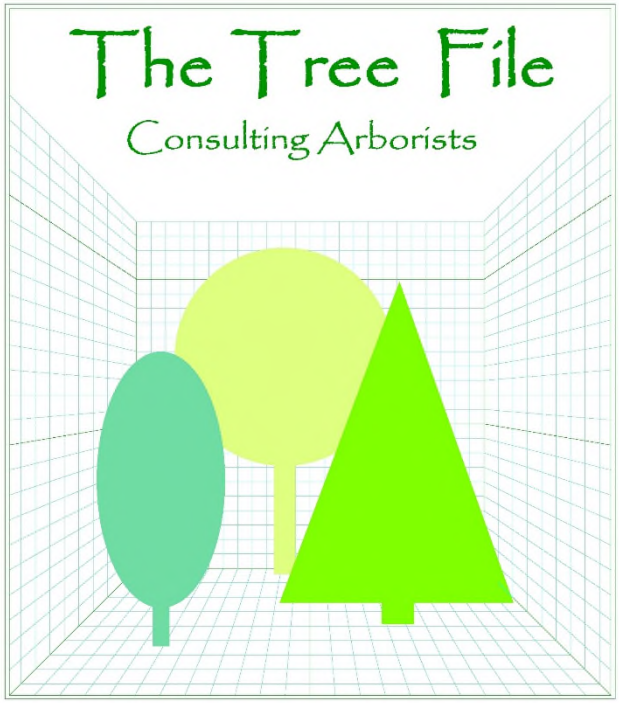

Arboricultural Report

Trees at Proposed Site at
Cooldown Commons Phase 3
Citywest
Dublin 24

May 2021

The Tree File Ltd
Consulting Arborists
Ashgrove House
Kill Avenue
Dun Laoghaire
Co Dublin
01-2804839

Contents

Associated Drawings

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

	Drawing Title	Drawing Subject
1)	**Cooldown Commons Tree Constraints Plan**	**Tree Constraints Plan** A plan depicting the predevelopment location, size, calculated constraints, and simplified tree quality category
2)	**Cooldown Commons 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)	**Cooldown Commons 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.

1 Report Summary

1.1 Much of the proposed site is devoid of any larger vegetation, with the only trees on the site being limited to its southern edge, adjoining the LUAS station.

1.2 This report relates to 6 no. Young London Plane. The trees are in reasonable condition and would offer reasonable sustainability if protected from the potentially injurious effects of the proposed works.

1.3 It is advised that tree protection should comprise simple “construction exclusion” type fencing, erected prior to the commencement of works and retained in situ until all works are complete. A schematic representation of the tree protection has been provided in the drawing “Cooldown Commons Tree Protection Plan”.

1.4 Note should be made that the trees involved, London Plane, have the potential to become particularly large in time. This may have repercussions on the adjoining landscape in respect of stem and root growth, as well in respect to aerial encroachment, for example on the JUAS line and its infrastructure.

2 Introduction

2.1 This report was commissioned by-
Cairn Homes Properties Ltd.
7 Grand Canal
Grand Canal Street Lower,
Dublin 2
D02KW81

This report has been prepared by-
Andy Worsnop Tech Arbor A, NCH Arb (PTI LANTRA)
The Tree File Ltd
Ashgrove House
Kill Avenue
Dun Laoghaire
Co Dublin

Report Brief

2.2 An updated 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 accepted frameworks for such reports, then its composition, inclusions and recommendations have been followed as a general basis for such reporting.

Report Context

2.3 This report includes a 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.

2.4 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

2.5 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.

2.6 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.

2.7 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.

2.8 Accordingly, this assessment is premised on all its elements/recommendations, and the omission or alteration of any part of it, particularly the application of tree protection methodologies, can radically alter outcomes in respect of sustainable tree retention.

3 Site Description

3.1 The site in question comprises an irregularly shaped compound area within the broader Citywest residential quarter. The broader site is effectively devoid of any vegetation of Arboricultural interest and is currently a working construction site. Note is made that the southern boundary of the site is adjoined by a LUAS stop and within that context, several recently installed trees. These trees have been recorded and are described as part of this report.

4 Pre-Development Arboricultural Scenario

4.1 For the purposes of this report, it should be noted that the subject site is broadly devoid of any vegetation of Arboricultural interest. Indeed, the Phase 1 and Phase 2 development works permitted under ABP 302398 is substantially underway and much of the site area comprises a works zone.

4.2 Notwithstanding this, it is equally appreciated that adjoining sites support some trees however most are at a range whereby they are physiologically detached from the site and there would be no physical repercussion from any site activities upon those trees. The only possible exception of this relates to a small number of trees located immediately adjoining the southern boundary of the site and adjoining what is the Lewis stop area located immediately outside of the site redline.

4.3 In respect of this, it is appreciated that the area supports 6No. young London Planes. Each of these trees have been recently installed and arise from wholly artificial environments, typically associated with the raised pavements in turn associated with the LUAS stop area. Trees arise from artificial environment within soft reserve adjoining LUAS stop. Most trees exhibit evidence of once having been supported by low level staking systems however, all systems are now effectively defunct and collapsed though some specimens remain in situ. Most trees appear to support minor imbalance is to north-east suggesting prevailing south-westerly wind. General vigour and vitality appear fair however tree deadwood is notable throughout but is likely to be most attributable to exposed site conditions. In line with their young age, these trees are in reasonable condition however, all exhibit some degree of stress symptoms be they defoliation, Twiggy decline or signs of exposure and wind related damage. In this instance, such issues are not considered unusual and indeed would be expected in respect of the exposed and isolated nature of the area within which they exist.

4.4 Assuming the trees survive, it must be noted that they assert immense potential for continued growth over time. Whilst the trees are particularly small at present, they have the potential to exceed 20 m in height and potentially an equal crown spread. The Aerial portion of the trees is unlikely to cause issues within the short to medium term, their growth in respect of roots and stems has immense potential for disturbance of likely laden structures such as landscape features, walls and pavements in the immediate vicinity within the short to medium term. In this respect, it would be advised that such trees be reviewed on a regular basis.

5 Planning Scenario in Respect of Tree

5.1 In respect of trees as they relate to planning within the **South Dublin County Council** area, note is made of two areas of guidance including - **The South Dublin County Council Development Plan 2016-2022** and **South Dublin County Council's Tree Management Policy 'Living with Trees'.**

5.2 **South Dublin County Council's Tree Management Policy 'Living with Trees'** "and the Amendments to Tree Management Policy 2015-2020 'Living With Trees' (as well as an interim internal review in February 2019) that incudes substantial amounts of information in respect of tree management, planting and pertinent to this application, information pertaining to trees on development sites as outlined in Section 7, Trees and Development.

5.3 Within the **South Dublin County Council Development Plan 2016-2022**, trees and tree issues are dealt with regularly, including **Chapter 4, Economic Development and Tourism,** section 4.3.3, ET3 Objective 5 calling for the retention of trees on commercial development sites. Under Chapter 6, Transport and Mobility notes that the design of urban roads and street should incorporate tree planting.

5.4 As expected, trees are mentioned widely in **Chapter 8, Green Infrastructure**, with objectives to protect, and preserve trees and woodlands as per G2 Objective 9 and G6 Objective 1 and well as to include new tree planting as per Objective G2 Objective 11.

5.5 Also, **Chapter 10, Heritage, Conservation and Landscapes**, mentions trees, particularly HCL10 Objective 3, HCL11 Objective 5, HCL15 Objective 3 and HCL17 Objective 1. Within Chapter 10, trees are also mentioned specifically in respect of Section 9.2.4 GRAND CANAL where trees are considered an integral part of the canal landscape.

5.6 Specifically, **Chapter 10, Heritage, Conservation and Landscapes**, includes Section 9.5.0 Tree Preservation Orders, including their application as well as defining the 4 existing orders located at, St. Brigid's (now Newlands Garden Centre), New Road, Clondalkin, Beaufort Downs, Rathfarnham, Townland of Quarryvale and Brooklawn, Palmerstown and Newcastle Road, Lucan.

5.7 In **Chapter 11, Implementation** and under "Masterplan Considerations", "Open Space and Landscape" and particularly "Section 11.5.5 Landscape" again mentions the importance of retaining trees and hedges

6 Construction Works and Trees

6.1 Tree retention is costly in respect of available space and there is a substantial difference between physically retaining a tree in situ and gaining any realist expectation of it surviving into the future and remaining safe.

6.2 Trees are living organisms and are highly reliant upon a continuity of environmental factors, the changing of which can easily undermine health and sustainability. As a perennial plant, a trees nature is to necessarily become larger on an annual basis. The

survival of the plant and its funding of continued growth requires a minimum import of water and various nutrients, a large proportion of which are provided by the soil in which the tree is rooted.

6.3 A tree is highly dependent upon the ground from which it arises, the nature of that ground and a continuity of conditions and provisions that that ground provides. Any change extending beyond the short-term has the potential to affect a tree's metabolism, health, and sustainability.

6.4 Development works typically result in the loss, changing or denaturing of this ground and thereby is contrary to sustainable tree retention. Critically, a tree is fundamentally reliant on the nature and environment of the ground that supports it. Any action that affects or denatures the existing soil environment in respect of gas flux, hydrology or soil strength can quickly make a soil incapable of supporting plant function. Therefore, these effects must be avoided in the areas upon which a tree is reliant.

6.5 BS 5837:2012: Trees in relation to design, demolition and construction - Recommendations, is the broadly accepted standard that sets out guidelines and parameters by which we can assess impacts to and protect trees from damage, thereby providing some degree of realistic expectation regarding sustainable tree retention. The standard sets out a procedure and calculation whereby a minimum amount of ground space can be defined in respect of the requirement for the maintenance of a tree of any particular size. This calculation is based primarily on tree size considering issues of hydrological capacity, nutrient availability and anchorage.

6.7 The standard generates a "root protection area" (RPA) intended to define a minimum zone of conservation and preservation centred about the tree. This area is typically expressed in a symmetrical fashion and most commonly as a circle about the tree however, it is appreciated that physiological issues can have a bearing upon this and can radically alter what might otherwise be a symmetrical rooting pattern.

6.8 Examples of "RPA" distortion include physical features such as bedrock and its extent above and below ground level thus comprising a physical barrier to natural root development, rivers or watercourses extending to depths beneath normal root development depths and comprising soil conditions beneath their course that would be inhospitable to tree root growth or areas where materials or soil composition is beyond that capable of being exploited by trees, for example compressed and compacted areas such as hardcore and sub-bases to existing roads or areas where substantial or historic trafficking has caused soil compaction, high soil strength or a high CBR's (California Bearing Ratio)

6.9 In respect of the above, the tree survey information provided, intends to show the areas of minimum conservation associated with the sustainable retention of trees within the scope of a development project. In the case of the proposed development, these minimum areas are often exceeded, thus creating a scenario whereby it is reasonable to

assume that the development works will have no direct effect or repercussions on tree health.

6.10 In other instances, obvious conflicts exist either total and direct whereby the tree's location will be wholly consumed by the position of a new building or structure or, partial whereby there is an encroachment upon this protection zone, meaning the minimum RPA cannot be achieved.

6.11 This latter issue occurs to varying degrees at various positions across the site. Where it occurs to a minor extent then consideration might be given to clause 5.3.1, a) and b) whereupon minor encroachments may be considered allowable and potentially inconsequential. Nonetheless, there are larger encroachments that would exceed this consideration and may constitute an impact harmful to tree health and sustainability. Such issues do not necessarily require the immediate removal of the tree and oftentimes construction works can be achieved without their removal, however, the impact may well lead to deterioration in tree health, limited sustainability, and early death.

6.12 Such issues must be considered in two forms. Firstly, affects to sustainability and long-term retention. Such issues might still consider the benefits of interim and short-term retention, for example during the establishment of new plantings. Secondly however, it must also appreciate that direct physical effect on tree root systems can also affect stability and safety and therefore considerations might be given to site safety factors.

6.13 In respect of the above, tree health-related affects and issues typically manifest themselves over time and only the most severe impact generates immediate effects. Tree damage relating to environmental change and disturbance can often result in a slow deterioration and decline, only becoming apparent after some years (2 – 5 years) with a slow deterioration where death may not occur for anything between 3 and 15 years. Understanding the timescale of possible interim benefits must appreciate the fact that its full extent or rate cannot be quantified at an early stage.

Contextual Issues

6.14 Note should be made that the species encountered, London Plane, can attain particularly large sizes at maturity. This growth may affect the trees sustainability over time

6.15 Where the site’s current context will be changed in respect of occupation and use of space near trees, there may develop repercussions that require further scrutiny after first site clearance and felling works. Some trees may require specific attention, including structural pruning improve their safety status within the changed context as well as to deal with issues of exposure and shelter loss.

6.16 Tree canopy cover varies by species and can change by season. Therefore, their relationship with the post development site must be considered in respect of additions issues, including shadow-cast and light admission and littering.

6.17 While the retention of trees within a development is commendable, tree retention close to buildings must consider the blockage of views and light, and the possible effects on daylight analysis. Trees can have a material effect on these issues and can lead to post development request for more tree removal, for example based on a requirement for artificial light during daylight hours.

6.18 Deciduous tree shed leaves each autumn that can be subject to local wind patterns, creating local drifts and accumulations. Such issues may require management and can lead to drainage issues including the blockage of drains and gullies.

7 Project Works and General Impacts

7.1 The development will principally consist of:

7.1.1 The proposed development will consist of the construction of 421 no. residential units within 9 no. blocks ranging in height from 1 – 13 storeys, retail/commercial/office units, residential amenity space, and open spaces along with all associated site development works and services provisions to facilitate the development including parking, bin storage, substations, landscaping and all services. A full description is provided in the statutory notices and in Chapter 3 of the EIAR.

7.2 Considering the scope and scale of the propsed development, it is considered likely that most of the 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.

8 Identification of Development Impacts to Trees

8.1 The expected tree impacts have been represented graphically on the tree impacts drawing "**Cooldown Commons Tree Impacts Plan"**, as well as within the narrative of this report. This drawing combines the tree constraints plan information with the current stage development details including the architectural and services layouts below, thereby allowing for simple direct comparisons to be made between the existing site context and the development proposals in respect of new structures.

8.2 In this drawing, trees denoted with "Broken Pink" crown outlines are to be removed and those denoted with "Continuous Green" crown outlines are to be retained.

8.3 Detail of the development proposals where gained from drawings provided by-

- Reddy Architecture + Urbanism – Develeopent layout
- Murray & Associates Landscape Architecture – Landscape Design

8.4 The evaluation is primarily based on minimum protection ranges as defined paragraphs 4.6.1, 4.6.2 and 4.6.3 of BS 5837:2012. 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.

8.5 The broader assessment attempts to consider both direct and indirect implications, based on perceived construction requirements, as well as how a tree will likely interact with the development in respect of growth, hazard development, light blockage and other social concerns in respect of the changing context, including its effect on tree amenity value.

9 Specific Issues and Arboricultural Concerns

9.1 The development proposal indicates that nearly all works will occur to the north of the existing Plane trees. Accordingly, and with the provision of simple "construction exclusion" type fencing during the construction period, then tree retention should be easily attainable.

10 Design Iterations and Arboricultural Considerations

10.1 This report relates to clause 4.4.2.1 of BS5837-2012 in that its finding relate to a predefined concept that was issued 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.

11 Tree Retention and Loss

11.1 The drawing "Cooldown Commons Tree Impacts Plan" comprises the tree survey drawings overlaid by the development drawings, thus providing a graphic representation of the relationship between tree constraints and the development elements.

11.2 it appears that the proposed works can be achieved without the removal of any trees or significant vegetation.

12 Tree Protection within the Scope of a Development

12.1 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.

12.2 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.

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

12.4 In 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".

12.5 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.

13 Preliminary Management Recommendations

13.1 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. 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.

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

13.3 Additionally, any development related loss of trees can result in exposure and shelter loss issues. Therefore all retained trees must be reviewed immediately after the primary site clearance works. This will allow for the updating and amending the "preliminary management recommendations" of the primary survey. Such amendments would address such issues as may arise and may include additional structural pruning works .

Regular reviews of all retained trees must be maintained, so that early and prompt intervention and action can be applied as required.

14 Bibliography

14.1 British Standards Institution (2010) BS 3998:2010: Tree Work - Recommendations. London: British Standards Institution.

14.2 British Standards Institution (2012) BS 5837:2012: Trees in Relation to Design, Demolition and Construction - Recommendations. London: British Standards Institution.

14.3 Jackson, R.B et al (1996) A Global Analysis for Root Distribution in Terrestrial Biomes Oecologica, 108 (1996) pp389-411, Springer Verlag

14.4 Lonsdale, D. (2005) Principals of Tree Hazard Assessment and Management, London, TSO

14.5 Mattheck, C. and Breloer, H. (1994) The Body Language of Trees, London, TSO

14.6 Roberts, J. and Jackson, N. and Smith, M. (2006) Tree Roots in the Built Environment, London, TSO

14.7 Strouts, R.G. and Winter, T.G. (1994) Diagnosis of Ill-Health in Trees, London, HMSO

A1 Appendix 1 - Arboricultural Method Statement (and Tree Protection Plan)

Method Statement Outline

A1.1 This method statement intends to provide guidance in respect of tree protection on a development site. This is a broad and prescriptive method statement, intended to provide general advice and guidance in respect of trees and tree protection on a typical development site, dealing with issues known at planning stage.

A1.2 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.

A1.3 This method statement addresses, amongst others, two primary issues, those being –

a) The avoidance/prevention of physical damage to a tree to be retained.

b) The avoidance/prevention of physical damage or disturbance to the ground/earth upon which a tree is reliant.

Drawings

A1.4 This Arboricultural Method Statement must be read with the associated "Tree Protection Plan" drawing, "Cooldown Commons Tree Protection Plan". The "planning stage" drawing must be updated for "Construction" stage purposes, to include tree protection ranges/dimensions as defined for that tree within the tree survey table or unless otherwise defined by the project Arborist.

Method Statement Use

A1.5 This Method Statement should be used under the direct guidance of the project Arborist. As limited "construction stage" detail was available at planning stage, it may require amendment and adjustment to address construction stage issues.

Amendments and Modifications to Tree Protection Plan

A1.6 Any amendment to the tree protection plan must be agreed with the project Arborist, including the adoption of specific methodologies and/or procedures and structures for access into/use of certain parts of the above defined "Construction Exclusion Zones". Such procedures, including the provision of suitable ground protection may allow for the relocation of the "Construction Exclusion Fencing" to provide access to and across the previously protected areas.

Works Related Impacts

A1.7 In respect of any necessary and unavoidable structures/works 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.

Tree Works Specification Updates

A1.8 Many of the tree management recommendations stipulated within the "Preliminary Management Recommendation" section of the primary tree survey, relate to the "as was" site scenario. Because of changing site contexts, these may no longer apply and may require modification to account for the changes that the built project will cause.

General Method Statement

1.0) Overview and Implementation

1.1 **Prior to any site works, 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 The project Arborist or another suitably qualified person will oversee the application of all tree protection measures and any necessary modifications to this Method Statement (any issues as may have arisen in respect of planning conditions or details as may have changed between the design stage) to provide a basis upon which tree protection will be managed on the construction site.

1.3 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.

1.4 As unforeseen tree losses may compromise project planning permissions, it is imperative that issues relating to tree protection and/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 and felling as defined in the Arboricultural report and/or grant of permission.

2.3 On completion of tree felling/site clearance works, the tree management plan will be reviewed, accounting for (if necessary) the updating of the "preliminary Management Recommendations" stipulated in the original Tree Survey.

2.4 Any revised pruning/cutting works will be agreed with the local authority and applied at the earliest possible opportunity.

2.5 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.

2.6 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". Such works must be agreed and overseen by Project Arborist.

2.7 At construction works completion stage, all retained trees will be reviewed regarding their condition and longer-term management recommendations and regarding site hand-over.

3.0) Tree Protection

3.1 All tree protection measures and locations must be agreed, overseen, and verified by the Project Arborist prior to works commencement.

3.2 All construction, works or access areas must be enclosed and defined by protective fencing, this comprising the "Construction Exclusion Zone" based upon drawings "Cooldown Commons Tree Protection Plan" (Construction Stage version).

3.3 Unless specifically stipulated by the project Arborist, the default minimum range of the protective fencing from a tree is the range stipulated for that tree within the "RPA" (root protection area) column of the original survey.

3.4 Such a fence must be fit for purpose and commensurate with the nature of activity expected upon the site and should comply with "Section 6.2" of BS5837: 2012.

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

3.6 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.

3.7 If entry into the "RPA" (Root Protection Area) zones becomes unavoidable, ground protection systems agreed with the project Arborist, will be utilised.

3.8 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 "Construction Exclusion Area" ground.

4.2 Ground protection can comprise the use of proprietary materials/structures (installed to

manufacturer's specifications and recommendations) 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 protection structure.

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 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.

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

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

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 and the updating of the "Preliminary Management Recommendations" 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.

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

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

9.3 Works outside the "Construction Exclusion Zone" must be controlled to create no potential secondary hazard to tree health.

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

9.5 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.

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

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

9.8 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.

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

9.10 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.

9.11 It is possible 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.

A2 Appendix 2 - Tree Survey

Nature of Survey

A2.1 The criteria put forward in "BS5837:2012 – Trees in Relation to Design, Demolition and Construction – Recommendations" have provided a basis for this report.

A2.2 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.

A2.3 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 site's 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 any 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

A2.4 The survey must be read with the "Tree Constraints Plan" drawing "Cooldown Commons Tree Constraints Plan" 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 "Cooldown Commons Tree Constraints Plan". Any such trees should be located and plotted by professional means to identify the constraints such trees have upon the site.

A2.5 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.

A2.6 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".

A2.7 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

A2.8 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

A2.9 The original survey was carried out in February of 2020. 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.

A2.10 Each tree in the survey has 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 be estimated only.

Inspection and Evaluation Limitations and Disclaimers

A2.11 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.

A2.12 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.

A2.13 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.

A2.14 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.

A2.15 Throughout the undertaking of the survey, several factors acted against the inspectors, contriving to reduce the accuracy of the survey.

Seasonality

A2.16 The original survey was carried out during the winter periods. 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 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	London Plane *(Platanus x hispanica)*	S/M	F	5.50	2.00	2.00	2.00	1.25	0.50	1	115	1.38	Notably unbalanced and supporting some deadwood.		L	B2
2	London Plane *(Platanus x hispanica)*	S/M	F	5.50	2.00	2.00	1.75	1.50	1.00	1	118	1.41	Apparently vigorous but supporting some twiggy deadwood.		L	B2
3	London Plane *(Platanus x hispanica)*	S/M	F	5.50	1.75	2.00	2.00	1.00	1.00	1	118	1.41	Apparently vigorous but supporting some twiggy deadwood.		L	B2
4	London Plane *(Platanus x hispanica)*	S/M	F	5.50	2.00	2.00	2.00	1.00	1.00	1	121	1.45	Apparently vigorous but supporting some twiggy deadwood.		L	B2
5	London Plane *(Platanus x hispanica)*	S/M	F	5.50	2.00	2.00	1.75	1.00	1.00	1	118	1.41	Apparently vigorous but supporting some twiggy deadwood.		L	B2
6	London Plane *(Platanus x hispanica)*	S/M	F	6.00	2.00	2.00	2.00	1.00	1.00	1	131	1.57	Apparently vigorous but supporting some twiggy deadwood.		L	B2