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Arboricultural Impact Assessment (AIA)

Site Details: 10 Grove Avenue, London, N3 1QP

Prepared for: Mr. J. Neophitou

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Title: NEO_10GA_AIA_002*

Published Date: 20th March 2024

*- Publication Note:

This publication of the Arboricultural Impact Assessment (AIA) report has been produced following revisions to the original scheme design which was considered in the AIA report Ref: NEO_10GA_AIA_001 and published on the 16th December 2022.

This latest publication of the AIA report Ref: NEO_10GA_AIA_002, reflects the latest design proposal with all plans and related report content updated accordingly and supersedes the previously published AIA report (Ref: NEO_10GA_AIA_001).

Report Index

1.0 – Summary of Instruction

An Arboricultural Impact Assessment (AIA) in accordance with *BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations* was commissioned by our client to be undertaken at 10 Grove Avenue, London, N3 1QP.

I have been instructed to provide an Arboricultural Impact Assessment (AIA) & tree protection strategy for a proposed development scheme at the above property.

The AIA is required to demonstrate that the proposed development work will not adversely impact on the physiological health, or structural condition of retained on site and/or off site trees.

The AIA is also required to detail effective tree protection and control measures to be implemented at the site, to safeguard retained trees above and below ground level throughout all of the development phases.

The development scheme relates to the proposed:

- Demolition and removal of an existing detached garage/outbuilding in the rear garden;
- Construction of a new single storey, detached studio building, including a lower ground floor level and lightwell with outdoor amenity space (hard landscaping), cycle and refuse storage units.

Instructions were to:

- Carry out a tree survey in accordance with the British Standard *BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations* to:

  - Undertake an Arboricultural Impact Assessment (AIA) to evaluate the potential direct and indirect effects of the proposed scheme and associated construction activity on nearby significant trees;

  - Assess and categorise trees at and adjacent to the site to ascertain their suitability for retention;

  - Provide all relevant tree data including species identification, dimensions, life stage, condition assessments and make Preliminary/General Management Recommendations where necessary;

  - Identify the potential above and below ground tree constraints posed to the development proposal, to assist the development team with conception, design and scheme feasibility, (i.e. A *Tree Constraints Assessment*);

  - Highlight the arboricultural implications that the development design and associated construction processes may have on retained trees;

  - Provide tree protection information, methods, specifications and control measures to be employed at the site *(in conjunction with other specialist's input where necessary)*, as required to mitigate impact and safeguard the retained trees above and below ground level throughout all of the development phases;

  - Produce findings of the AIA survey in a written report including a Tree Protection Plan (TPP) and an Arboricultural Method Statement (AMS) for submission to the Local Planning Authority for approval.

The British Standard Institute publication *BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations* is referred to throughout this report. This is a nationally recognised standard typically used by Local Planning Authorities to assess planning applications. It is frequently referred to in planning conditions to enforce protection or control of works that may be harmful to trees both on and off the site.

This report has been produced in accordance with *BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations '*for the sole use of our client (as detailed on the Title Page). Information provided by third parties for use in the preparation of this report is assumed to be correct. *(i.e. Proposed Site Plans, Construction Management Plans, Engineer Specifications etc).*

1.1 – Background

Tree Sense Arboricultural Consultants were originally engaged to undertake an Arboricultural Impact Assessment (AIA), in relation to a development project proposed at 10 Grove Avenue, London, N3 1QP in December 2022.

The project originally proposed the removal of the existing detached garage structure in the rear garden and the construction of a new single storey, detached studio building with outside hard landscaping for amenity space, including cycle and refuse storage units.

The original planning application **(23/0192/FUL)** is understood to have been declined based on the size, siting and the building design, as detailed in the Planning Decision Notice dated 14th March 2023.

Following revision and a a re-design of the proposal, including the addition of a lower ground floor level to the detached studio building, Tree Sense were again engaged to update the supporting AIA report to address the changes to the scheme design and update the AIA report accordingly to reflect those changes.

This revision of the AIA report (NEO_10GA_AIA_002) seeks to bring up to date the AIA report including an up to date Tree Constraints Plan, Tree Protection Plan, Arboricultural Method Statement and all related content within the AIA report, to reflect the latest design proposal and any relevant changes to construction operations in line with the latest scheme being proposed.

2.0 – Report Limitations

- *Assessments of all trees have been conducted using Stage 1 of the Visual Tree Assessment (VTA) method of inspection, as appropriate in enough detail to inform the development project. (See Sections 2.3 and 2.4).*
- *All observations of tree conditions were undertaken from ground level, a visual assessment of external features only, assisted as required by the use of binoculars, a metal probe and a rubber mallet (used for audible resonance testing) where necessary. Below ground tree roots and buried parts were not inspected.*
- *The Proposed Site Plan (PL – 02 – 50) provided by gt associates, which is based on a Topographical Survey of the site has been used to create the Tree Constraints and Tree Protection Plans in the AIA report.*
- *All measurements of tree heights, crown spreads and crown clearance from ground level are recorded to the nearest half metre for dimensions up to 10m and to the nearest metre for dimensions over 10m.*
- *Stem diameters are measured to the nearest 10mm, or where obscured / inaccessible, estimated based on the visible features and characteristics of the tree in question.*
- *Stem diameter measurements were recorded in accordance with methods detailed in Annex C (fig.C.1a-C.1f) as applicable for each individual tree and adjusted in accordance with Table D.1 of Annex D in BS 5837:2012 as required.*
- *Detailed background information is not known concerning the past history of the site, the soil type, geology or hydrology of the environs. No inspection material has been acquired by Tree Sense Arboricultural Consultants for assessment and no soil analysis information has been provided by third parties.*
- *Tree Sense Arboricultural Consultants cannot be held responsible for property damage arising from soil shrinkage or heave issues related to the retention or removal of trees on site.*
- *The AIA is only concerned with arboricultural issues and the safeguarding of retained trees against adverse development impacts, although other disciplines such as engineering and ecology may be mentioned where relevant.*
- *The author of the AIA report does not have formal qualifications in the areas of structural engineering or law. However, making comment on such matters from an arboricultural perspective is both within the normal scope of our instructions and also within the range of the author's experience. Notwithstanding this, specialist professional advice must be sought to clarify/confirm any observations on engineering or legal matters that this report may contain.*
- *The recommendations made in this report relate to the assessment of the trees and their surroundings at the time of inspection.*
- *Tree management recommendations made in this report relate to the assessment of the trees and their surroundings at the time of inspection and in some cases, may be recommended within the context of the development proposal and the end land use. The tree survey undertaken is not a full tree risk assessment, but carried out as appropriate in enough detail to inform the development proposal.*
- *Weather conditions were dry and bright on the day of the tree survey.*
- *Where a tree is subject to a Tree Preservation Order (TPO) and/or stands within a designated Conservation Area, it will be necessary for the tree owner or his/her appointed agent to ensure appropriate compliance with planning requirements, before any recommended, non-urgent treatments can be undertaken. (See Section 12.0).*
- *BS 5837:2012 does not make a distinction between trees which are subject to statutory protection, such as a TPO, and those trees without. This is principally because all trees are a material consideration and full planning consent overrides any TPO protection. Therefore, we do not seek to offer any comparison between, or imply any difference in the quality or importance of trees covered by a TPO and other trees which are not statutory protected.*
- *The AIA report is provided to detail impartially the potential tree constraints posed to the development proposal as identified at the site and detail the tree protection measures and methodologies to be employed, in the interest of safeguarding the short and long term health of significant retained trees.*
- *The provision of the AIA does not guarantee that the associated Local Planning Authority (LPA) will agree with the opinion of the Consulting Arboriculturist, or grant planning consent based on the content and findings of the AIA report.*
- *This report is compiled into a single PDF file designed for electronic release. If printing this document, please note that the plan drawings may be a different size or orientation to the standard A4 / portrait of the rest of the report. Some PDF reader software may also automatically adjust the size of drawings included in this report. It is the responsibility of the user to ensure that resulting prints are to scale and that the scale bars on the plans measure correctly.*
- *The Tree Constraints Plan (TCP) and Tree Protection Plan (TPP) are drawn to the scale indicated in Sections 8.1 and 9.1.1 respectively and feature a scale bar on the drawings for cross reference and scaling purposes.*

2.1 – Time Limits

It should be understood that trees are not static objects, but growing, living organisms; and their condition, size and relationship to buildings and other trees can change significantly and sometimes unpredictably over the course of a full growing season and periods of dormancy. Trees can also be affected by pathogen attack and react to seasonal weather events, particularly strong wind conditions which have become more frequent in recent years.

Therefore, this report is given a validity period of 12 months from the date of publication and is subject to any suggested management recommendations being undertaken within the correct time frames. A re-assessment tree inspection survey may be required to enable re-validation of the AIA report if required after the 12 month expiry date of this publication.

2.2 – Severe Weather Limitations

Impacts of severe drought, storm, inundation, land slip or subsidence are not covered by this report.

2.3 – Tree Safety Matters / Tree Risk Assessment

The Arboricultural Impact Assessment (AIA) in accordance with *BS 5837:2012 (Trees in relation to design, demolition and construction - Recommendations)* is carried out in sufficient detail to gather data for and to inform the current project.

Our appraisal of the structural integrity of trees on and adjacent (if applicable) to the site is of a preliminary nature and sufficient only to inform the current development proposal. The tree assessment is carried out from ground level as is appropriate for this type of survey, without invasive investigation and is not a full Tree Risk Assessment.

The disclosure of hidden tree defects cannot therefore be expected. Whilst the survey is not specifically commissioned to report on matters of tree safety, we report obvious visual defects that are significant in relation to the existing and proposed land use. As such, General Management Recommendations (GMR) or Preliminary Management Recommendations (PMR) may be made regarding the assessed trees, in respect of good urban tree management.

2.4 – Visual Tree Assessment (VTA)

The Visual Tree Assessment (VTA) method of inspection is an internationally recognised tree hazard assessment method developed by Prof. Claus Mattheck: *Body Language of Trees – a handbook for failure analysis (HMSO, 1994).*

The basis of VTA is the identification of (external) symptoms which a tree produces in reaction to a weak spot or area of mechanical stress. These can then be interpreted in terms of potential direct impact hazard features within a tree.

The VTA method of inspection does not allow for opinions to be made concerning the risk of a trees potential to cause indirect impact on nearby structures. Indirect impact refers to potential problems caused by changes in soil moisture content in shrinkable soils (i.e. those soils with a high clay content); to which trees can be a contributing factor.

The tree inspection survey undertaken at the above site was conducted in accordance with Stage 1 of the VTA process, as appropriate to inform the development proposal.

3.0 – Process

The Arboricultural Impact Assessment (AIA) in accordance with *BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations* was commissioned to be undertaken as part of the initial feasibility study at the planning stage of the process and seeks to provide supporting arboricultural information to the planning application.

Additionally, the AIA report is to be used by on site contractors and any related third parties, for instructions relating to the installation and management of tree protection apparatus at the site and control measures to be followed during construction operations.

The elements of the AIA at the initial Tree Constraints Assessment stage were:

- To undertake the tree survey;
- Categorise the trees;
- Identify the above and below ground tree constraints posed to the development, with a view to assisting with the conceptual design and feasibility of the proposal from an arboricultural perspective.

The identified tree constraints are to be used to inform and assist with the scheme design, including advising on any necessary engineering solutions and demolition/construction methods which may need to be explored to mitigate potential damage to retained trees in the short and long term, both above and below ground level.

Additionally, the identified constraints will also later assist in determining the requirement, specification and positioning of tree protection measures at the site, to safeguard retained trees above and below ground level throughout the development process to completion.

Following the identification of tree constraints, the AIA evaluates the identified direct and indirect effects of the proposed design in relation to nearby trees. The assessment will consider the effect of any tree loss or damaging activities proposed in the vicinity of retained trees. Activities such as:

- *Removal of existing structures or hard surfacing;*
- *Installation of new hard surfacing;*
- *The location and dimensions of all proposed excavations or alterations in ground levels;*
- *Construction of any new structures above ground level;*
- *Construction or alterations to any below ground utility infrastructure (i.e. for drainage, water, gas, electricity etc.).*

In addition to the permanent works, account should be taken to the buildability of the scheme in terms of access, plant machinery use, adequate operational space and provision for the storage of materials including topsoil, without inflicting damage to the retained trees. Post development pressure on nearby trees is also closely considered and assessed.

As well as an evaluation of the extent of the impact on existing trees, the AIA includes and details within this document:

a) The tree survey data;

b) Trees selected for retention, clearly identified (e.g. by number) and marked on a plan with a continuous outline or similar;

c) Trees to be removed, also clearly identified (e.g. by number) and marked on a plan with a dashed outline or labelled / detailed as appropriate;

d) Trees to be pruned, including any access facilitation pruning, also clearly identified and labelled or detailed as appropriate;

e) Areas designated for structural landscaping that need to be protected from construction operations in order to prevent the soil structure being damaged;

f) Evaluation of impact of proposed tree losses (if applicable);

g) Evaluation of tree constraints and production of a draft tree protection plan including details of tree protection measures;

h) Issues to be addressed by an arboricultural method statement where necessary in conjunction with input from other specialists associated with the project.

4.0 – General Site Observations

10 Grove Avenue features an end of terrace, two storey building, which houses three residential apartments with private front and rear gardens.

The property is a corner plot on Grove Avenue, with Falkland Avenue running east – west on the southern side of the property. It is understood that the property is not situated within a Conservation Area.

Within the curtilage of the rear garden there is an existing detached, single storey garage/outbuilding, which is understood to have been constructed approx. 40 years ago. The garage is accessible via a double gated driveway crossover from Falkland Avenue, which leads directly onto a concrete surface in front of the garage. The garage appears to be constructed on concrete strip footings, with the concrete surfacing continuing around the edges of the structure.

To the north-west of the garage the main rear garden features a predominantly lawn surface, with planting beds along the side boundaries. The lawn is raised in relation to the ground floor level of the house, with steps leading up on to the lawn and garage level.

A young Fig tree is located within the rear garden, in close proximity to the gated driveway entrance on the north-west side of the entrance. This tree offers little amenity value and is proposed to be removed as part of the new amenity space landscaping. The tree was not recorded for the purposes of the AIA, as it is to be removed. (See Tree Protection Plan (TPP) in Section 9.1). Additionally, in the adjacent plating bed on the north-east side of the rear garden, two other sapling Fig trees were observed. However, both are very small , juvenile trees with stem diameters less than 75mm and were also not recorded for the purposes of the AIA.

Beyond the north-east side boundary, one off site tree was assessed for inclusion in the AIA, due to is close proximity to the boundary line and the existing garage structure.

No site related access will occur via the front garden, as all construction works will occur only in the rear garden, utilising the existing double gated entrance from Falkland Avenue.

Details of the individual tree surveyed for inclusion in the AIA can be found in the Individual Tree Data Table in Section 5.0 below, with additional tree data notes provided in Section 5.2.

5.0 – Individual Tree Data

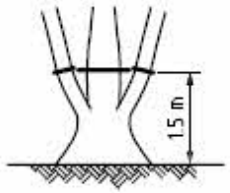
Tree No.	Species	Height (m)	Stem Diameter (mm)	Branch Spread (m)	First Significant Branch Height and Direction of Growth (m)	Canopy Height (m)	Life Stage	General Comments Inc. Physiological and Structural Condition	Preliminary / General Management Recommendations	Estimated Remaining Contribution (Years)	Category
T1	Wild Cherry *(Prunus avium)*	6	1 – 100 2 – 100 SE – 150	N – 2 E – 2 S – 1 W – 1	2.5 – NE	3	Y	Physiological Condition – Good Structural Condition – Fair Co-dominant stems (2) from 1m. Historically topped, reducing the crown spread south and west and to maintain the overall crown size relative to its location. Live buds visible on branch shoots, indicating normal vitality. Some bark cracking and delamination on both of the co-dominant stems, but not extensive. Some branch stubs remain where branches have been pruned off, but not back to an established growth point or back to the branch collar/bark ridge. Off site tree in the neighbouring rear garden to the north-west.	–	10+	**C 1**

5.1 – Key to Table 5.0

1) Height describes the height of the tree from the base of the trunk/stem in metres.
2) Stem Diameter is the diameter of the trunk in millimetres, measured at 1.5m from ground level. For multi stemmed trees, a single stem diameter equivalent (SE) is calculated and indicated beneath the measurements of each separate stem. (Est.) indicates the stem diameter was estimated due to the tree being obscured and/or inaccessible to measure.
3) Branch Spread is the average length of branch spread from the centre of the tree in the direction of each cardinal point of the compass in metres.
4) First Significant Branch Height and Direction of Growth – Clearance height from the ground of the first major structural branch of the trees' crown and its direction of growth.
5) Canopy Height is the distance between the lowest visible canopy branches and ground level in metres.
6) Life Stage is represented as: Y= Young (*in first third of life expectancy*), SM = Semi Mature (*in second third of life expectancy*), M= Mature (*final one third of life expectancy*). Trees considered to be beyond their likely life expectancy are normally classed as OM = Over Mature or V = Veteran.
7) Physiological Condition relates to the vitality of the tree, Structural Condition relates to the mechanical integrity of the tree and assesses the presence of structural defects. *(i.e. dead branches, cavities, splits, included bark etc.)*
8) Estimated Remaining Contribution is an indication of the minimum useful contribution the tree will provide.
9) Preliminary Management Recommendations (PMR) detail any additional arboricultural practices to be undertaken, such as Stage 2/3 VTA, or climbed/aerial inspections. General Management Recommendations (GMR) may also be indicated and relate to tree surgery management works which are recommended in respect of good tree management and are not made in the context of a potential development project. (See Section 5.2).
10) Category grading is based on tree categorization guidelines provided in The British Standard *BS 5837:2012 Trees In relation to design, demolition and construction - Recommendations* (See 6.0 below).

Stem diameter measurements:

T1 features more than one stem at 1.5m above ground level. As such, a single stem equivalent has been calculated and recorded for this tree, based on the measuring method shown in *Fig. C.1f in Annex C of BS 5837:2012*, as required.



f) Measurement of a tree with more than one stem at 1.5 m above ground level

- Major deadwood = over 25mm diameter, Minor deadwood = under 25mm diameter.
- *= CODIT – (*Compartmentalisation of Decay in Trees*).
- PMR = Preliminary Management Recommendation - i.e. VTA Stage 2/3, semi invasive tree condition investigations (Tomography/Resistograph testing etc.) or climbed/aerial tree inspection.
- GMR = General Management Recommendation – i.e. Tree surgery management works (pruning, felling etc, including Access Facilitation Pruning). ***For on site trees which are under the management control of the applicant.***
- *GMR ADVISORY = General Management Recommendation – i.e. Tree surgery management works (pruning, felling etc, including Access Facilitation Pruning).* ***For off site trees which are NOT under the management control of the applicant.***

5.2 – Tree Data Notes

The trees detailed individually in Section 5.0 are those which were considered in the Arboricultural Impact Assessment (AIA).

*General Management Recommendations – (GM*R) for tree surgery works may have been made in the interest of good tree management and are not necessarily required in relation to the proposed development project.

Preliminary Management Recommendations – (PMR) may have been made where *further investigation into tree health and condition is required before a decision can be made concerning the safe retention of a tree.

**Further investigation normally refers to (but is not restricted to):*

- *Stage 2/3 of the Visual Tree Assessment (VTA) process, which involves semi invasive testing with Tomography, Resistograph and Fractometer equipment on areas of the tree where a significant internal structural defect is suspected following the Stage 1 VTA.*
  Stage 2/3 VTA can determine in much greater detail the extent and severity of suspected internal wood decay and/or structural defects and also determine the strength of supporting wood tissue.

- *Recommendations for a climbed/aerial inspection to be undertaken, to assess the upper sections of the tree stem or crown, where a significant structural defect is suspected but could not be quantified during the Stage 1 VTA undertaken from ground level.*

Any tree surgery work recommended must be undertaken following the correct procedures relating to trees protected by Tree Preservation Orders (TPO), or which are growing within a designated Conservation Area, where applicable to both on site and off site trees. (See Section 12.0).

Any *General Management Recommendation (GMR)* which may have been made to remove hazardous trees, deadwood from crowns, or removal of invasive climbing vegetation (such as Ivy) from TPO or Conservation Area trees does not require permission from the Local Authority before actioning. However, it is considered good practice to inform the Local Authority of any intended emergency tree removals and/or deadwood and Ivy removal works. In the case of complete tree removal emergencies, taking before and after photographs is strongly recommended.

Advisory GMRs are made if any works are recommended to be undertaken to off site trees which are outside of the management responsibility of the applicant.

Advisory GMRs must also be permissible by the tree owners, except in situations where Common Law allows. (The Statutory Protection process as above still applies where relevant).

Advisory GMRs are made in the interests of good tree management and should be brought to the attention of those who own or have the responsibility to manage the trees concerned.

All recommended tree work must be undertaken in accordance with guidelines set out in *BS 3998:2010 Tree work – Recommendations (As updated). (See Section 10.3).*

The following sections provide information regarding the categorisation of the surveyed trees and the tree constraints which have been identified at the site.

6.0 – Tree Categorisation

The purpose of Tree Categorisation as detailed in *BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations*, is to identify the quality and value of existing tree stock, allowing informed decisions to be made concerning which tree(s) should be retained or removed should development occur. This process is the starting point of the tree survey, following a land survey and should ideally, be undertaken before any site design or layout is proposed.

Trees are given a category grading based on individual tree assessment, in line with the categorisation methodology as detailed in Table 1 of *BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations.* Table 1 is reproduced as an informative below:

Table 1 **Cascade chart for tree quality assessment**

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.*			See Table 2
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
Category A **Trees of high quality** with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	See Table 2
Category B **Trees of moderate quality** with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	See Table 2
Category C **Trees of low quality** with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	See Table 2

To easily identify the category grading for each tree assessed for inclusion in the AIA, all tree identification numbers on the Tree Constraints Plan(s) and Tree Protection Plan(s) are shown in a colour which represents the tree's category grading. Table 2 below, again reproduced from *BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations*, details the identification colours to be used for each category grade:

Table 2 **Identification of tree categories**

Category (from Table 1)	Colour [A)]	RGB code [A)]
U	Dark red	127-000-000
A	Light green	000-255-000
B	Mid blue	000-000-255
C	Grey	091-091-091

[A)] Colours verified against http://safecolours.rigdenage.com/palettefiles.html#files [viewed 2012-03-26].

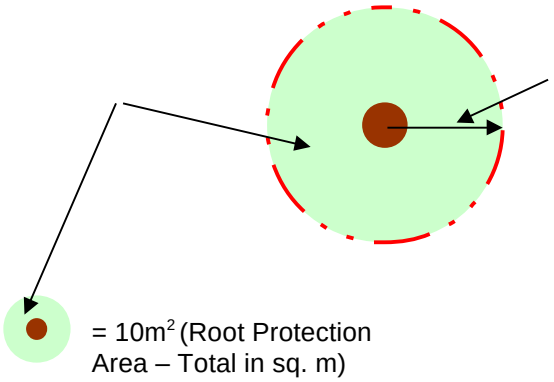
Once it has been established which trees can and are suitable to remain and are worthy of retention, necessary measures to protect them throughout the course of the development project must be undertaken.

7.0 – Tree Constraints

The tree constraints are the influences the trees will have below and above ground level in relation to the development proposal. The below ground constraints are represented by the trees Root Protection Area (RPA), the above ground constraints are represented by the trees size and position, including shading dominance caused by crown density and spread which may affect light into newly developed or extended buildings. The physical constraints posed by trees and their crown branching in relation to new proposed structures and construction apparatus (such as scaffolding) are also closely considered.

7.1 – RPA (Root Protection Area) – (Below Ground Constraints)

The nominal RPA radius is taken from the centre of the tree stem, encircling the tree to give the RPA Area (example based on T1 shown below) **:



** Tree root systems do not necessarily show the symmetry indicated in the above example, the development of all roots is influenced by the availability of water, nutrients, oxygen and soil penetrability. As far as these conditions allow, the root system tends to develop sufficient volume and area to provide physical stability.

The following table indicates the calculated Root Protection Areas (RPA) for the trees which were assessed as part of the Arboricultural Impact Assessment (AIA).

The RPAs have been calculated using stem diameter measurements (taken at 1.5m above ground level) collected at the time of the tree survey and are detailed in Table 5.0.
RPA calculations are made using formulae detailed in *BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations* – Section 4.6 and Table D.1.

Tree No. **(Category colour coded)**	**RPA Radius (m)**	**RPA Area (m^2)**
1	1.8	10

7.2 – Above Ground Constraints

The above ground constraints caused by tree heights and the spread of branches can pose constraints to the development project in respect of demolition work, new building design, position and operational space requirements.

For example, if the lateral branch spread of a tree extends into areas where development activity is likely, there is a risk of potential direct impact from site machinery, installation of scaffolding and other construction related activities on the tree crowns which may cause damage to limbs and branches.

Tree stems and exposed buttress roots are also above ground constraints which need to be considered in respect of possible impact damage to them. Post development pressure is also of material consideration in respect of future tree pruning requirements and frequency following completion of the development.

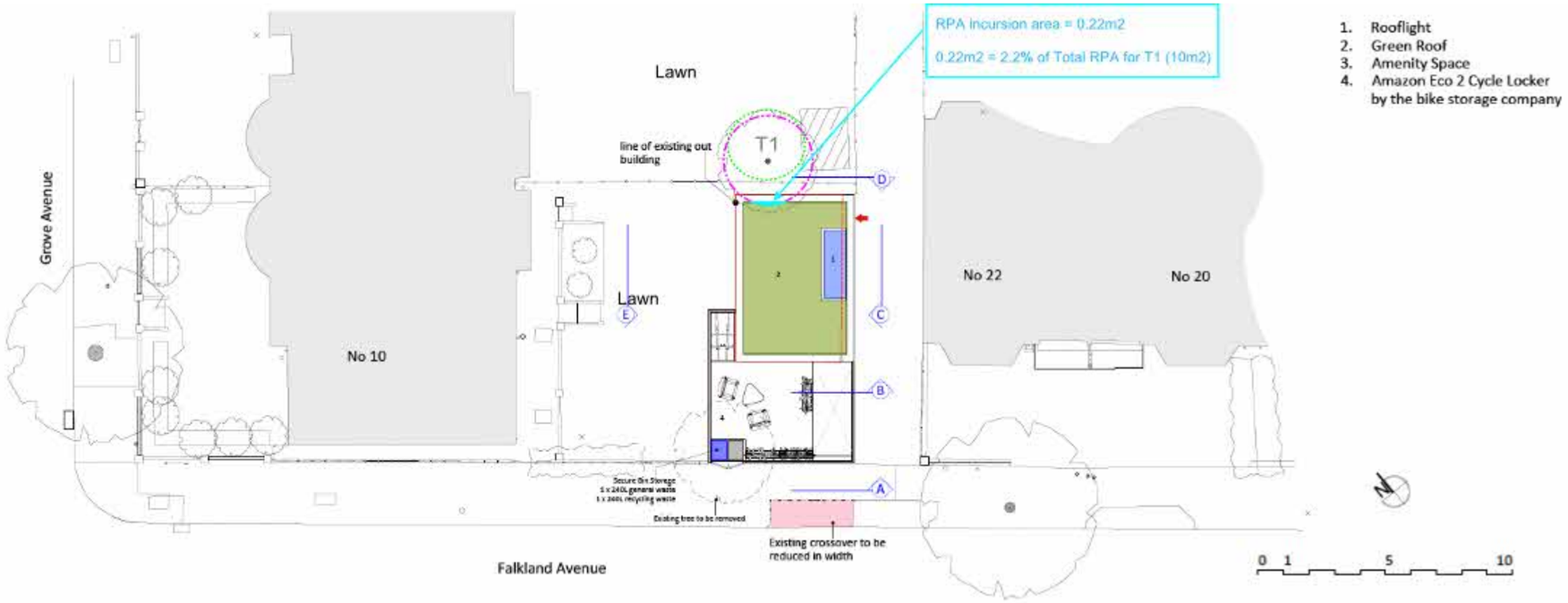
Shading issues should also be considered in respect of tree size, form and position in relation to the proposed new structure and end use.

Species characteristics such as density of foliage, and whether trees are deciduous or evergreen are important factors to consider in respect of shading issues, which may affect light levels into new or extended buildings.

Any proposals for above ground service installations such as telecommunication cables should also be considered with close reference to the above ground constraints posed by the trees at the development site, their location and their crown spreads.

The Tree Constraints Plan (TCP) in Section 8.0 below indicates the above and below ground constraints of all relevant trees at and adjacent to the site, with comments relating to the identified constraints in Sections 8.1 and 8.2. Canopy heights (ground clearance) and crown spread measurements are recorded in the Individual Tree Data Table in Section 5.0.

8.0 – Tree Constraints Plan (TCP)



PROPOSED

TREE NUMBER COLOUR CODING:

RED = CATEGORY U

GREEN = CATEGORY A

BLUE = CATEGORY B

GREY = CATEGORY C

KEY TO SYMBOLS:

= Calculated Root Protection Area (RPA)

= Crown spread (N, E, S, W)

8.1 - Tree Constraints Plan (TCP) Notes:

The Tree Constraints Plan (TCP) in Section 8.0 is shown to approximate 1:200 scale @ A3 based on the Proposed Site Plan *(Drawing No. PL – 02 – 50)* provided by gt associates.

The TCP is provided only to indicate the position, category and numbering of the surveyed trees and provide an indication of the identified tree constraints by showing a graphic of the calculated Root Protection Areas (RPA) and tree crown spreads. The TCP is for use to assist in the scheme design and determine the arboricultural feasibility of the proposal.

RPA measurements can be found in the RPA table in section 7.1, crown spread measurements can be found in Table 5.0 above.

Using the formula described in *BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations* (Section 4.6 of the standard), the calculated RPA should be shown as a nominal circle on the Tree Constraints Plan with a radius based on 12 times the stem diameter for a single stem tree.

8.2 – Tree Constraints Assessment

The identified constraints shown on the Tree Constraints Plan (TCP) in Section 8.0 were established following the tree survey, using data collected at that time.

The tree constraints are to be used to assist with the final design and arboricultural feasibility of the proposal and to later determine the layout of tree protection measures to create the Construction Exclusion Zones (CEZ) and ground protected areas at the site, if required.

Below is a summary of the identified tree constraints in relation to the development proposal, following the tree survey undertaken on the 9th December 2022:

Below Ground – Root Protection Area (RPA) Incursion - (New single storey studio footprint, including lower ground floor level and lightwell)

- **Trees Affected:**
  - T1.
- **Comments:**
  - The proposed footprint for the new studio building shows a negligible crossover (incursion) at the south-west extremity of the calculated nominal RPA for T1.
  - The extent of the lower ground floor level continues beyond the ground floor footprint to the south west including construction of a lightwell.

  - **RPA Incursion:**

    - Proposed footprint of the new building and lower ground floor level incurs inside the nominal RPA of T1 at the south-west extremity by 2.2%. **(0.22m² = 2.2% of the Total RPA (10m²) calculated for T1).**

  - The above percentage incursion is considered acceptable and does not factor in the restrictive nature of the existing concrete surface and footings of the current garage / outbuilding, which has been in situ for approx. 40 years. The presence of these structures would likely restrict the lateral growth and spread of T1 tree roots to the extremities shown by the nominal RPA circle. T1 is a young tree and likely to have been planted post construction of the existing outbuilding.
  - **The neighbouring garden where T1 is located is predominantly unmade ground, providing a rooting environment which is contiguous with the nominal RPA calculated for the tree and therefore, compensates for the negligible encroachment at the RPA extremity.**
  - It is important to take into consideration that the crown size of T1 has also been significantly reduced in the recent past and likely on numerous occasions in its life.
  - When a tree has undergone crown reduction work by heavily pruning back the primary scaffold limbs within the crown framework and subsequently replaced by secondary epicormic re-growth, the former crown size will unlikely be replaced, in comparison to a maiden tree which has not been treated in this way.

  - *Growing plants maintain a balance between the size of the shoot and the root system. This ensures a functional equilibrium between the demand for resources by above and below ground plant organs and the capacity for supply (Brouwer, 1983). Balance between the shoot and root systems ensure that resources supplied by each can meet the demand by the other. (Kramer and Kozlowski, 1979).*
    - *REF: J. Roberts, N. Jackson & M. Smith. (2006) "Tree Roots in the Built Environment", Research for Amenity Trees No. 8. Dept. for Communities and Local Government. London, TSO.*

  - *The overall size of the root system depends on the shoots and vice versa (Root to Shoot Ratio). Although the ratio varies through the life of a tree and can be influenced by a change in conditions, for any individual it is a very fundamental value which is under tight control in the allocation of carbon resources. If the ratio is upset for any reason, for instance by damage or pruning either the roots or the shoots, the tree will seek to readjust back to the original relationship, either by enhanced growth if this can be achieved or by the dieback of tissue which is surplus.*
    - *REF: Dr. P. G. Biddle (1998) "Tree Root Damage to Buildings: Vol. 1, Causes, Diagnosis and Remedy" Willowmead Publishing Ltd.*

8.2 – Tree Constraints Assessment - Cont'd

Below Ground – Root Protection Area (RPA) Incursion - (New single storey studio footprint, including lower ground floor level and lightwell) - Cont'd

- **Arboricultural Impacts:**
  - Potential for negligible root severance / loss of ephemeral feeder roots through ground excavations.
  - *(N.B. Any roots encountered at the extremities of the RPA will be ephemeral feeder roots, which die off and regenerate seasonally to the needs of the tree). Major woody roots are highly unlikely to be found at these extremities of the nominal RPA.*

- **Controls:**
  - The existing concrete hard standing and the garage / outbuilding foundations are to be taken up in their entirety to allow the lower ground floor level (including for the lightwell) to be excavated and new foundations constructed for the new studio building.
  - As a precautionary measure, removal of any existing hard surfacing and excavations inside the shown RPA sector *(as indicated in **CYAN** on the Tree Constraints Plan)* will be undertaken to a depth of 600mm using hand operated tools only. *i.e. using hand operated concrete breakers and manual garden forks to minimise the risk of root severance if roots are present.*
  - Further excavations necessary for the creation of the lower ground floor level and the building foundations in this area will continue to be undertaken using mechanical plant machinery.
  - Should any woody roots measuring over 25mm diameter be discovered during the course of any below ground excavation works (by hand or otherwise), they must not be severed, wrapped in hessian cloth to prevent desiccation and the Consulting Arboriculturist contacted.

The RPAs shown for retained trees are indicated on the Tree Constraints Plan (TCP) by a nominal circle around each tree. The circle is based on the RPA radius, as calculated using the stem diameter measurement for each tree, taken at 1.5m above ground level. RPA calculations for all assessed trees can be found in Section 7.1 above.

Below Ground – Root Protection Area (RPA) Incursion - (New underground services)

- **Trees Affected:**
  - None.

- **Comments:**
  - New trenches for installing new or altering existing underground utility apparatus to service the new studio building are not proposed where tree RPAs have been calculated.
  - It has been advised by the design team at gt associates that any underground utilities required to service the new studio building will be run in from Falkland Avenue, where no trees will be present.
  - An existing, young Fig tree growing on the north-west side of the entrance gates is to be removed prior to commencement of the development project.

  - *N.B. A Construction Management Plan (CMP) was not available at the time of writing to assess or reference utility service proposals and should be requested directly from the design team or applicant.*

- **Arboricultural Impacts:**
  - N/A.

- **Controls:**
  - N/A.

8.2 – Tree Constraints Assessment - Cont'd

Below Ground – Root Protection Area (RPA) Incursion - (New outside hard surfacing – Amenity space)

- **Trees Affected:**
  - None.

- **Comments:**
  - The new amenity space proposed inside the gated entrance from Falkland Avenue on the south-west side of the studio building will not affect any retained tree RPAs.
  - An existing, young Fig tree is growing on the north-west side of the entrance gates. The tree was planted approx. 5 years ago, is small in form at a height of approx. 4m, and offers little amenity value to the site or wider area. The tree is proposed to be removed prior to commencement of the project. (See Tree Surgery Works Section 8.3.1)

- **Arboricultural Impacts:**
  - None.

- **Controls:**
  - N/A.

Below Ground – Root Protection Area (RPA) Incursion – (Cycle and refuse storage units)

- **Trees Affected:**
  - None.

- **Comments:**
  - The cycle and refuse storage units proposed do not impact on tree RPAs.

- **Arboricultural Impacts:**
  - None.

- **Controls:**
  - N/A.

Below Ground – Root Protection Area (RPA) Incursion - (Site access & operations)

- **Trees Affected:**
  - None.

- **Comments:**
  - All site related access will be via the crossover and gated entrance from Falkland Avenue directly into the rear garden.
  - Following removal of the young Fig tree on the north-west side of the entrance gate, no significant trees are present within the rear garden area.
  - T1 is off site with a marginal RPA sector shown to extend within the curtilage of the site where the new studio building is to be constructed.
  - *(See "Below Ground – Root Protection Area (RPA) Incursion - (New single storey studio footprint, including lower ground floor level and lightwell)" heading above.)*

- **Arboricultural Impacts:**
  - None.

- **Controls:**
  - *(Refer also to the Tree Protection Plan (TPP) in Section 9.1 and Arboricultural Method Statement (AMS) in Section 10.1).*

  - All site related access will be directly into the rear garden area via the driveway crossover from Falkland Avenue.

  - **Tree Protection measures such as barrier fencing or temporary ground protection are not required to create Construction Exclusion Zones, as no significant on site trees are present.**

  - Suggested areas designated for material storage and preparation (i.e. Site Compound Areas) are indicated on the Tree Protection Plan (TPP) in Section 9.1.

8.2 – Tree Constraints Assessment – Cont'd

Above Ground – Crown heights / Crown Spread - (New structures above ground level)

- **Trees Affected:**
  - None.

- **Comments:**
  - The branch spread of T1 has been historically pruned to maintain clearance away from the existing garage / outbuilding and does not pose an above ground constraint to the construction of the new studio building.

- **Controls:**
  - N/A.

Above Ground – Crown heights / Crown Spread - (The use of cranes, booms/jibs, skip lorries)

- **Trees Affected:**
  - None.

- **Comments:**
  - At the time of writing, no cranes were proposed by the development team to be in use at the site during the development phases.

  - Mechanical diggers and dumpers will be in frequent operation within the rear garden, due to the extent of ground excavation works required in the lower ground floor level and lightwell construction. No tree crowns will be affected by plant use around the construction area within the rear garden.

  - If required, skips must not be positioned in close proximity to any trees on or off site to allow for delivery and collection by skip lorries without impacting on tree crowns.

  - ***Skips will need to be located on the Falkland Avenue carriageway, as no on site space for skips to be located will be available at the south-western end of the site, due to the extent of ground works required in construction of the lower ground floor level and lightwell. (See Tree Protection Plan (TPP) in Section 9.1).***

  - *N.B. A Construction Management Plan (CMP) was not available at the time of writing to assess or reference in respect of skips or waste management and should be requested directly from the design team or applicant.*
    - *As such, no information was available in respect of movement and disposal of excavated spoil. It can only be assumed that excavated spoil will be removed from the site to a skip before collection. The frequency of skip collections and delivery required for this purpose has also not been advised or made available in a CMP.*

- **Arboricultural Impacts:**
  - None.

- **Controls:**
  - Skips (if required) will need to be located on the Falkland Avenue carriageway. The approximate location for skips is shown on the Tree Protection Plan (TPP) in Section 9.1 and allows skip lorry lifting gear to freely operate without risk of impact on structures or tree branches.

  - **Skips must be located and operated in full accordance with The Highways Act 1980 Section 139, including the acquisition of a valid Skip Hire Licence.**
  - **(See Arboricultural Method Statement (AMS) in Section 10.1).**

8.2 – Tree Constraints Assessment – Cont'd

Above Ground – on/off site tree stems and buttressing - (All site activity)

- **Trees Affected:**
  - None.

- **Comments:**
  - T1 is located off site behind existing timber board boundary fencing.
  - No significant trees are present within the curtilage of the rear garden where the development works are being undertaken.

- **Controls:**
  - The stem and buttressing of T1 will be inaccessible and excluded beyond the existing boundary fencing. (See Tree Protection Plan (TPP) in Section 9.1).

The above assessment summarises the above and below ground level tree constraints identified at the site in relation to the development proposal, with a brief summary of tree protection control measures also provided. In terms of the associated construction works and site activity, all retained trees will need to be safeguarded by the installation of tree protection measures to prevent damage to them throughout the development phases. (See Tree Protection Sections 9.0 – 10.1 below).

The Arboricultural Method Statement (AMS) in Section 10.1 provides details of the tree protection and control measures to be employed at the site, to ensure the trees are safeguarded above and below ground level throughout the course of the development project and in the long term.

8.3 – Development phases

The following main phases of the development project are assumed:

- **Pre-development Phase** –:
  - Removal of the young Fig tree on the north-west side of the gated entrance from Falkland Avenue (See Section 8.3.1).

Development Phases

- **Development Phase 1** –:
  - Removal of the existing garage / outbuilding structure, removal of the existing concrete hard standing and foundations.
  - Excavations and ground works for the construction of the lower ground floor level, lightwell and building foundations.
  - Construction of the new single storey studio building including new service installations, cycle and refuse storage units.

- **Development Phase 2 –:**
  - Outside hard landscaping including the new amenity space surfacing and soft landscaping.

  - *N.B. A Construction Management Plan (CMP) was not available at the time of writing to assess or reference timings of development phases and should be requested directly from the design team or applicant.*

8.3.1 – Tree Surgery Works

The following section summarises the recommended tree surgery works which should be undertaken prior to commencement of the Development Phases:

- ***Tree removals:***

  - *Removal of the young Fig tree on the north-west side of the entrance gate from Falkland Avenue.*
    - *Remove tree to ground level and remove the stump using a stump grinder.*

9.0 – Construction Exclusion Zone (CEZ) – (General)

Retained trees on and/or in close proximity to the site must be protected by barriers and/or suitable ground protection before any materials or machinery are brought onto the site, and before any demolition or construction work commences.

Where all activity can be excluded from the tree's Root Protection Area (RPA), vertical barriers are to be erected to create a Construction Exclusion Zone (CEZ).
Where, due to site constraints construction activity cannot be fully or permanently excluded in this manner from all or part of a trees' RPA in unmade ground, suitable temporary ground protection is to be installed over exposed RPA sectors.

The RPA measurements of the surveyed trees (as shown in section 7.1 above) are used to help determine the Construction Exclusion Zone (CEZ) around the trees, protecting them during the construction phases to eliminate the possibility of damage above or below ground level.

The CEZ is created by fencing off the area and/or installing suitable ground protection that is fit for purpose, using the calculated distance of the trees' RPA Radius as shown in the table in Section 7.1 above.

The CEZ is required so that the calculated RPAs of trees remain undisturbed during the development process by excluding all activity from the area, or by protecting any exposed RPA sectors from pedestrian and vehicular traffic with suitable ground protection, if exposed outside of the barrier fencing. The CEZ should also be positioned to protect tree stems, buttress roots, surface roots and any low tree branches which may travel beyond the calculated RPA. In these cases, barrier fences should be extended to incorporate low hanging crown branches behind them if possible.

The storage of building materials also must not occur within any designated CEZ. An area for storage of materials, fuels, spoil and the mixing of cement and concrete will be determined during the planning phase to ensure the RPAs of the trees are not affected. (See Arboricultural Method Statement (AMS) 10.1 below).

Materials which can be considered as contaminates such as cement, concrete mixings, spoil and fuels, whose accidental spillage would cause damage to a tree, should be stored and handled well away from the outer edge of any tree RPA and in accordance with the *Control of Substances Hazardous to Health Regulations 2002 (COSHH). This also includes vehicle washings and care must be taken to ensure that sloping ground will not allow for contaminates to travel into the CEZ.*

Fires on site are not permitted. Notice boards, cables or other services must not be attached to the tree stems, limbs or branches.

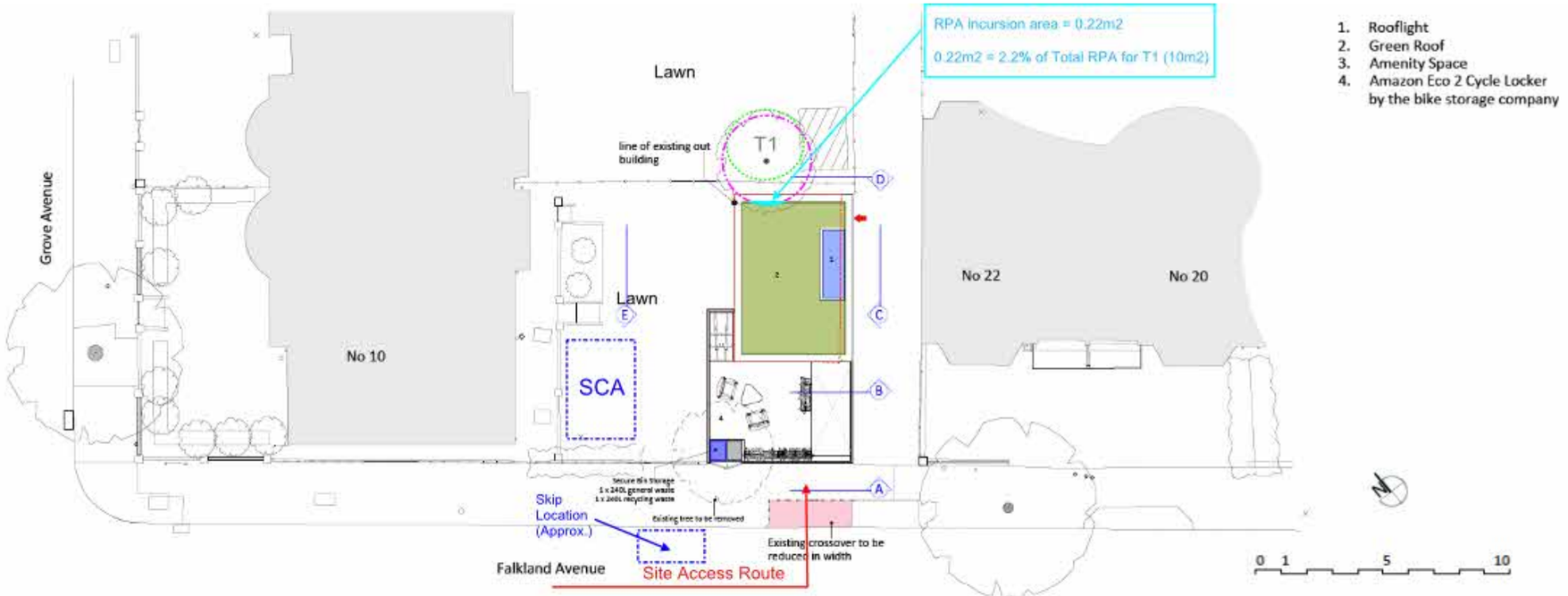
The CEZ must be considered as sacrosanct and not removed or altered without prior consultation with a Tree Sense Arboriculturist. The fencing should also display a sign with words to the effect of "Construction Exclusion Zone – Keep Out".
(See example in Appendix C).

Care must also be taken to ensure that any site activity involving any cranes or vehicles with booms, jibs and counterweights can operate without coming into contact with the protected tree(s). CEZ fencing should be extended to encapsulate low spreading branches if they travel beyond the calculated RPA.

Direct impact from vehicles with tree crowns and stems can cause irreparable damage and may make their safe retention impossible. Consequently, any transit or traverse of plant in proximity to trees should be conducted under the supervision of a banksman at all times, to ensure that adequate clearance from trees is always maintained.

BARRIER FENCING OR TEMPORARY GROUND PROTECTION MEASURES ARE NOT REQUIRED TO CREATE CONSTRUCTION EXCLUSION ZONES AT THE SITE, AS NO SIGNIFICANT ON SITE TREES ARE PRESENT.

9.1 – Tree Protection Plan (TPP)



PROPOSED

TREE NUMBER COLOUR CODING:

RED = CATEGORY U

GREEN = CATEGORY A

BLUE = CATEGORY B

GREY = CATEGORY C

KEY TO SYMBOLS:

= Calculated Root Protection Area (RPA)

= Crown spread (N, E, S, W)

= Site Compound Areas (SCA) (Approx.) - *For:*
Temporary site units;
Material storage;
Material Preparation;
Skips (front).

N.B.

Skips will need to be located on the Falkland Avenue carriageway.

Subject to Local Authority permission and acquiring a valid Skip Hire Licence.

Skips must be sited and operated at all times in accordance with the Highways Act 1980 Section 139.

(See Arboricultural Method Statement (AMS) in Section 10.1)

9.1.1 – Tree Protection Plan (TPP) Notes

The Tree Protection Plan (TPP) in Section 9.1 is shown to approximate 1:200 scale @ A3 based on the Proposed Site Plan *(Drawing No. PL – 02 – 50)* provided by gt associates.

The TPP is provided only to indicate the position, category and numbering of the surveyed trees and provide an indication of the identified tree constraints by showing a graphic of the calculated Root Protection Areas (RPA) and relevant tree crown spreads.

Suggested locations for Site Compound Areas (SCA) and skip locations are also shown on the TPP, where no trees will be affected either above or below ground level.

BARRIER FENCING OR TEMPORARY GROUND PROTECTION MEASURES ARE NOT REQUIRED TO CREATE CONSTRUCTION EXCLUSION ZONES AT THE SITE, AS NO SIGNIFICANT ON SITE TREES ARE PRESENT.

The following sections detail the Construction Exclusion Zone fencing and ground protection specifications as detailed in BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations.

9.2 - Protective Barrier Specification

In the case of the development project at 10 Grove Avenue, barrier fencing to create on site Construction Exclusion Zones (CEZ) are not required, as no significant on site trees are present.

9.3 - Ground Protection Specification

Temporary Ground Protection measures are not required at the site as as no significant on site trees are present.

10.0 – Arboricultural Implications

The potential direct and indirect impacts on trees which may arise from the proposed development and related construction activity, (identified following the tree constraints assessment) are as follows:

- **T1 – Potential for negligible root severance / loss of ephemeral feeder roots;**

Site specific controls relating to mitigation measures to be implemented in respect of these implications can be found in the Arboricultural Method Statement 10.1 below.

10.1 – Arboricultural Method Statement (AMS)

Arboricultural Method Statement for tree protection throughout the duration of the proposed development works.

Control measures must be implemented as detailed below to safeguard all assessed retained trees above and below ground level against the potentially damaging effects of construction works and related site activity.

The Arboricultural Method Statement (AMS) below is to be read and implemented with reference to the Tree Protection Plan (TPP) in Section 9.1, to identify:

- Trees to be retained – identified by a circle showing the stem position and individually numbered on the plan;
- **If required:**
  - Protective fence positions - (Therefore, the designated Construction Exclusion Zones);
  - Areas where Temporary Ground Protection (TGP) measures are to be installed.

A copy of this AMS and the Tree Protection Plan (TPP) shall be maintained on site at all times and must be made available to all site personnel to read and acknowledge.

A Site Personnel Induction Form (Template provided in Appendix B) must be completed and kept on file for all individual operatives working at the site, including sub contractors.

Construction Exclusion Zone (CEZ)

- No physical barriers to create on site Construction Exclusion Zones (CEZ) are required, as no significant on site trees are present.
- Temporary Ground Protection (TGP) measures are not required, as no significant on site trees are present.

Access Details

- All site access will be via the gated entrance and crossover from Falkland Avenue directly into the rear garden where the development work is to be undertaken.

Contractors car parking

- Car parking can be found on Grove Avenue and Falkland Avenue, subject to permit holder parking restrictions between 2-3pm.

Site Welfare Facilities

- If required, all temporary site welfare facilities, and site office units can be located within the curtilage of the rear garden.
- Recommended Site Welfare/Site Compound Areas (SCA) are shown with a blue hashed line on the TPP in Section 9.1.

10.1 – Arboricultural Method Statement (AMS) – Cont'd

Storage Space & Waste Management

- Areas of the rear garden have been recommended for material storage and material preparation (i.e. Site Compound Areas).

- Recommended Material Storage/Site Compound Areas (SCA) are shown with a blue hashed line on the TPP in Section 9.1.

- Contaminate materials such as oils, fuel, chemicals and gases will be stored and handled away from any fenced CEZ (if applicable) and must be stored and handled in accordance with the *Control of Substances Hazardous to Health Regulations 2002 (COSHH).* This includes the storage of all contaminate or hazardous materials within a bunded container or cabinet, which minimises exposure and risk.
- There should be specific storage spaces for all COSHH substances. Access to these areas should be restricted to authorised personnel only and stringent security measures must be implemented.
- The rear garden SCA has been designated as the area where a bunded container/compound is to be installed for the storage of all contaminate materials.

- No soil, demolition debris, or and other waste materials will be stored within the RPAs or under canopies of the retained trees, whichever is the greater. All construction related waste is to be removed from the site at the earliest opportunity.

- Skips will need to be located on the Falkland Avenue carriageway, as no on site space for skips to be located will be available, due to the extent of ground works required in construction of the lower ground floor level and lightwell at the south-western end of the site. (See Tree Protection Plan (TPP) in Section 9.1).

- **Skips must be located and operated in full accordance with The Highways Act 1980 Section 139, including the acquisition of a valid Skip Hire Licence.**

- *The approximate location for skips is shown on the Tree Protection Plan (TPP) in Section 9.1 and allows skip lorry lifting gear to freely operate without risk of impact on structures or tree branches.*

- A Construction Management Plan (CMP) detailing the frequency of visits for material deliveries, waste management etc. was not available at the time of writing and should be requested directly from the applicant, if required
    - *As such, no information was available in respect of movement and disposal of excavated spoil. It can only be assumed that excavated spoil will be removed from the site to a skip before collection. The frequency of skip collections and delivery required for this purpose has also not been advised or made available in a CMP.*

Demolition works

- The existing garage / outbuilding is to be removed using a "top down, pull back" method of demolition within its own footprint to restrict the spread of resulting debris.
- The existing concrete hard standing and building foundations are to be removed using a mechanical digger, with the exception of concrete removal within the nominal RPA sector for T1, as shown in **CYAN** on the Tree Protection Plan (TPP) in Section 9.1.
- Where the existing concrete is to be removed within the nominal RPA sector of T1, all excavations must be undertaken using hand operated tools only, such as hand operated concrete breakers.
- Any woody tree roots encountered which measure over 25mm in diameter during the removal of the existing concrete, exploratory hand digging or mechanical excavations must not be severed. (*See "Construction within RPAs of retained trees" heading below).*
- Any exposed woody roots measuring over 25mm in diameter must be wrapped in hessian cloth to prevent desiccation and the Consulting Arboriculturist contacted.

Construction within RPAs of retained trees

- **New studio building and lower ground floor level footprint incursion:**
    - Proposed footprint of the new studio building including the lower ground floor level incurs inside the nominal RPA calculated for T1 at the south-west extremity by 2.2%.
    - ***(0.22m^2 = 2.2% of the Total RPA (10m^2) calculated for T1).***
        - There is an extremely low risk of 25mm+ diameter woody roots being encountered at this extremity of the total RPA for T1. (See Tree Constraints Assessment Section 8.2).
        - The negligible RPA incursion as calculated above is considered acceptable for the necessary excavations required to construct the lower ground floor level, lightwell and building foundations, with the following control measures to be employed:
        - Following the removal of the existing concrete foundation base, exploratory excavations are required inside the RPA sector affected *(as shown in **CYAN** on the Tree Protection Plan (TPP) in Section 9.1).*
        - Exploratory excavations inside the RPA sector must be undertaken using hand operated tools only *(namely, garden forks to minimise the potential risk of root severance in case roots are present)* to a depth of 600mm before continuing with mechanical excavation.
        - Should any woody tree roots be encountered which measure over 25mm in diameter during any excavation works (by hand or otherwise), they must not be severed, wrapped in hessian cloth to prevent desiccation and the Consulting Arboriculturist contacted.

Proposed new outside hard surfaces (Amenity space)

- The existing, young Fig tree growing on the north-west side of the entrance gates is proposed to be removed prior to commencement of the project.
- The new hard surfacing proposed in Development Phase 2 to construct a paved amenity space on the south-west side of the studio building, does not impact on retained trees and therefore, no special control measures are required.

Changes to Existing Ground Levels

- There are no proposals to raise or lower existing ground levels at the site where retained tree RPAs would be adversely affected.

Underground Utility Services

- At the time of writing, it has been advised by the design team at gt associates that any utility infrastructure required to be constructed, or altered to service the new studio building will be run in from Falkland Avenue and not impact on T1 below ground level.

- *A Construction Management Plan (CMP) providing details of any proposed new utility infrastructure, or alterations to existing services was not available for consideration at the time of writing and should be requested directly from the applicant.*

Additional Precautions

- All Preliminary / General Management Recommendations / Access Facilitation tree surgery works must be completed prior to commencement of the development phases.
- Fires at the site are not permitted at any time.
- No notice boards, cables or other services will be attached to any tree stem, limb or branch.
- Should any woody tree roots over 25mm in diameter be exposed during the course of any hard surface removals or excavation works (by hand or otherwise), they must be immediately wrapped or covered in hessian cloth to prevent desiccation and protect from temperature changes whilst exposed and the Consulting Arboriculturist advised immediately.
- Any roots exposed over 25mm in diameter must not be severed without prior consultation with the Consulting Arboriculturist.
- Consideration will be given at all times to ensure that sloping ground will not allow for any contaminating substances to travel into areas where tree RPAs may be affected.
- Should spillages of contaminates occur, water is readily available on site and will be used to flush spilt materials through the soil and avoid contamination to tree roots. At the time of any spillage the main contractor will immediately contact the Consulting Arboriculturist for advice.
- Any significant build up of dust or particulate material on tree foliage should be hosed down to prevent clogging of stomata in the leaves.
- No cranes are proposed to be in use at the site.
- Skips (if required) must be positioned where lorry lifting gear can operate without coming into contact with tree crowns/branches.
- Skips must be located and operated in full accordance with The Highways Act 1980 Section 139, including the acquisition of a valid Skip Hire Licence.
- Recommended areas for skips to be located are shown on the Tree Protection Plan (TPP) in Section 9.1.

10.2 – Responsibilities

As applicable:

- It will be the responsibility of the main contractor to ensure that the planning conditions attached to planning consent are adhered to at all times and that a monitoring regime in regards to tree protection is adopted on site.
- The main contractor must further assign tree protection monitoring duties to one or more individuals working at the site, who will be responsible for regular tree protection monitoring and supervision.
- **The individual(s) assigned tree protection monitoring duties must:**
- Be present on site for the majority of the time throughout the development phases;
- Be aware of (a) the Tree Protection Plan and (b) the tree protection measures to be installed and maintained throughout the build;
- Be responsible for ensuring all tree protection measures are adhered to as detailed in the Arboricultural Impact Assessment (AIA) report and Arboricultural Method Statement (AMS);
- Ensure all site operatives without exception read and understand the tree protection and control measures detailed in the AIA and AMS;
- Keep on file all individual Site Personnel Induction forms (*see Appendix B*) which must be completed and signed by all site operatives indicating they have read and understood the control measures detailed in the AIA report and AMS;
- Maintain a written record of regular Tree Protection / Construction Exclusion Zone inspections (*see Appendix A*), to be kept up to date by the person(s) who have been designated the inspection and monitoring duties;
- Have the authority to stop any work that is causing, or has the potential to cause, harm to any retention trees;
- Be responsible for ensuring that all site operatives including sub contractors are aware of their responsibilities toward on/off site trees and the consequences of the failure to observe these responsibilities;
- Make immediate contact with the Consulting Arboriculturist in the event of any tree related problems occurring, whether actual or potential. *(Contact details including telephone number and email address is listed on the Title Page);*
- The Construction Exclusion Zone (CEZ) fencing, Temporary Ground Protection (TGP) apparatus and all signs must be maintained in position at all times and checked on a regular basis by the on site person(s) who have been designated that responsibility.
- The main contractor will be responsible for contacting the Local Planning Authority and the Consulting Arboriculturist at any time issues are raised relating to the trees on site.
- If at any time pruning works are required permission must be sought from the Local Planning Authority first and then carried out in accordance with *BS 3998:2010 Tree Work – Recommendations* (As updated).
- The main contractor will ensure the build sequence and phasing is appropriate to ensure that no damage occurs to the trees during the construction processes. Protective fences will remain in position and undisturbed until completion of ALL development works on the site.
- The main contractor will be responsible for ensuring sub-contractors do not carry out any process or operation that is likely to adversely impact upon any tree on site.

10.3 – Tree Work Standards

All recommendations for tree surgery works made within this report have been done so in the interests of good arboricultural management and to ensure tree surgery works are performed to a professional standard in accordance with *BS 3998:2010 Tree work – Recommendations.* (As updated).

All remedial tree surgery work which is suggested in this report must be undertaken to conform to standards and procedures set out in *BS 3998:2010 BS 3998:2010 Tree work – Recommendations.* (As updated)

- Tree Sense Arboricultural Consultants are happy to recommend a trusted tree surgery contractor if required, to ensure that all recommended tree surgery work is performed to a high standard.
- Tree Sense Arboricultural Consultants only recommend contractors who are approved by The Arboricultural Association to ensure that the highest standards of tree surgery work are met at all times.

11.0 – Report Summary

This Arboricultural Impact Assessment (AIA) report publication has been produced following a tree survey conducted in accordance with BS5837:2012 Trees *in relation to design, demolition and construction – Recommendations*.

The information provided within this re-publication of the AIA report follows revision and design changes made to the development scheme originally proposed under planning application ref: (23/0192/FUL).

The AIA report provides an assessment of the trees associated with the proposed development, based on the latest design proposal, including the addition of a lower ground floor element of the studio outbuilding and lightwell. The AIA has been produced using the latest information as made available by the development team at the time of writing.

This AIA report Ref: NEO_10GA_AIA_002 is published to detail the findings from an arboricultural viewpoint within the context of the latest proposed scheme and to detail the necessary tree protection controls and methodologies required to safeguard trees in the short and long term.

The original supporting AIA report Ref: NEO_10GA_AIA_001 published on the 16th December 2022 is invalidated and superseded by this latest publication (NEO_10GA_AIA_002).

The rear garden of No.10 Grove Avenue where the existing garage / outbuilding is to be replaced, is devoid of any significant trees. As such, physical barriers and temporary ground protection measures are not required at the site.

The AIA concludes that if the recommendations made within this report are duly followed, the development is achievable in arboricultural terms and should be acceptable to the Local Planning Authority (LPA). It must be understood however, that the provision of this AIA report does not provide any guarantees that the associated Local Planning Authority (LPA) will agree with the opinion of the Consulting Arboriculturist, or grant planning consent based on the content and findings of the AIA report.

If any design changes are made to any aspect of the proposed development project due to the identified tree constraints, operational restrictions, geotechnical concerns or otherwise, revisions or additions to tree protection, damage mitigation measures and site layouts will need to be made and a revised report produced.

This is a Development Control, not a Building Control focused document. In regard to the latter, this deals with foundation depth and design in relation to trees using NHBC/Zurich national guidance. For advice, consult with the local council Building Control Officer or an approved NHBC inspector in order to gain Full Plans Approval or a Completion Certificate. The latter are governed by the Building Act 1984 and Building Regulations 2010. As such the above Building Control issues are outside the remit of a Consulting Arborist.

Full detailed specifications of the development project and engineering methods etc. will be supplied by the development team separately on request.

Detailed information regarding the site setup, plant use, waste management and demolition/construction methodologies was not available at the time of writing and should be requested separately from the development team in a Construction Management Plan (CMP), as required.

The CMP must take fully into consideration and adhere to all required tree protection control measures, as detailed in the AIA report.

If necessary, referral back to the Consulting Arboriculturist will be required to evaluate any potential tree related impacts which have not already been considered using the available information supplied at the time of writing and a revised AIA report will need to be produced. *(i.e. changes to any elements of the scheme design, utility service proposals, or the requirement for a crane to be used etc).*

12.0 – Legal and Planning Consents

- Appropriate legal and planning consent should be gained before undertaking any tree work; for example if the tree(s) are subject to a Tree Preservation Order (TPO), permission must first be obtained from the Local Authority. Permission is not required for emergency tree work on dead, dying or dangerous TPO trees; however the Local Authority should still be advised.
- Six weeks notice is required to be given to the local authority via a Section 211 Notice for any proposed tree surgery work on trees situated within a designated Conservation Area. Permission is not required for emergency tree work on dead, dying or dangerous trees situated within a Conservation Area; however the Local Authority should still be advised.
- Tree owners have a responsibility as a common law duty of care, as well as responsibilities under statutory law, to ensure that trees growing within the boundaries of their property are maintained to reduce to an acceptable level the risk of potential harm befalling other people or property.
- In the course of undertaking any tree work, the client is advised to ensure that operational assessments and procedures are in place, and to take due consideration of the legal requirements.

- Key legislation includes (but is not restricted to):

    - The Wildlife and Countryside Act (1981)
    - Occupiers Liability Act (1957/84)
    - Highways Act (1980/86)
    - Town and Country Planning Act (1990/Regulations 1999/Amendment 2008/09)
    - Anti-Social Behaviour Act (2003) – Part 8 (High Hedges)
    - The Countryside Rights of Way Act (2000)
    - The Conservation (Natural Habitats etc.) Regulations (1994)
    - The Badgers Act (1992)

13.0 – Publications

- Other publications which are relevant to the development proposal to which further reference is advised includes but is not restricted to:

    - National House Building Council (N.H.B.C) Chapter 4.2 – (Building near trees);

    - National Joint Utilities Group (NJUG) Volume 4 – (Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees).

Chris Wallis *Tech Cert (ArborA), AHort II (Arb.)*
Tree Sense Arboricultural Consultants

Appendix A – Construction Exclusion Zone Inspection Form

Where physical barriers, fencing or temporary ground protection measures are to be installed to create on site Construction Exclusion Zones (CEZ), below is a suggested, auditable inspection and monitoring form to be used (as applicable):

Construction Exclusion Zone Inspection Form
Site Address: 10 Grove Avenue, London, N3 1QP **Client Name**: Mr. J. Neophitou **Inspected By**_____ **Inspection Date & Time**:_____

Construction Exclusion Zone – Barrier Fencing
Comments: **Action:**
Construction Exclusion Zone – Temporary Ground Protection
Comments: **Action:**
General Observations and Comments

Appendix B – Site Personnel Induction Form

Name: _____

Company: _____

Site Address: **10 Grove Avenue, London, N3 1QP** _____

Date: _____

Declaration	**Tick to Confirm**
I have read and understand the Arboricultural Method Statement and the requirements to be employed / actioned at the site regarding tree protection.	
I understand that all tree protection measures if installed at the site (i.e. barrier fencing and/or ground protection apparatus) must not be moved or disturbed throughout the development project without prior agreement with the Consulting Arboriculturist.	
I understand that certain operations may only be undertaken under supervision of the Consulting Arboriculturist and/or must not be undertaken without their approval.	
I acknowledge that any concerns I have regarding the protection of trees at and adjacent to the development site will be brought to the attention of the Site Manager/Supervisor.	
I acknowledge that I must not cause direct or indirect damage to any on site or neighbouring tree, either above or below ground level during the course of my daily operational duties.	

SIGNATURE: _____

Appendix C – Construction Exclusion Zone (CEZ) – Sign Format

Where physical barriers or fencing is to be installed to create on site Construction Exclusion Zones (CEZ), below is a suggested format for weatherproof warning signs to be attached to the barrier fencing: