproportionate from stem suggesting possible early life decapitation. Dense Ivy cover prevents detailed review.	Cut Ivy and rereview.	M	C2

No.	Species	Age	Con	Ht	CH	N	E	S	W	Stm	Dia	RPA	Structural Condition	PMR	Yrs	Cat
17	Sycamore (<i>Acer pseudoplatanus</i>)	E/M	F	14.00	5.00	5.00	3.00	3.50	3.00	3	420	5.04	Tall and drawn-up because competition by near neighbours. Arises from a position adjoining lower embankment of stream.	Review regarding retention context.	M	C2
18	Sycamore (<i>Acer pseudoplatanus</i>)	S/M	F	12.00	3.00	3.50	2.50	3.00	2.00	2	229	2.75	Slender and drawn up because competition by near neighbours. Comprises typical element of adjoining woodland thicket.		M	C2
19	Wild Cherry (<i>Prunus avium</i>)	E/M	F	12.00	2.00	4.50	5.00	4.00	3.00	3	462	5.54	Young and vigorous, arising as typical element of boundary thicket.		L	B2
20	Sycamore (<i>Acer pseudoplatanus</i>)	M	G/F	15.00	2.50	6.50	4.00	7.00	6.50	2	910	10.92	Of distorted form because of proximity to near neighbours. Secondary stem extends notably to north. Middle crown is obscured by developing Ivy cover though general vigour and vitality appears good.		L	B2
21	Sycamore (<i>Acer pseudoplatanus</i>)	M	G/F	18.00	5.00	7.00	5.50	5.00	5.00	2	1025	12.30	A close-knit group including primary stem to East and secondary stem to west, combining to create a singular crown form. General vigour and vitality appear good though Ivy development is obscuring stems from view. Principal tree to east has suffered extensive prior storm damage.	Cut Ivy and cleanout. Review with regard retention context.	M	C2
22	Sycamore (<i>Acer pseudoplatanus</i>)	E/M	F	13.00	2.00	4.00	5.00	4.50	3.00	5	548	6.57	The cumulative group including multiple stems. Is generally young and remains vigorous though is suppressed by larger neighbours.	Cut Ivy and rereview.	M	B2

No.	Species	Age	Con	Ht	CH	N	E	S	W	Stm	Dia	RPA	Structural Condition	PMR	Yrs	Cat
23	Ash (<i>Fraxinus excelsior</i>)	S/M	F/P	11.00	1.50	4.00	4.00	4.00	4.00	1	379	4.55	A once slightly taller tree has suffered traumatic failure of principal stem with crown splitting and primary stem being caught within remaining crown. Sustainability is impaired and tree would require extensive structural pruning for retention in area of high use or occupation.		M	C2
24	Ash (<i>Fraxinus excelsior</i>)	E/M	F	13.00	1.00	1.00	2.00	3.50	3.00	1	420	5.04	Young and still vigorous but heavily cut on northern side to facilitate minimum clearance from overhead power lines.		M	C2

Tree Lines and Hedges

H1	Hedge 1 Hawthorn (<i>Crataegus monogyna</i>) Bramble (<i>Rubus fruticosus</i>) Ivy (<i>Hedera helix</i>) Dog Rose (<i>Rosa canina</i>) Sycamore (<i>Acer pseudoplatanus</i>) Oak (<i>Quercus robur</i>)	S/M	G	3.50-9.00	0.00	Spread 4.00	m/s	239	2.86	A relatively young and recently planted hedge, dominated by Hawthorn at lower levels but supporting a young, typically healthy and vigorous emergent tree population. Trees are still relatively small, most being between 6.0080 m in height and accordingly tend to be of good general health. There potential for growth over time is considered immense because of their current young age. Continuity within the lower level hedge is good with evidence of recent clipping to circa 2.50 m on road side of hedge stop	L	B2
H2	Hedge 2 Hawthorn (<i>Crataegus monogyna</i>) Bramble (<i>Rubus fruticosus</i>) Ivy (<i>Hedera helix</i>) Dog Rose (<i>Rosa canina</i>) Hazel (<i>Corylus avellana</i>) Ash (<i>Fraxinus excelsior</i>) Sycamore (<i>Acer pseudoplatanus</i>)	M	F/P	5.00-7.00	0.00	Spread 4.00-8.00m	m/s	207	2.48	The original hedge appears to be associated with the raised earth and embankment that appears to extend to more than 1.00 m above adjoining playing field levels to West. The original hedge appears to comprise a historic field boundary hedge, originally dominated by Hawthorn but now, through invasion by other species is broadly mixed with the Hawthorne no longer being the dominant species. Continuity is variable but broadly good with only a few gaps occurring, where little more than Bramble at lower levels provides any degree of continuity. Ivy is troublesome throughout the alignment, often dominating the supporting plants. Health is equally variable throughout the tree/shrub population with evidence suggesting some localised elements of decline.	I	C2

H3	Hedge 3 Hawthorn (<i>Crataegus monogyna</i>) Blackthorn (<i>Prunus spinosa</i>) Bramble (<i>Rubus fruticosus</i>) Ivy (<i>Hedera helix</i>) Dog Rose (<i>Rosa canina</i>) Elder (<i>Sambucus nigra</i>) Ash (<i>Fraxinus excelsior</i>)	M	F/P	1.00-5.00	0.00	Spread 4.00-6.00m	m/s	223	2.67	A poor quality and often discontinuous hedge apparently arising from the northern side of a substantially eroded ditch profile. The original Hawthorn content is now discontinuous and broken at numerous points with best continuity been provided for by Bramble thicket only. Whilst there is some potential for hedge retention, removal of spurious and weed species such as Bramble will see it take on a sporadic alignment of individual trees as opposed to a true hedge line.	L	C2
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ST	Streamside Thicket Sycamore (<i>Acer pseudoplatanus</i>) Ash (<i>Fraxinus excelsior</i>) Elder (<i>Sambucus nigra</i>) Hawthorn (<i>Crataegus monogyna</i>) Blackthorn (<i>Prunus spinosa</i>) Dog Rose (<i>Rosa canina</i>)	E/M	F	4.00-10.00	0.00	Spread Contiguous	m/s	223	2.67	Streamside thicket. Sycamore, ash, elder, Hawthorne, dog rose, Blackthorn, a highly variable and apparently naturally arising thicket, associated with the northern bank of the stream. Only a small number of Hawthorne's exist suggesting that this may not have been a Thorn based hedge alignment but moreover that the vegetation noted to date has arisen as natural thicket development. Accordingly, Hawthorne is not dominant and indeed, elder and Blackthorn would account for the greater proportion of the population. Continuity is highly variable and presumed to be associated with its natural arising. The alignment is not symmetrical and whilst a large proportion of the material arises from the raised embankment north of the stream, much arises from positions some metres north of this again. In comparison to the western section of Hedge 5, the eastern section is substantially poorer, supporting far fewer specimens and exhibiting evidence of far more dramatic decapitation and removal to facilitate minimum clearances for overhead power cables. In this respect, a large proportion of this area comprises little more than low level Bramble thicket with sucker regeneration from the stumps of previously decapitated trees. Accordingly, the material north of the stream in this area is considered particularly poor and of dubious significance in respect of potential for retention.	M	C2
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H4	Hedge 4 Hawthorn (<i>Crataegus monogyna</i>) Blackthorn (<i>Prunus spinosa</i>) Bramble (<i>Rubus fruticosus</i>) Ivy (<i>Hedera helix</i>) Dog Rose (<i>Rosa canina</i>) Elder (<i>Sambucus nigra</i>) Ash (<i>Fraxinus excelsior</i>)	M	F/P	5.00-7.00	0.00	Spread 4.00-8.00m	m/s	207	2.48	This is effectively a continuation of "Hedge 2" and is highly similar in nature, however, continuity is poorer with the greater number of gaps bridged only by Bramble.	M	C2
H5	Hedge 5 Hawthorn (<i>Crataegus monogyna</i>) Blackthorn (<i>Prunus spinosa</i>) Bramble (<i>Rubus fruticosus</i>) Ivy (<i>Hedera helix</i>) Dog Rose (<i>Rosa canina</i>)	M	F	2.00-5.00	0.00	Spread 5.00-8.00m	m/s	223	2.67	Originally comprising a Thorn hedge apparently growing on the eastern side of a now heavily eroded ditch profile. Whilst many of the original hawthorns remain, there continuity is particularly poor with lower level. Bramble dominated thicket accounting for much of the hedges overall continuity. Nonetheless, the remaining thorns tend to be of reasonable health status and condition, notwithstanding erosion and lower stem damage as a result of the passage of livestock. The hedge tends to be of improving condition as one progresses in a northerly direction along its length.	M	C2

TL1	Tree Line 1 Hornbeam (<i>Carpinus betulus</i>)	S/M	G	5.00	0.50	Spread 3.00m	1	175	2.10	A regular alignment of Hornbeam, installed as part of the road development scheme, located adjoining a combined foot/cycle path and within the context of a grasp margin that slopes from the elevated levels of the road towards field levels at circa 600-700 mm millimetres below. Trees remain semimature, of typically small stature and accordingly tend to be of good health. There is minor asymmetry between specimens are not to an extent that would require replacement. Note has been known of physical damage, particularly about lower stem is considered likely to relate to grass cutting activities.	L	B2
TL2	Tree Line 2 Leyland Cypress (<i>Cupressocyparis leylandii</i>)	E/M	F	15.00	3.00	Spread 8.00m	1	430	5.16	A contiguous alignment of Leyland cypress arising from position to west of apparent boundary line and that appear to be associated with the edge of the adjoining sports pitches. General vigour and vitality is good however, concerns arise in respect of known sustainability issues as well as trustworthiness in respect of predisposition towards storm damage at maturity. Though suitable for retention at present, it is likely that these trees will deteriorate and raise management and potential safety issues within the short to medium term.	M	B2

RII	Roadside Hedge Sycamore (<i>Acer pseudoplatanus</i>) Ash (<i>Fraxinus excelsior</i>) Hawthorn (<i>Crataegus monogyna</i>) Blackthorn (<i>Prunus spinosa</i>) Bramble (<i>Rubus fruticosus</i>) Ivy (<i>Hedera helix</i>) Dog Rose (<i>Rosa canina</i>) Cotoneaster (<i>Cotoneaster Sp</i>)	E/M	F	3.50-6.00	0.00	Spread 4.00-7.00 contiguous	m/s	223	2.67	The embankment above the road edge appears to support a Hawthorne alignment, though it is unclear whether this is historic or reinstalled. The embankment to the roadway exhibit evidence of relatively recent disturbance and reconstitution, particularly at its easternmost end. Any original hedge is now joined and mixed with a notable emergent tree population typically involving ash but also including Sycamore, Beech and Wych Elm. Unfortunately, and as a result of the widespread effect of Dutch Elm disease, a majority of the elms are already exhibiting evidence of Dutch Elm disease with a substantial proportion being completely dead already. The emergent tree population tends to be young and accordingly is quite vigorous. It's quality is undermined by mechanical issues, with many specimens being multi-stemmed, suggesting early life decapitation and subsequent re-suckering. Nonetheless, such trees may provide a tangible retention life even if it would be preferable to see them replaced with better quality stock over time. The hedge like thicket is highly variable ranging from low level scrub thicket dominated by Bramble and Blackthorn only through to higher hedges, often attaining 5.00-6.00 metres through to the higher levels of emergent semimature ash some of which attain 10.00 and 11.00 m. This element of boundary is considered physiologically detached from the site and any actions or activities as occur there by the adjoining stream watercourse that will act as a barrier to any potential root trespass in a northerly direction. The southern boundary thicket includes several which elms, many of which exhibit evidence of Dutch Elm disease and some of which have already died. This belt of trees is considered to be physiologically detached from the adjoining roadway to the south by the existence of the stream. In this respect the stream was acted as a natural barrier to root development with all routine potential and capacity being limited to the northern bank of the stream only.	M	C2
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This Drawing Must Be
Read in Conjunction with
the "Arboricultural Method
Statement" at "Appendix 1"
of the Associated
Arboricultural Report

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D3-TPP-Crodaun-03-20 1/1 Scale 1:1000 @ A1

This is a colour coded drawing that will be difficult or impossible to interpret if reproduced in black and white

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- Location Of Primary Construction Exclusion Fencing
- Area Of Primary Construction Exclusion Fencing

- Tree Line
- Hedges
- Scrub and Thicket

- Category "A" Trees (Green Button)
- Category "B" Trees (Blue Button)
- Category "C" Trees (Gray Button)
- Category "U" Trees (Red Button)

Graphic Representation of Tree and Protection Zone

Canopy Extent
Cardinal Radii
Category Code
Stem Circumference

Root Protection Area (RPA)

Canopy is drawn to account for any natural asymmetry or imbalance. Crown Representation is scaled to account for north, east, west and south radii.

Root Protection Area (RPA)
This area indicates the "RPA" radius as defined in the Tree Survey Table and is measured from the tree centre. This area defines the preliminary Construction Exclusion Zone (CEZ) that must be protected by fencing from the potentially damaging effects of construction activity.

Client: Crodaun Development Company Ltd.

Scale: 1:1000 Date: March 2020

Project: Tree Survey, SHD application, Crodaun, Celbridge, Co Kildare.

Description: Tree Protection Plan

Drawing Title: D3-TPP-Crodaun-03-20



23 APR 2020
REC IV-D

This Drawing Must Be
Read in Conjunction with
the Associated
Arboricultural Report

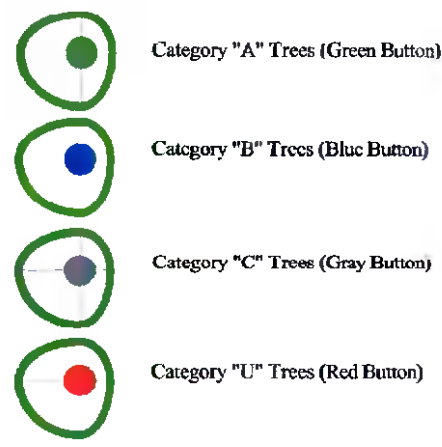
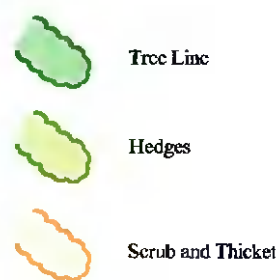
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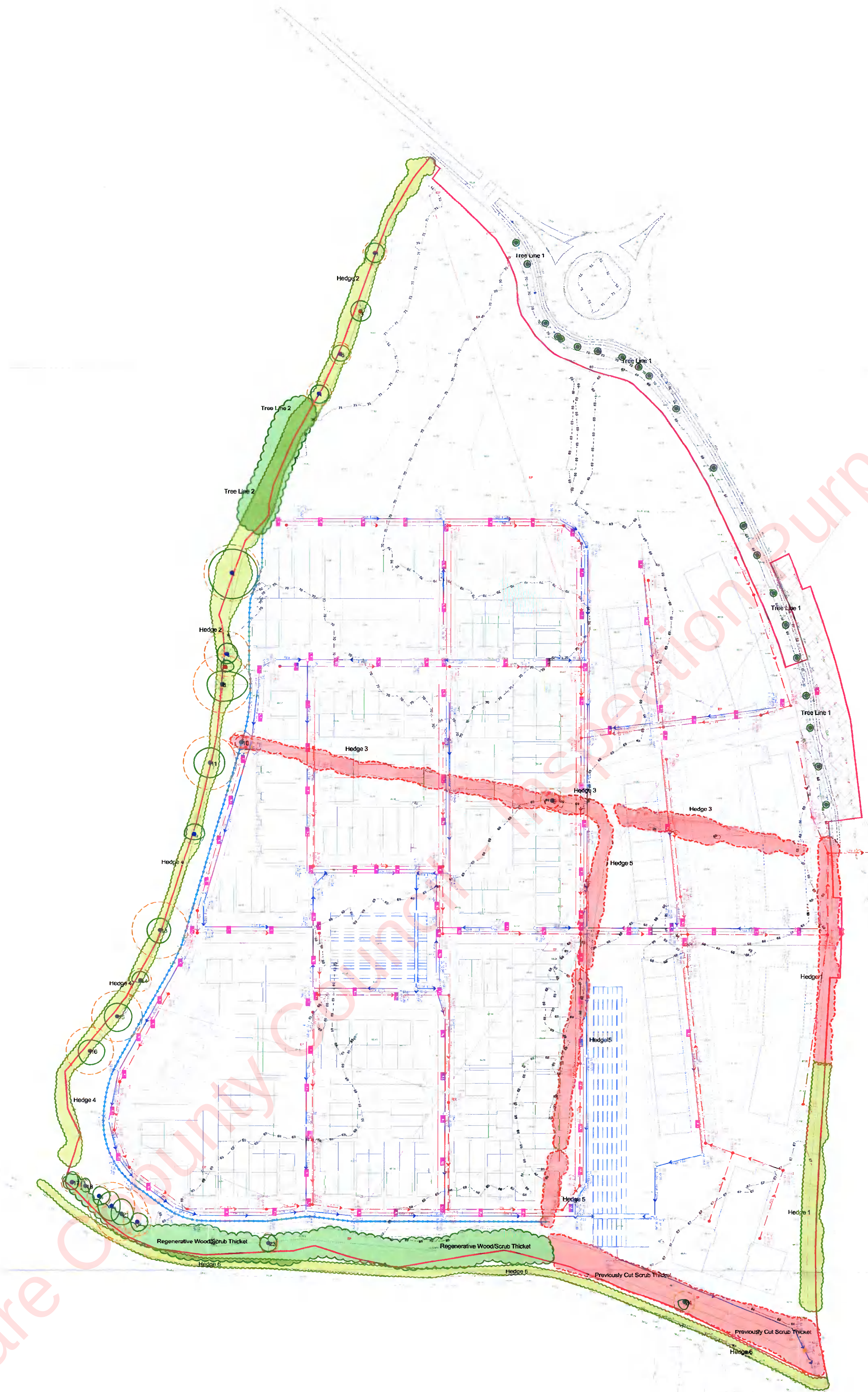
Graphic Representation of Tree and Protection Zone

Canopy Extent
Cardinal Radii
Category Code
Stem Circumference

Canopy is drawn to account for any natural asymmetry or imbalance. Crown Representation is scaled to account for north, east, west and south radii.

Root Protection Area (RPA)
This area relates the "RPA" radius as defined in the Tree Survey Table and is measured from the tree centre. This area defines the preliminary Construction Exclusion Zone (CEZ) that must be protected by fencing from the potentially damaging effects of construction activity.

Client: Crodaun Development Company Ltd.
Scale: 1:1000 Date: March 2020
Project: Tree Survey, SHD application, Crodaun, Celbridge, Co Kildare.
Description: Tree Constraints Plan
Drawing Title: D1-TCP-Crodaun-03-20



This Drawing Must Be
Read in Conjunction with
the Associated
Arboricultural Report

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D2-AIA-Crodaun-03-20 1/1 _ Scale 1:1000 @ A1

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- Trees Intended for Retention - Solid Green Crown Outline
- Trees Intended for Removal In Conjunction With Development Works - Broken Red Crown Outline
- Tree Line, Hedge, Scrub and Thicket for Removal

- Tree Line
- Hedges
- Scrub and Thicket

- Category "A" Trees (Green Button)
- Category "B" Trees (Blue Button)
- Category "C" Trees (Gray Button)
- Category "U" Trees (Red Button)

Graphic Representation of Tree and Protection Zone

Canopy Extent
Cardinal Radii
Category Code
Stem Circumference

Root Protection Area (RPA)

Canopy is drawn to account for any natural asymmetry or imbalance. Crown Representation is scaled to account for north, east, west and south radii.

Root Protection Area (RPA)
This area relates to the "RPA" radius as defined in the Tree Survey Table and is measured from the tree centre. This area defines the preliminary Construction Exclusion Zone (CEZ) that must be protected by fencing from the potentially damaging effects of construction activity.

Client: Crodaun Development Company Ltd.
Scale: 1:1000 Date: March 2020
Project: Tree Survey, SHD application, Crodaun, Celbridge, Co Kildare.
Description: Tree Impacts Plan
Drawing Title: D2-AIA-Crodaun-03-20