CLYDESMUIR INDUSTRIAL ESTATE

BS 5837: 2012 Arboricultural Survey Report and Impact Assessment

DECEMBER 25

CLYDESMUIR INDUSTRIAL ESTATE

Arboricultural Impact Assessment

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Pegasus Development

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30295735-ARC-XX-XX-RPT-ARB-001-AIA

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Revision Control

Revision	Date	Author	Checker	Reviewer	Approver	Changes
First Issue	12/12/25	IL	CMJM	JP	RA	N/A

CONTENTS

1 Introduction

1.1 Overview

Arcadis Consulting (UK) Limited (Arcadis) has been commissioned by Pegasus Developments to undertake a Preliminary Arboricultural Survey and impact assessment in line with British Standard BS 5837: 2012 Trees in relation to design, demolition and construction – Recommendations (British Standards Institution, 2012), henceforth referred to as BS 5837: 2012 in support of proposed works the Clydesmuir Industrial Estate.

The site is located in Tremorfa, Cardiff (grid reference: ST 20677 77524) and is comprised of hardstanding with industrial building units throughout. There is a small unmanaged area with ephemeral/tall ruderal vegetation in the northern corner of the site.

An aerial screen shot illustrating the site location (red outline) and survey area (blue outline) is presented in Image 1.

Image 1 Site Boundary (red line), Survey Boundary (blue line). Imagery © 2025 Infoterra Ltd & Bluesky

1.2 Proposed Development

The proposed development seeks to deliver approximately 96 affordable homes and associated car parking spaces.

2 Methodology

2.1 Tree Survey Methodology

An Arboricultural Survey was undertaken by Charlie Moore BSc (Hons) MArborA MRSB (Senior Arboricultural Consultant) on 20 October 2025 in accordance with BS 5837:2012.

The survey was based on topographical survey, document reference: P3390.

Observations were conducted from ground level, utilising the “Visual Tree Assessment” (VTA) system as outlined in The Body Language of Trees, A Handbook for Failure Analysis Research for Amenity Trees No.4 (Mattheck and Breloer, 1994) with the aid of binoculars. Photographs of all trees surveyed are provided in Appendix D. Photographs

2.2 Study Area

The study area included the site itself (redline boundary) and any trees considered to be within influencing distance of the site within an area up to 15 metres outside (blueline boundary) as displayed in Figure 1.

2.3 Individual trees

For the purposes of BS 5837: 2012, only trees with a stem diameter greater than 75mm, (measured at 1.5m above ground level), were included within the survey.

For reference, individual trees are identified with the letter T and an associated unique number on the tree schedules and Tree Constraints Plan (TCP).

The stem diameter of the trees was recorded at 1.5m above ground level or following Annex C of BS5837:2012, using a rounded-down diameter tape and recorded in millimetres.

The height of trees was recorded in meters using a clinometer.

The maximum crown spread of each tree was measured from the centre of the trunk to the tips of the live lateral branches taken at four compass points (N-E-S-W) using a ground tape where safe and practical to do so. Crown spread measurements were recorded in metres.

Tree age was estimated from visual indicators (such as tree size and appearance of bark) which was taken as a provisional guide. Age estimates often need to be modified based on further information such as historical records and local knowledge.

If direct access to the tree was not possible, estimations from appropriate vantage points were taken, and any limitations or estimations are presented within the survey limitations section and noted in the associated schedules.

2.4 Groups of trees

Features have been recorded as a group where they have been considered to form a cohesive arboricultural feature either aerodynamically (e.g. trees that provide companion shelter), visually (e.g. avenues or screens) or culturally, including for biodiversity (e.g. wood pasture).

Groups of trees were identified with the letter G and number on the associated schedules and plans.

Crown spread was assessed by measuring the largest crown spread on each compass point (N-E-S-W). Groups have been plotted using aerial imagery. The stem diameter of tree groups has been calculated as an average stem diameter of trees within a group.

Heights are displayed as the maximum height of the tallest tree within the group or displayed as a range of heights where two or more distinct height layers have been identified. (i.e. understorey trees/large woody shrubs).

2.5 Hedgerows

Hedgerows were identified with the letter H and number on the associated schedules and plans. A 30m section of hedgerow was surveyed for each hedgerow, recording the number of species, average stem

diameter, lateral spread and the maximum height. Any individual trees present within the hedgerow were recorded as individual trees.

2.6 Categorisation

Trees surveyed have been categorised according to their quality and value in compliance with Table 1 Cascade chart for tree quality assessment of BS 5837: 2012. A glossary of survey terms can be found in Appendix A. Explanation of Terms and the full cascade chart for tree categorisation is displayed in Table B2 of Appendix B. Schedule of Trees.

2.7 Root Protection Area

The Root Protection Area (RPA) of a tree is described in section 3.7 of BS 5837: 2012 as the 'minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority. It should be recognised that the calculated RPA may not entirely encompass all of the tree's rooting material.

RPAs were calculated in accordance with Section 4.6.1 in BS: 5837:2012 using the measurement of the stem diameter at 1.5m above ground level or at ground level if the tree is multi-stemmed. The shape and size of an RPA has been amended in accordance with Section 4.6.3 of BS: 5837:2012. Where assessed as appropriate. Where they have been amended, original calculated RPAs are represented as a pink dashed line in Figure 1. Tree Constraints Plan and Figure 2. Tree Impact and Protection Plan.

Tree RPAs are recorded in the Schedule of Trees (Appendix B. Schedule of Trees) and shown as a pink shaded area on the Tree Constraints Plan (and Tree Impact and Protection Plan as appropriate) and should form the initial Construction Exclusion Zone (CEZ) to protect the trees within and adjoining the Site.

Where RPAs have been calculated for tree groups, hedgerows or woodlands, they have been represented as an offset (in meters) from the plotted canopy line of the feature in question when detailed in Appendix B. Schedule of Trees.

No soil assessment or above/below ground investigations into the true extent of a trees rooting area were undertaken as they are beyond the scope of this report.

2.8 Survey Limitations

This report has been prepared in accordance with BS5837:2012 and is intended to inform the design and planning process in relation to arboricultural constraints. The Visual Tree Assessment (VTA) methodology was used solely to evaluate the physiological and structural condition of trees as relevant to this process. This assessment does not constitute a tree hazard assessment and no evaluation of failure probability, or risk of harm from trees has been undertaken, and as such, this report should not be used to discharge duty of care under The Occupiers Liability Act 1957 (as amended 1984).

However, in accordance with industry best practice and our professional duty of care, any trees observed during the survey to present an immediate risk of harm to person or property will be identified and communicated to the client, landowner, and project manager at the earliest opportunity.

Of the arboricultural features surveyed, five were located in areas where access to their main stems was not possible and as such, estimations have been made regarding their dimensions. Inaccessible trees are marked with a hash (#) in Appendix B. Schedule of Trees.

Only trees with the potential to be affected by development within or adjacent to the site as determined by the survey boundary displayed in Image 1 have been included within this report. Any additional trees in the vicinity of the proposed scheme have been deemed to not be affected by the proposals and have not been included.

Trees are living organisms and as such their health and condition are naturally subject to change over time. Unforeseen future circumstances such as neglect, wilful damage or severe/extreme weather conditions may affect the future health and condition of the trees included in this report.

2.9 Arboricultural Impact Assessment

An AIA is a study undertaken by an arboriculturist, to identify, and evaluate the extent of direct and indirect impacts on existing trees that may arise as a result of the implementation of proposed development. The AIA may also include identification of mitigation measures which have been included within this report.

The Arboricultural Impact Assessment (AIA) was undertaken by Charlie Moore, BSc (Hons), TechArborA (Senior Arboricultural and Ecological Consultant) & Isabel Leggett (Graduate Arboricultural and Ecological Consultant) in December 2025 as a desk-based study based on the collected field data and design details provided on behalf of the Client. Table 1 provides the data sources used.

Table 1: Data Sources

Document Reference and Author	Date	Document Title
CMWW-HMA-ZZ-ZZ-D-A-90002 (HolderMathiasarchitects)	December 2025	Proposed Site Plan

2.10 Tree Constraints Check

The following constraints checks were undertaken for the site on 22 October 2025.

- A tree constraints check was performed using the Cardiff Council iShare interactive map (Cardiff Council, 2025).
- Data Map Wales was used to search for areas of ancient woodland (DataMapWales 2025); and
- A check for catalogued Ancient and Veteran trees using the Woodland Trust Ancient Tree Inventory (Woodland Trust 2025).

The results of which are provided in Section 3 of this report.

3 Tree Survey Results

Full details of the survey data are presented within Appendix B. Schedule of Trees and within Figure 1. Tree Constraints Plan.

3.1 Tree Assessment and Categorisation

A total of six arboricultural features were recorded within the study area, these were recorded as two individual trees (T), three groups of trees (G) and one hedgerow (H).

Each arboricultural feature was assigned to one of four categories, as listed in Table 2.

Table 2: Tree Categories Recorded

Tree Category	No. of Individual Trees	No. of Groups of Trees	No. of Hedgerows
Category C (trees of low quality)	2	3	1
Totals	**2**	**3**	**1**

3.2 Tree Species Diversity

A total of five different individual tree species were recorded during the survey and are represented throughout the survey area. A summary of the species surveyed can be found within the tree schedules in Appendix B. Schedule of Trees and also provided in Table 3.

Table 3: Tree Species Recorded

Tree Species	Individual Trees	Tree Groups	Hedgerows
Dogwood *(Cornus sanguinea)*	0	1	0
Goat Willow *(Salix caprea)*	0	1	0
Hawthorn (*Crataegus monogyna*)	1	0	0
Leyland Cypress *(Cupressus x leylandii)*	0	0	1
Sycamore (*Acer pseudoplatanus*)	1	1	0
Totals	2	3	1

3.3 Age Diversity

All arboricultural features surveyed within the study area were assessed to be within the Young to Mature age classifications set by BS 5837: 2012 as illustrated in Table 4.

Table 4: Age Diversity

Age Class	Trees	Groups	Hedgerows
Semi-mature	1	0	0
Early mature	1	2	0
Mature	0	1	1
Totals	**2**	3	1

3.4 Tree Constraints Check

It was confirmed by Cardiff Council that no trees surveyed are subject to Tree Preservation Orders or Conservation Area restrictions.

It was confirmed that there are no designated ancient woodlands or veteran trees were identified in the study area using online data sources listed in Section 2.10.

4 Arboricultural Impact Assessment (AIA)

4.1 Potential Arboricultural Impacts

Development can have an adverse impact on trees and other woody vegetation within a site. This can include:

- immediate tree removal to facilitate the footprint of a new development;
- potential future tree loss through the early decline of trees due to soil compaction;
- root disturbance and damage within a tree's rooting area; and
- canopy removal or damage due to plant movement.

The AIA is used to appraise any direct and indirect effects of the proposed design and where necessary recommend mitigation.

This should include the effects of any tree loss required to implement the proposed development and any potentially damaging activities proposed in the vicinity of retained trees, including the demolition of existing structures, construction activities relating to the proposed development and its buildability.

The potential arboricultural impacts have been assessed using the design detail listed in Table 1. Tree removals, potential RPA and canopy incursions have been presented on the Figure 2. Tree Impact and Protection Plan Potential RPA incursions are marked in yellow hatching, tree removals are shown in red hatching and the recommended fencing requirements are shown in black lines.

4.2 Tree Removal

No arboricultural features are expected to be removed as a result of the proposed development.

4.3 Potential Incursions within Root Protection Areas

One group of trees to be fully or partially retained within the study area will be subject to potential incursions within its calculated RPA as presented in Table 5.

Table 5: Potential Root Protection Area Incursions

Tree ID	Species	Incursion type and likely significance	RPA m^2	RPA incursion m^2	RPA incursion %	Grade
G1	Sycamore (*Acer pseudoplatanus)*	Proposed hard standing area and building located on pre-existing hard standing already in situ. Unlikely to result in the loss or significant impact to existing trees within group.	836.1	30.1	3.6	C2

Proposals for a new hard standing area and building located on pre-existing hard standing will encroach inside the RPAs of trees to be retained within groups of trees G1. Mitigation measures as described in Section 5 of this report will be necessary to ensure the safe retention of the remainder of group G1.

4.4 Facilitation Pruning

Facilitation pruning works to three arboricultural features will be necessary to facilitate proposed construction works and future site usage. Details of recommended pruning operations are provided in Table 6 and Section 5 of this report

Table 6: Facilitation Pruning

Tree ID.	Species	Necessary Works	Grade
G1	Sycamore (*Acer pseudoplatanus)*	Pruning of lateral branches back to site boundary to facilitate construction.	C2
G2	Goat Willow *(Salix caprea)*	Pruning of lateral branches back to site boundary to facilitate construction.	C2
G3	Dogwood *(Cornus sanguinea)*	Pruning of lateral branches back to site boundary to facilitate construction.	C2

The facilitation pruning is considered unlikely to impact the trees to be retained due to their age and the nature of the necessary works.

4.5 General Construction Impacts

Construction access, site works, and storage areas have the potential to directly or indirectly impact the stem, canopy or RPAs of the trees scheduled for retention which are located around the proposed works as displayed in Figure 2. Tree Impact and Protection Plan. In order to ensure that these features are successfully retained during the proposed works, temporary protective fencing will be required to demarcate a Construction Exclusion Zone (CEZ) around all retained trees as displayed don the Tree Impacts and Protection Plan.

The CEZ acts to protect both tree roots and branches and should be suitably protected with appropriate temporary fencing for the duration of the demolition and construction phases of the development; exact specifications for this will depend on the nature of the proposed development.

5 Mitigation

5.1 General Construction Mitigation

Site operations involving plant with booms, jibs and counterweights should be planned in advance to prevent contact with retained trees. All operations involving such plant in close proximity to trees should be conducted under the supervision of a banksman to ensure that adequate clearance from the retained trees is maintained.

All pruning and contracting works should be carried out by a competent qualified contractor in accordance with BS 3998:2010, Tree Work Recommendations.

Adequate allowance for the planning and implementation of site compounds and storage areas and the routing of services for the proposed scheme must be made to avoid encroachment with the RPA of, or prevent direct contact with, all retained trees on site.

5.2 RPA Incursions

Construction works within the RPA of G1 are unlikely to significantly impact trees within the group. To minimise potential for accidental damage retained trees, the following methodology should be implemented on-site.

Any breakout of hardstanding undertaken using handheld tools or plant (e.g. pneumatic hammer).

Where proposals require new hardstanding, sub-base should be retained and new surface waring course applied to remove the requirement for excavation into RPAs.

Where sub-base cannot be retained, the first 1000mm of excavation within RPAs of retained trees shall be carried out using hand-held tools. Ideally tools that utilise high-pressure gas to loosen soil aggregates (e.g., airspade) are recommended.

Where rooting activity is encountered it should be cleanly severed back to excavation edges using secateurs or a pruning saw.

Excavations for the installation of foundations or retaining walls adjacent to the RPAs of trees to be retained must be carefully lined with a non-permeable membrane in order to prevent chemical leeching into adjacent soils

5.3 Facilitation Pruning

It is likely that pruning works will be required to groups G1, G2 and G3. Any requirement for facilitation pruning should be reviewed and confirmed prior to the commencement of works on site.

All tree works must be carried out by a qualified contractor in accordance with BS 3998: 2010: Tree Work – Recommendations.

5.4 Arboricultural Method Statement

Due to the nature and scale of the proposed works, a site-specific Arboricultural Method Statement (AMS) is not likely to be required to protect trees to be retained over the course of the works. This document encloses details of Preliminary Tree Protection Measures (Appendix C Preliminary Tree Protection Measures) to be implemented on site prior to the commencement of demolition or construction works.

6 Statutory Tree Protection and Guidance

6.1 Town and Country Planning (Trees) (Amendment) (Wales) Regulations 2017

The Town and Country Planning (Tree Preservation) (Amendment) (Wales) Regulations 2017 make provision for, amongst other things, the form of Tree Preservation Orders (TPOs) and for applications for consent to carry out work on trees subject to an order. The order makes it an offence to cut down, uproot, prune, lop or damage the tree (including the roots) in question without first obtaining the Council's consent. A TPO can apply to a single tree, a group of trees or woodland. Anyone who wishes to fell or carry out work to a tree protected by a TPO must apply to the Council to obtain permission.

There are exemptions for statutory undertakers under the Town and Country Planning Regulations which include:

1 where the land on which the tree is situated is operational land of the statutory undertaker and the work is necessary; and
   1.1. in the interests of the safe operation of the undertaking;
   1.2. in connection with the inspection, repair or renewal of any sewers, mains, pipes, cables or other apparatus of the statutory undertaker;
   1.3. to enable the statutory undertaker to carry out development permitted by or under the Town and Country Planning (General Permitted Development) Order 1995. This is only where works are within an operational site and does not include works outside of operational sites.
2 where works are granted planning permission no additional specific permission in regard to works to TPOs is required.

6.2 Town and Country Planning Act 1990 (as amended).

Conservation Areas are protected under the Town and Country Planning Act 1990 (as amended). Where trees within a Conservation Area are not a TPO permission must also be obtained by the Local Planning Authority (LPA) under a Section 211 notice, which gives the LPA the opportunity to consider protecting a tree. The exception is when a tree is less than 7.5 cm in diameter, measures 1.5 m above ground or 10 cm if thinning to help the growth of other trees.

7 Trees and Planning

7.1 The Planning Process

LPAs in the UK have a statutory duty to consider both the protection and planting of trees when considering planning applications. The potential impact of development on all trees (including those not protected by a TPO or other statutory designation) is a material consideration in determining a planning application.

BS 5837 provides a framework which sets out how trees should be considered in the planning process and also explicitly applies to development where planning consent is not required.

BS 5837 recommends that a tree survey is undertaken to identify the quality and benefits of trees and the spatial constraints associated with them. This information is then used to produce a Tree Constraints Plan (TCP) illustrating the above and below ground constraints associated with trees RPA. The TCP is intended to be used to inform the design process and to identify those trees considered to be a constraint to development due to the quality and value (in a non-fiscal sense).

Following the production of the final scheme design, an Arboricultural Impact Assessment (AIA) is produced to identify the likely direct and indirect impacts of the proposed development, along with a Tree Protection Plan (TIPP) to identify trees to be removed and retained and to illustrate the protection of retained trees. An Arboricultural Method Statement (AMS) is also often required as a condition of planning consent to detail how sensitive operations are to be undertaken in close proximity to retained trees.

These documents and plans are considered the minimum requirement for arboricultural matters within a planning application and are intended to ensure both a long term sustainable and harmonious relationship between existing trees and the proposed development.

7.2 Planning Policy Wales (2024)

Planning Policy Wales section 6.4.4.2 states:

"Permanent removal of trees, woodland and hedgerows will only be permitted where it would achieve significant and clearly defined public benefits. Where individual or groups of trees and hedgerows are removed as part of a proposed scheme, planning authorities must first follow the step wise approach as set out in paragraph 6.4.15. Where loss is unavoidable developers will be required to provide compensatory planting (which is proportionate to the proposed loss as identified through an assessment of green infrastructure value including biodiversity, landscape value and carbon capture). Replacement planting shall be at a ratio equivalent to the quality, environmental and ecological importance of the tree(s) lost and this must be preferably onsite, or immediately adjacent to the site, and at a minimum ratio of at least 3 trees of a similar type and compensatory size planted for every 1 lost. Where a woodland or a shelterbelt area is lost as part of a proposed scheme, the compensation planting must be at a scale, design and species mix reflective of that area lost. In such circumstances, the planting rate must be at a minimum of 1600 trees per hectare for broadleaves, and 2500 trees per hectare for conifers. The planting position for each replacement tree shall be fit to support its establishment and health and ensure its unconstrained long term growth to optimise the environmental and ecological benefits it affords."

Planning Policy Wales section 6.4.43 states:

"Ancient woodland, semi natural woodlands, individual ancient, veteran and heritage trees and ancient hedgerows are irreplaceable natural resources, and have significant landscape, biodiversity and cultural value. Such trees, woodlands and hedgerows are to be afforded protection from development which would result in their loss or deterioration unless very exceptionally there are significant and clearly defined public benefits; this protection must prevent potentially damaging operations and their unnecessary loss. In the case of a site recorded on the Ancient Woodland Inventory, authorities should consider the advice of NRW. Planning authorities should also have regard to the Ancient Tree Inventory, work to improve its completeness and use it to ensure the protection of trees and woodland and identify opportunities for more planting as part of the Green Infrastructure Assessment, particularly in terms of canopy cover."

Where the LPA does not have a development plan or the development plan is out of date, the LPA should grant planning consent insofar as the development proposals do not breach Planning Policy Wales requirements.

7.3 Local Planning Policy

The operative development plan for the site is the Cardiff Local Development Plan (LDP) 2006–2026, adopted January 2016.
The LDP recognises the significant environmental, social and climatic value of trees, woodlands, and hedgerows, and contains specific protective policy wording under Policy EN8 – Trees, Woodlands and Hedgerows.

Policy EN8:
"*Development will not be permitted that would cause unacceptable harm to trees, woodlands and hedgerows of significant public amenity, natural or cultural heritage value, or that contribute significantly to mitigating the effects of climate change."*

The supporting text to Policy EN8 highlights that trees, woodlands, and hedgerows: "*offer multiple benefits, including visual amenity, defining a sense of place, providing places for relaxation and recreation, habitats for wildlife, improved health and wellbeing, and mitigating the effects of climate change."*

The policy further requires that: "*To prevent damage to trees, woodlands and hedgerows during development, schemes of protection will normally be required, in accordance with the current British Standard 5837*."

Accordingly, the Council expects arboricultural assessments and protection measures to follow BS 5837:2012 to ensure trees and woodlands are retained and integrated within new development as part of Cardiff's wider sustainable urban forest.

This report should therefore identify, categorises, and assesses all trees, groups, and woodlands in accordance with BS 5837:2012, and considers design, construction, and mitigation measures to ensure full compliance with Policy EN8 and the overarching aims of the LDP.

7.4 Assessment of Scheme compliance with relevant planning policy

The proposed development aligns with planning policy EN8 as no trees are anticipated to require removal as a result of the proposed development.

The scheme aligns with the Planning Policy Wales requirements to avoid the loss or disturbance of irreplaceable habitats.

8 Summary

A total of six arboricultural features were recorded within the study area, these were recorded as two individual trees (T), three groups of trees (G) and one hedgerows (H).

Each arboricultural feature was assigned to one of four categories, as listed below:

- Category A features: none have been identified as Category A (trees of high quality) as part of this survey;
- Category B features: none have been identified as Category B (trees of moderate quality) as part of this survey;
- Category C features: six have been identified as Category C (trees of low quality) as part of this survey;
- Category U features: none have been identified as Category U (trees of poor quality unsuitable for retention) as part of this survey.

It was confirmed by the Cardiff Council that no trees surveyed are subject to Tree Preservation Orders or Conservation Area restrictions.

It was confirmed that there are no designated ancient woodlands in the study area and no veteran trees were identified during the survey.

No arboricultural features are expected to be removed as a result of the proposed development.

One arboricultural feature (G1) to be fully or partially retained within the study area will be subject to potential incursions within its calculated RPA. Mitigation requirements for these works are provided in Section 5.

Some minor facilitation pruning works within three groups of trees (G1, G2 and G3) will be necessary to facilitate proposed construction works and future site usage.

Any tree works must be carried out by a Arboricultural Association Approved contractor must be in accordance with BS 3998: 2010: Tree Work – Recommendations.

A copy of this report, including the Tree Impact and Protection Plan should be made available to the site managers and proposed arboricultural contractor to ensure site works comply with methodologies detailed within

This document encloses details of Preliminary Tree Protection Measures (Appendix C Preliminary Tree Protection Measures) to be implemented on site prior to the commencement of demolition or construction works. Given the limited nature of construction activity adjacent to trees on the site, a site-specific Arboricultural Method Statement is not considered a necessity of this project.

9 References

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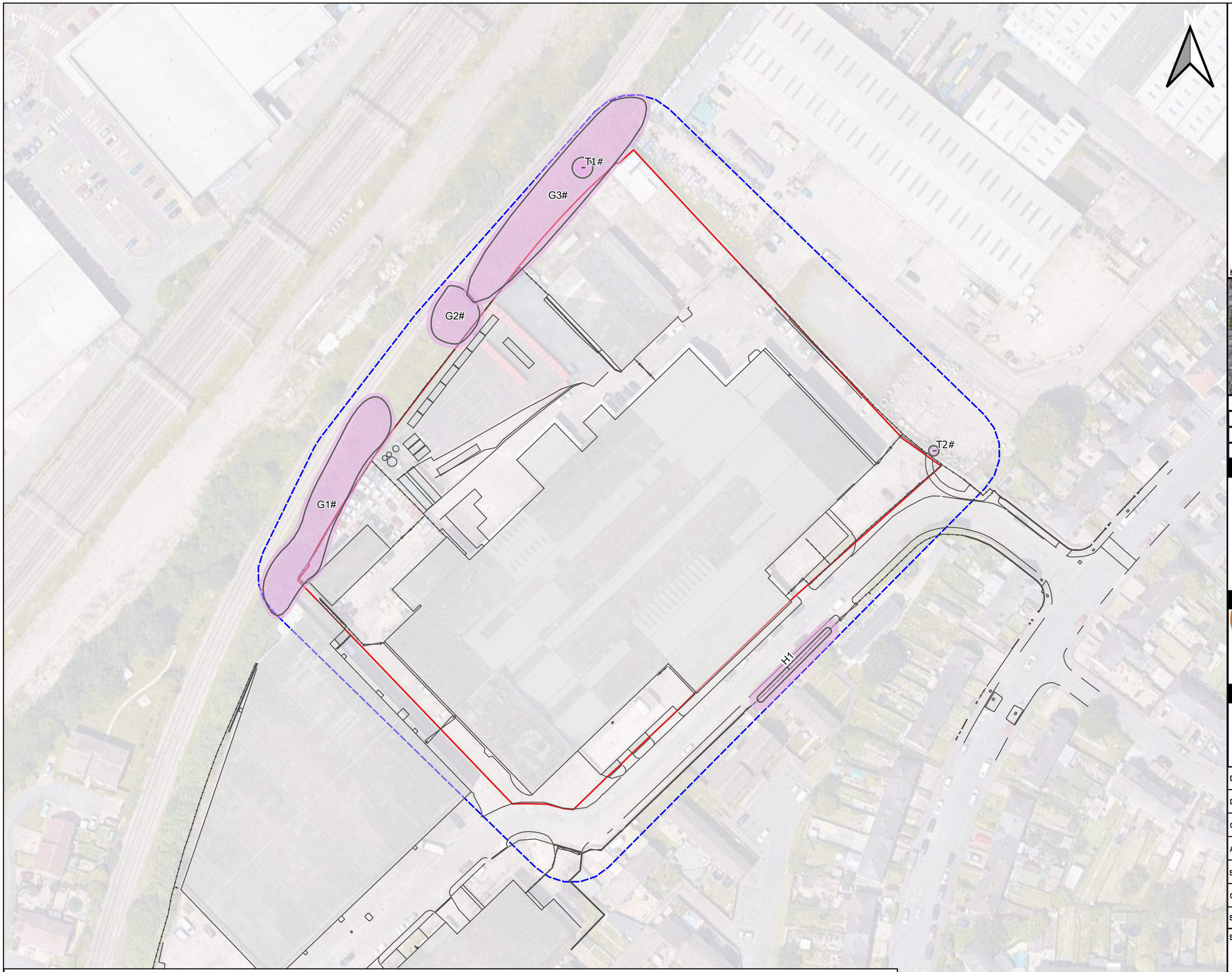
Figure 1. Tree Constraints Plan



Legend:

- Site Boundary
- Survey Boundary
- Canopy extent of C Category Tree/Group
- BS 5837:2012 Root Protection Area (RPA)

Key Plan:

Rev	Date	Description	Drawn	Check	Approv
P1	03/12/25	For information	JP	BM	MG

Client: Pegasus Developments

PROJECT: Clydesmure Industrial Estate

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TITLE:

FIGURE 1
TREE CONSTRAINTS PLAN

Designed:	CMJM	Date: 03/12/2025	Signed:
Drawn:	CMJM	Date: 03/12/2025	Signed:
Checked:	WG	Date: 03/12/2025	Signed:
Approved:	JP	Date: 03/12/2025	Signed:
Scale:	1:1,000	Datum:	AOD
Original Size:	A3	Grid:	OS
Suitability Code:	00	Project Number:	30295735

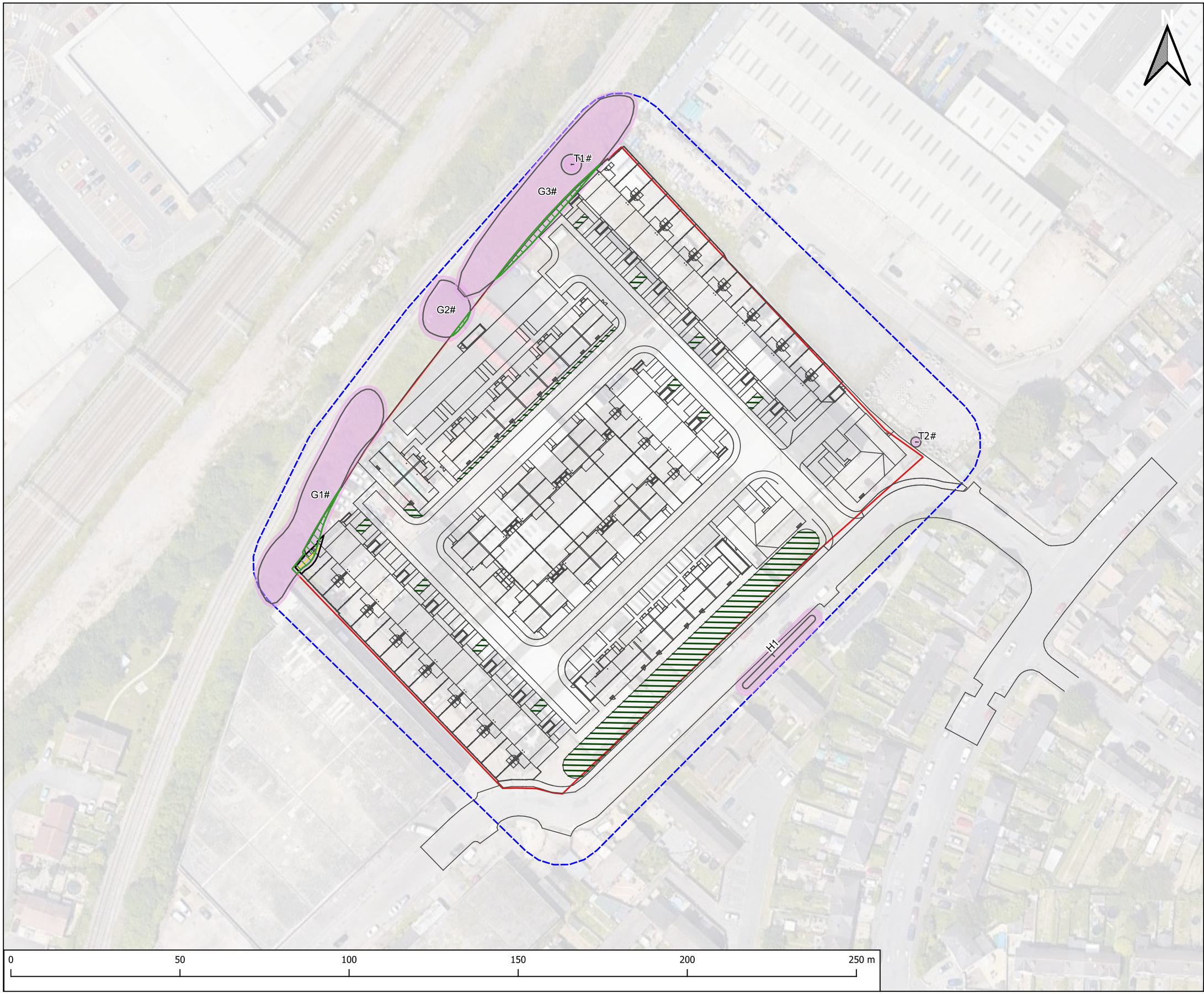
Suitability Description:

FOR INFORMATION

NOT TO BE USED FOR DESIGN OR CONSTRUCTION

Drawing Number:	Revision:
30295735-ARC-XX-XX-DRA-ARB-001	P01

Figure 2. Tree Impact and Protection Plan



Legend:

- Site Boundary
- Survey Boundary
- Canopy extent of A Category Tree/Group
- Canopy extent of B Category Tree/Group
- Canopy extent of C Category Tree/Group
- Canopy extent of U Category Tree/Group
- BS 5837:2012 Root Protection Area (RPA)
- Pruning Requirements
- Root Protection Area Incursions

Key Plan:

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P1	03/12/25	For information	JP	BM	MG

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TITLE:

FIGURE 2
TREE IMPACT AND PROTECTION PLAN

Designed:	CMJM	Date: 03/12/2025	Signed:
Drawn:	CMJM	Date: 03/12/2025	Signed:
Checked:	WG	Date: 03/12/2025	Signed:
Approved:	JP	Date: 03/12/2025	Signed:
Scale:	1:1,000	Datum:	AOD
Original Size:	A3	Grid:	OS
Suitability Code:	00	Project Number:	30295735

Suitability Description:

FOR INFORMATION

NOT TO BE USED FOR DESIGN OR CONSTRUCTION

Drawing Number: 30295735-ARC-XX-XX-DRA-ARB-002

Revision: P01

Appendix A. Explanation of Terms

Age Class

Young (Y) – Establishing tree that could be transplanted without specialist equipment.

Semi-mature (SM) – Fully established but has not reached its ultimate height and has significant growth potential.

Early-mature (EM) – A tree reaching its ultimate potential height, growth rate is slowing, will still increase in DBH.

Mature (M) – A mature specimen with limited potential for any significant increase in size.

Over Mature (OM) – A senescent or moribund specimen with a limited safe useful life expectancy.

Veteran (V) – A specimen of high value due to either its age, size, or ecological significance. Can be identified by the presence of specific characteristics.

Stem Diameter

The diameter of the stem measured in millimetres (mm) at a height of 1.5m above ground level

Crown Spread

Average measured in metres using a ground tape where possible

Physiological Condition

Good – Healthy tree with no signs of ill health and signs of good extension growth for species

Fair – Trees with signs of disease, minor defects and decreased life expectancy due to physical damage

Poor – Trees with significant disease, significantly reduced life expectancy and/or under major physiological stress

Dead – Dead tree or trees with over 70% crown dieback

Structural Condition

Good – Trees with no significant defects

Fair – Trees with remedial defects which require minor tree surgery works

Poor – Trees with remedial defects which require significant tree surgery works or felling

Dead – Trees which require felling

BS 5837 Retention Category

Each tree, group of trees or hedge is assigned to a retention category. Category A trees of high quality and amenity value. Category B trees of moderate quality and amenity value. Category C trees of low quality or amenity value. Category U trees of very low quality or requiring immediate removal due to health and safety concerns

British Standards BS 5837:2012 recommends that these categories may be further broken down into sub-categories A1 A2 A3 pertaining to Arboricultural, Landscape or Cultural values respectively.

Deadwood

Minor – <70mm diameter

Moderate – >70mm and <150mm diameter

Major – >150mm diameter

Appendix B. Schedule of Trees

ARCADIS

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Client:

Pegasus Developments

PROJECT:

Clydesmuir Industrial Estate

Surveyor:	Charlie Moore BSc (Hons) MArborA MRSB	Date: 20/10/25
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Checked:	Will Green BSc (Hons) TechArborA	Date: 03/12/25
Approved:	James Potts BSc (Hons) MArborA	Date: 03/12/25

TITLE:

SCHEDULE OF TREES:

SHEET 1 OF 1

SITE MAP

Rev	Date	Description	Auth	Check	Approv
P01	03/12/25	For information	CMJM	WG	JP

Suitability Description:

FOR INFORMATION

NOT TO BE USED FOR DESIGN OR CONSTRUCTION
TO BE READ IN CONJUNCTION WITH PROJECT TREE CONSTRAINTS PLAN

Reference Number: **30295735-ARC-XX-XX-SCH-ARB-001**

Revision: P01

Tree ID	Species	Height	Stem Number	DBH	N	E	S	W	Crown Clearence	Branch Clearence	Branch Direction	Age Class	Physiological Condition	Structural Condition	Life Expectancy	RPA Radius	RPA (T) / RPA Offset (G,H,W)	Comments	BS Category
T1#	*Hawthorn (Crataegus monogyna)*	4	1	170	3	3	3	3	2	-	-	EM	Good	Good	20+	2	13.1	Located in a scrub group	C1
T2#	*Sycamore (Acer pseudoplatanus)*	5	1	120	1.5	1.5	1.5	1.5	2	-	-	SM	Good	Good	20+	1.4	6.5	Located in hard standing adjacent to the site.	C1
G1#	*Sycamore (Acer pseudoplatanus)*	4.5	3	107	1.5	1.5	1.5	1.5	0	-	-	EM	Good	Good	40+	1.3	5.2	Offsite broken group located adjacent to a railway. Comprised of self seeded and unmanaged shrub that has succeeded into small trees.	C2
G2#	*Goat Willow (Salix caprea)*	5	1	270	2	2	2	2	2	-	-	EM	Good	Good	40+	3.2	33	Located adjacent to railway, comprised of self seeded trees	C2
G3#	*Dogwood (Cornus sanguinea)*	3	1	50	2	2	2	2	0	-	-	M	Good	Good	40+	0.6	1.1	Self seeded shrub group	C2
H1	*Mixed species:Leyland Cypress (X Cuprocyparis leylandii),Cherry Laurel (Prunus laurocerasus)*	5	-	150	1	1	1	1	0	-	-	M	Good	Good	40+	1.8	10.2	Located in hard standing	C2

Table B2 Key to Categories

Trees unsuitable for retention				
Category and Definition	**Criteria (including subcategories where appropriate)**			**Identification on Plan**
Category U Those in such a condition that they cannot realistically be retained as a living tree 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 U category trees (i.e. 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 or irreversible overall decline. • Trees infected with pathogens of significance to the health and or safety of other trees nearby by or very low-quality trees suppressing adjacent trees of better quality.			Red
Trees to be considered for retention				
Category and Definition	**1. Mainly arboricultural values**	**2. Mainly landscape values**	**3. Mainly cultural values**	**Identification on Plan**
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are a particularly good example of their species, especially if rare or unusual, or essential components of groups or of formal or semi-formal arboricultural features.	Tree groups or woodlands of particular visual importance as arboricultural and/or landscape features.	Tree groups or woodlands of significant conservation historical, commemorative or other value	Green
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.	Trees that might be included in the high category but are downgraded because of impaired condition.	Trees present in numbers, usually 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 benefits.	Blue
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 150mm.	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 landscape value and/or trees offering low or only temporary/transient landscape benefits.	Trees with no material conservation or other cultural benefits.	Grey

Appendix C. Preliminary Tree Protection Measures

Overview

These Preliminary Tree Protection Measures provide generic best practice measures to be adopted in order to protect retained trees during the development process. It has been prepared in order to inform the planning and the construction/ development process. Should a bespoke AMS be recommended by the suitably qualified arboriculturist, one should be drawn up in liaison with the contractor undertaking the works.

Protective Fencing

The purpose of this fencing is to provide protection to the RPAs of retained trees/groups and to protect trees and hedgerows prior to their translocation. The type of fencing used shall be appropriate to the level of adjacent construction activity and shall be agreed with the Local Authority tree officer. Weather-proof notices shall be attached to any protective fencing located adjacent to retained trees displaying the words "Construction Exclusion Zone" and listing restrictions which apply. All personnel must be made aware of these restrictions.
Fencing Specifications may comprise BS 5837:2012 Specification Heras and Saffold back propped panelling for high activity areas, Hearas Pannel Fencing for areas of moderate activity areas, or chestnut pail fencing or orange weldmesh barrier fencing for areas of low activity

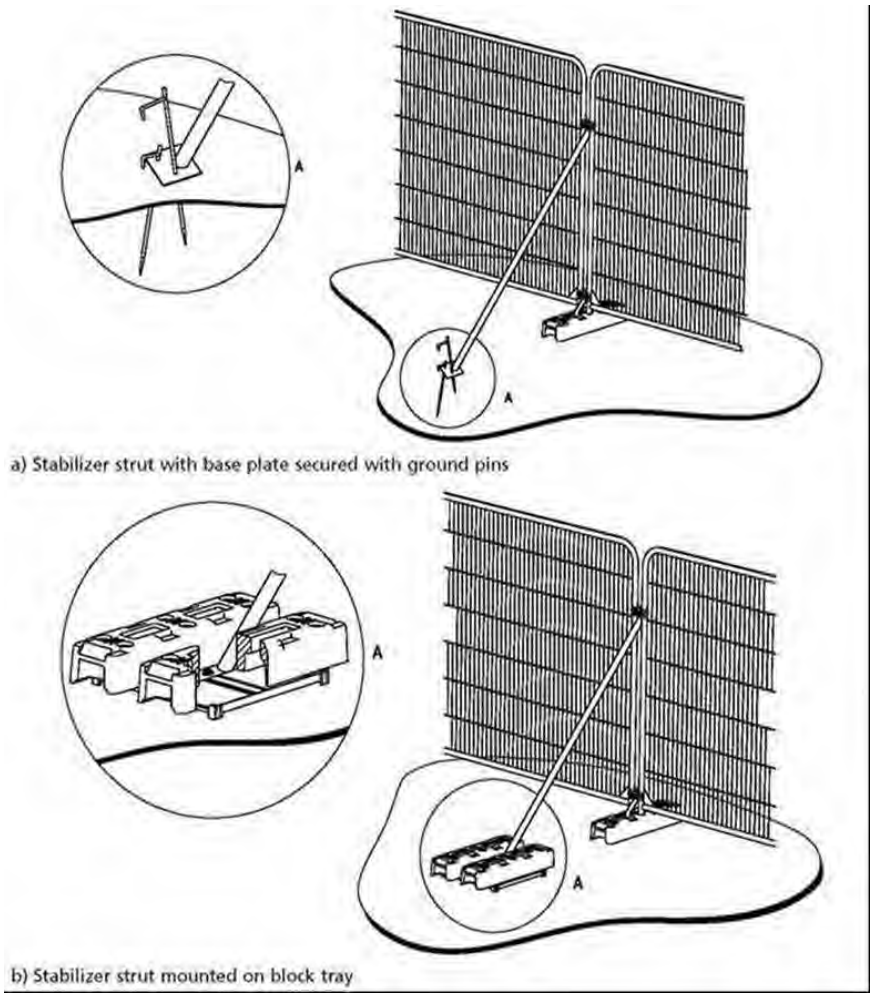


Figure C1 Tree protection fencing specification (extract from BS 5837: 2012)

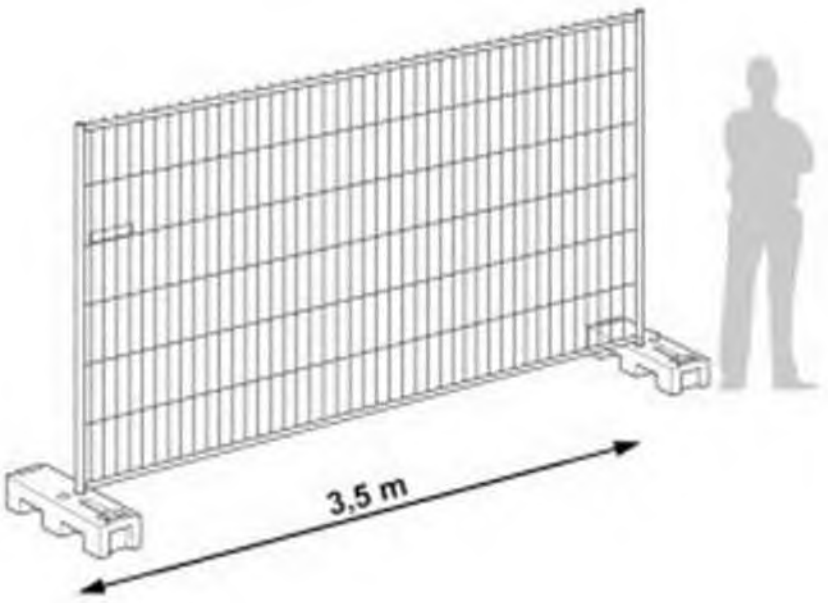


Figure C2 Tree protection fencing specification *(Heras Panneling)*

Figure C3 Tree protection fencing specification *(Orange Weldmesh or Chestnut Pail)*

Construction Exclusion Zone (CEZ)

The Construction Exclusion Zone (CEZ) is the area identified by a suitably qualified arboriculturist as the area to be protected during development, from site clearance and construction work through the use of barriers and/or ground protection to ensure the successful long-term retention of a tree. Fencing or ground protection shall not be taken down or relocated at any time without prior agreement and/or site supervision as recommended by the arboriculturist.

All areas excluded by protective tree fencing shall be treated as CEZs, and the following restrictions shall apply:

- No construction activity must occur within these areas.
- No works on trees unless agreed by a suitably qualified arboriculturist.
- No alterations of ground levels or conditions.
- No chemicals or cement washings.
- No excavation.
- No temporary structures*
- No storage of soil, rubble or other materials.
- No vehicles or machinery to be used or parked without appropriate ground protection measures as per BS5837 recommendations. This will require the use of a proprietary system of reinforced concrete slabs/steel road plates on a compressible layer, or side butting scaffold boards/ 18mm plywood sheets on a compressible layer. The type of ground protection used shall be appropriate for the likely loading applied.
- No fixtures (lighting, signs etc.) to be attached to trees.
- No fires within 10 metres of the canopies of any tree or hedgerow.

*Site huts, provided they are of the “Jack Leg” type, can be sited to act as ground protection for the duration of the construction.

Temporary Ground Protection

New temporary ground protection should be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil. The ground protection might comprise one of the following:

- For pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g.100 mm depth of woodchip), laid onto a geotextile membrane;
- For pedestrian-operated plant up to a gross weight of 2 t, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g.150 mm depth of woodchip), laid onto a geotextile membrane;
- For wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.

New Permanent Surfacing Within RPAs

Any new surfacing is within the RPAs shall occur above ground level without soil stripping. New surfaces shall be constructed on a cellular confinement to prevent localised compaction of the rooting medium post development. Porous geotextile membranes shall be used both above and below the cellular confinement system to prevent mixing of materials with the binding layer or the soil. The new surface needs to be permeable to air and water (resin bound gravel or similar is recommended). This is to allow roots to respire without there being a build-up of carbon dioxide, and to ensure the roots continue to receive the moisture and oxygen they require to function. Traditional kerbing requires excavation to install and will therefore not be suitable within the root protection areas of retained trees. As an alternative, haunched kerbing, treated timber edging, aluminium L-shaped edging, galvanised metal edging or no fixed edging shall be used.

Construction of the new surface will require access into the construction exclusion zone defined by the temporary ground protection. The ground protection shall not be removed until new surface is installed. The root protection areas should not be left exposed during construction.

General Canopy Protection

Since the canopies of retained trees may be in close proximity to areas of plant operation, the following restrictions will apply:

- All plant will be sited outside the defined RPAs of retained trees / groups, and the appointed contractor will ensure all relevant personnel shall be made aware of the location of branches and the need to avoid causing damage to them.
- Prior to the implementation of lifting operations, a representative from the equipment supply company shall visit the site and ensure all operations can be completed without causing damage to retained trees. A lifting plan will be prepared and submitted for approval prior to all lifting operations. The lifting plan will make provision for the potential for damage of retained trees.
- All lifting operations will be completed under the close direction of a qualified banksman, who will be briefed by the appointed contractor as to the need to avoid damage the stems and branches of retained trees.
- Should additional tree removal or pruning be required the Local Authority Tree Officer shall be contacted and the scope of works agreed in writing.

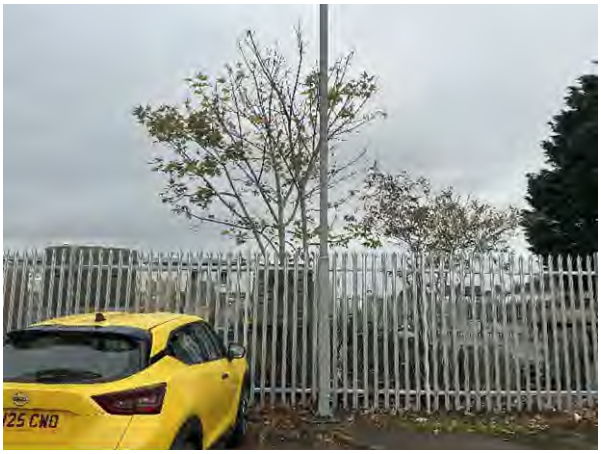
Hazardous Materials

Any mixing of cement-based materials is to take place outside the RPAs of all trees. Provision shall be made to ensure that the mixing area is contained so that no water runoff enters the RPAs of any trees. All mixers and barrows shall be cleaned within this dedicated mixing area.

All other chemicals hazardous to tree health, including petrol and diesel, are to be stored in suitable containers as specified by the Control of Substances Hazardous to Health (COSHH) Regulations (2002) (Ref 4), and kept away from the RPAs.

Example of Protective Fencing Signs

Appendix D. Photographs

Tree No.	Description	Photograph
T1	Category C1 Hawthorn *(Crataegus monogyna)*	
T2	Category C1 Sycamore *(Acer pseudoplatanus)*	
G1	Category C2 Sycamore *(Acer pseudoplatanus)*	

Tree No.	Description	Photograph
G2	Category C2 Goat Willow *(Salix caprea)*	
G3	Category C2 Dogwood *(Cornus sanguinea)*	
H1	Category C2 Mixed species:Leyland Cypress (X *Cuprocyparis leylandii),* Cherry Laurel (*Prunus laurocerasus)*	

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