

JLR HALEWOOD, NEW FENCE LINE

BS 5837: 2012 Arboricultural Impact Assessment

AUGUST 25



JLR HALEWOOD, NEW FENCE LINE
BS 5837: 2012 Arboricultural Impact Assessment

Author Isabel Leggett

Checker James Potts

Approver Brandon Murray

Report No 30237621-ARC-ARB-RP-01

Date AUGUST 2025

Version control

Version	Date	Author	Changes
01	16/07/2025	I Leggett	First Issue
02	05/08/2025	I Leggett	Comments Addressed

This report dated August 25 has been prepared for Jaguar Land Rover (the “Client”) in accordance with the terms and conditions of appointment (the “Appointment”) between the Client and **Arcadis Consulting (UK) Limited** (“Arcadis”) for the purposes specified in the Appointment. For avoidance of doubt, no other person(s) may use or rely upon this report or its contents, and Arcadis accepts no responsibility for any such use or reliance thereon by any other third party.

CONTENTS

1	INTRODUCTION	1
1.1	Overview.....	1
1.2	Proposed Development.....	1
2	METHODOLOGY	2
2.1	Tree Survey Methodology.....	2
2.2	Study Area.....	2
2.3	Individual trees	2
2.4	Groups of trees	2
2.5	Categorisation.....	2
2.6	Root Protection Area.....	3
2.7	Survey Limitations.....	3
2.8	Arboricultural Impact Assessment	3
2.9	Tree Constraints Check	4
3	TREE SURVEY RESULTS	5
3.1	Tree Assessment and Categorisation	5
3.2	Tree Species Diversity	5
3.3	Age Diversity	6
3.4	Tree Constraints Check	6
4	ARBORICULTURAL IMPACT ASSESSMENT (AIA)	7
4.1	Potential Arboricultural Impacts	7
4.2	Tree Removal	7
4.3	Potential Incursions within Root Protection Areas.....	7
4.4	Facilitation Pruning	9
4.5	General Construction Impacts	10
5	MITIGATION.....	11
5.1	Planning Policy	11
5.2	General Construction Mitigation.....	11
5.3	RPA Incursions	11
5.4	Ground protection	11
5.5	Facilitation Pruning	11
5.6	Arboricultural Method Statement.....	12

6 STATUTORY TREE PROTECTION AND GUIDANCE13

6.1 Town and Country Planning (Tree Preservation) (England) Regulations 201213

6.2 Town and Country Planning Act 1990 (as amended).....13

7 TREES AND PLANNING.....14

7.1 The Planning Process14

7.2 National Planning Policy Framework 202414

7.3 Local Planning Policy.....15

8 SUMMARY16

9 REFERENCES17

FIGURE 1. TREE CONSTRAINTS PLAN18

FIGURE 2. TREE IMPACT AND PROTECTION PLAN19

APPENDIX A. EXPLANATION OF TERMS.....20

APPENDIX B. SCHEDULE OF TREES21

APPENDIX C. PRELIMINARY TREE PROTECTION MEASURES24

APPENDIX D. PHOTOGRAPHS28

1 Introduction

1.1 Overview

Arcadis Consulting (UK) Limited (Arcadis) has been commissioned by Jaguar Land Rover (JLR) to undertake a Preliminary Arboricultural Survey and Impact Assessment Report 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 at Crab Tree Rough.

The site is located in Halewood, Knowsley, centred on Ordnance Survey (OS) Grid Reference SJ 45943 84334 and centred around the post code WA8 8NZ. The site is approximately 0.1 ha in area and is comprised of the southern edge of Crab Tree Rough and adjacent surfaced footpath along a slip-road.

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

JLR propose to remove the existing fencing between the footpath and Crab Tree Rough and install 152m of 3m high security fencing. There are currently two fencing options:

- V Beam 3m High Prison Mesh
- Steel Palisade 3m High Fencing

2 Methodology

2.1 Tree Survey Methodology

An Arboricultural Survey was undertaken by James Potts BSc (Hons) MArborA (Associate Technical Director - Arboriculture) on 10 July 2025 in accordance with BS 5837:2012.

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 accessible trees were taken and are provided in Appendix D.

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 (blue line 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 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.

2.6 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.

2.7 Survey Limitations

At the time of the survey no topographic information for the Site was available. Tree locations are based on GPS tracking, line of sight with existing features, aerial imagery and OS base mapping.

Of the arboricultural features surveyed, 17 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.

2.8 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 Isabel Leggett BSc (Hons) (Graduate Arboricultural and Ecological Consultant) in July 2025 as a desk-based study based on the collected field data and information provided on behalf of the Client.

2.9 Tree Constraints Check

The following constraints checks were undertaken for the site on 14 July 2025.

- A tree constraints check was performed using the Knowsley Council planning portal map and contacting the planning department (Knowsley Council 2025).
- The Multi-Agency Geographical Information for the Countryside (MAGIC) website was used to search for statutory designated sites of nature conservation value and areas of ancient woodlands listed on the Ancient Woodland Inventory (DEFRA 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 14 arboricultural features were recorded within the study area, these were recorded as ten individual trees (T) and four groups of trees (G).

Each arboricultural feature was assigned to one of four categories, as listed in Table 1

Table 1: Tree Categories Recorded

Tree Category	No. of Individual Trees	No. of Groups of Trees
Category A (trees of high quality)	-	-
Category B (trees of moderate quality)	5	-
Category C (trees of low quality)	5	4
Category U (trees of poor quality unsuitable for retention)	-	-
Totals	10	4

3.2 Tree Species Diversity

A total of four 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 2. A number of mixed species arboricultural features were also recorded, the composition of which are presented in the accompanying survey schedule provided in Appendix B. Schedule of Trees.

Table 2: Tree Species Recorded

Tree Species	Individual Trees	Tree Groups
Pedunculate Oak (<i>Quercus robur</i>)	5	-
Sycamore (<i>Acer pseudoplatanus</i>)	4	-
Wild Cherry (<i>Prunus avium</i>)	1	-
Mixed species – See Appendix B for detail	-	5
Totals	10	4

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 3.

Table 3: Age Diversity

Age Class	Trees	Groups
Young	-	-
Semi-mature	2	1
Early mature	8	3
Mature	-	-
Over-Mature	-	-
Totals	10	4

3.4 Tree Constraints Check

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

It was confirmed that there are no designated ancient woodlands within the study area using online data sources listed in Section 2.9. and no veteran trees were identified during the walkover survey.

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 Figure 2. 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 tree removals have been anticipated result of the proposed works.

4.3 Potential Incursions within Root Protection Areas

A total of 13 arboricultural features to be fully or partially retained within the study area will be subject to potential incursions within their calculated RPAs as presented in Table 4.

Table 4: Potential Root Protection Area Incursions

Tree ID	Species	Incursion type and likely significance	RPA m ²	RPA incursion m ²	RPA incursion %	Grade
T1#	Pedunculate Oak (<i>Quercus robur</i>)	Up to five excavations for new fence posts within RPA. Unlikely to significantly impact tree to be retained.	113.1	5 x 0.1	0.4	B1
T2#	Sycamore (<i>Acer pseudoplatanus</i>)	Up to three excavations for new fence posts within RPA. Unlikely to significantly impact tree to be retained.	55.4	3 x 0.1	0.5	

Tree ID	Species	Incursion type and likely significance	RPA m ²	RPA incursion m ²	RPA incursion %	Grade
T3#	Pedunculate Oak (<i>Quercus robur</i>)	Up to four excavations for new fence posts within RPA. Unlikely to significantly impact tree to be retained.	113.1	4 x 0.1	0.4	B1
T4#	Sycamore (<i>Acer pseudoplatanus</i>)	Up to five excavations for new fence posts within RPA. Unlikely to significantly impact tree to be retained.	113.1	5 x 0.1	0.4	B2
T5#	Wild Cherry (<i>Prunus avium</i>)	Up to three excavations for new fence posts within RPA. Unlikely to significantly impact tree to be retained.	40.7	3 x 0.1	0.7	C1
T6#	Pedunculate Oak (<i>Quercus robur</i>)	Up to five excavations for new fence posts within RPA. Unlikely to significantly impact tree to be retained.	72.4	5 x 0.1	0.7	B2
T7#	Pedunculate Oak (<i>Quercus robur</i>)	Up to four excavations for new fence posts within RPA. Unlikely to significantly impact tree to be retained.	31.8	4 x 0.1	1.3	C1
T8#	Pedunculate Oak (<i>Quercus robur</i>)	Up to six excavations for new fence posts within RPA.. Unlikely to significantly impact tree to be retained.	81.4	6 x 0.1	0.7	C1

Tree ID	Species	Incursion type and likely significance	RPA m ²	RPA incursion m ²	RPA incursion %	Grade
T10#	Sycamore (<i>Acer pseudoplatanus</i>)	Up to five excavations for new fence posts within RPA. Unlikely to significantly impact tree to be retained.	240.9	5 x 0.1	0.2	B1
G1	Mixed species: Elder (<i>Sambucus nigra</i>), Hawthorn (<i>Crataegus monogyna</i>), Sycamore (<i>Acer pseudoplatanus</i>)	Up to 13 excavations for new fence posts within RPA. Unlikely to significantly impact trees to be retained within group.	N/A	13 x 0.1	N/A	C2
G2	Mixed species: Elder (<i>Sambucus nigra</i>), Hawthorn (<i>Crataegus monogyna</i>), Sycamore (<i>Acer pseudoplatanus</i>)	Up to five excavations for new fence posts within RPA. . Unlikely to significantly impact trees to be retained within group.	N/A	5 x 0.1	N/A	C2
G3	Mixed species: Elder (<i>Sambucus nigra</i>), Hawthorn (<i>Crataegus monogyna</i>), Sycamore (<i>Acer pseudoplatanus</i>), Wild Cherry (<i>Prunus avium</i>)	Up to 17 excavations for new fence posts within RPA. Unlikely to significantly impact trees to be retained within group.	N/A	17 x 0.1	N/A	C2
G4#	Mixed species: Hawthorn (<i>Crataegus monogyna</i>), Ash (<i>Fraxinus excelsior</i>), Elder (<i>Sambucus nigra</i>)	Up to three excavations for new fence posts within RPA. . Unlikely to significantly impact trees to be retained within group.	N/A	3 x 0.1	N/A	C2

Proposals for a new fence and fence posts, will encroach inside the RPAs of nine trees (T1#, T2#, T3#, T4#, T5#, T6#, T7#, T8# and T10#) and four groups (G1, G2, G3 and G4) to be retained. Any excavations for the installation of a new fence and fence posts would be likely to cause minimal disturbance of the RPAs of trees retained within the group and as such, mitigation measures as described in Section 5 enacted during proposed works will be suitable to enable their retention.

4.4 Facilitation Pruning

Pruning works to five individual trees and four groups of trees will be necessary to facilitate the proposed fencing works. Details of recommended pruning operations are provided in Table 5.

Table 5: Facilitation Pruning Requirements

Tree ID	Species	Recommended Works	Grade
T1	Pedunculate Oak (<i>Quercus robur</i>)	Crown lift south-east laterals limbs to 4m over proposed fence.	B1
T3	Pedunculate Oak (<i>Quercus robur</i>)	Crown lift south-east laterals limbs to 4m over proposed fence.	B1
T4	Sycamore (<i>Acer pseudoplatanus</i>)	Crown lift south-east laterals limbs to 4m over proposed fence.	B2
T5	Wild Cherry (<i>Prunus avium</i>)	Crown lift south-east laterals limbs to 4m over proposed fence.	C1
T6	Pedunculate Oak (<i>Quercus robur</i>)	Crown lift south-east laterals limbs to 4m over proposed fence.	B2
G1	Mixed species: Elder (<i>Sambucus nigra</i>), Hawthorn (<i>Crataegus monogyna</i>), Sycamore (<i>Acer pseudoplatanus</i>)	Crown lift south-east laterals limbs to 4m over proposed fence.	C2
G2	Mixed species: Elder (<i>Sambucus nigra</i>), Hawthorn (<i>Crataegus monogyna</i>), Sycamore (<i>Acer pseudoplatanus</i>)	Crown lift south-east laterals limbs to 4m over proposed fence.	C2
G3	Mixed species: Elder (<i>Sambucus nigra</i>), Hawthorn (<i>Crataegus monogyna</i>), Sycamore (<i>Acer pseudoplatanus</i>), Wild Cherry (<i>Prunus avium</i>)	Crown lift south-east laterals limbs to 4m over proposed fence.	C2
G4	Mixed species: Hawthorn (<i>Crataegus monogyna</i>), Ash (<i>Fraxinus excelsior</i>), Elder (<i>Sambucus nigra</i>)	Crown lift south-east laterals limbs to 4m over proposed fence.	C2

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 on 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.

It has been assumed that both fence options outlined in Section 1.2 will have the same measurements based on information provided by the client and specifications found online. For the purpose of this AIA, the following measurements have been used:

- Proposed fencing will be 3m high
- There will be approximately 2.5m intervals between posts
- Post holes will be no greater than 40cm diameter

5 Mitigation

5.1 Planning Policy

Where trees are statutorily protected, such as a TPO or within a Conservation Area, it is usually a requirement under the Town and Country Planning (Tree Preservation) (England) Regulations (2012) to contact the Local Planning Authority (LPA) and follow the appropriate procedures before undertaking any works that might affect the protected trees.

For such trees all non-routine tree works including works to enable development must have Conservation Area Consent or Full Planning Consent from the LPA before the tree works take place. The application to the LPA to remove or undertake works on such trees requires a decision which can often take at least 2 months. This report when submitted as part of a planning application would constitute such an application.

5.2 General Construction Mitigation

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.

5.3 RPA Incursions

Proposals for a new fence and fence posts, will encroach inside the RPAs of nine trees RPAs of nine trees (T1#, T2#, T3#, T4#, T5#, T6#, T7#, T8# and T10#) and four groups (G1, G2, G3 and G4) to be retained. It is assumed that the fence posts will be situated in 2.5m intervals and will require 600mm excavation to facilitate installation. Excavations should work with a minimum standoff of 0.5m from any retained individual trees or the stems of any trees within the group wherever possible using a no-dig technique.

There should be no requirement for machinery or plant to enter the RPAs of any of the tree schedules for retention and any works should be limited to using hand-held tools/equipment, preferably compressed air tools including air pic and vacuum excavation in order to achieve the required depth.

Any minor tree roots encountered must be must be cleanly severed using secateurs. If any tree roots greater than 25mm are encountered, fence posts must be adjusted to enable their retention.

Due to the nature of this work and the proximity to the retained trees, the works will need to be supervised by an appropriately qualified and experienced arboriculturist.

5.4 Ground protection

Temporary ground protection will be required where pedestrians are working within the RPAs of trees to be retained. This should be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil. For example, 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. Ground protection should remain in-situ throughout the duration of the proposed works and only be removed upon completion.

5.5 Facilitation Pruning

Facilitation pruning works will be required to five individual trees (T1, T3, T4, T5 and T6) and four groups of trees (G1, G2, G3 and G4) as detailed in Section 4.4.

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

5.6 Arboricultural Method Statement

Given the minimal potential impact to existing trees resulting from proposed works, a site-specific Arboricultural Method Statement is not considered necessary for proposed fencing installation. Preliminary tree protection measures to be implemented during proposed works are provided in Appendix C of this report

6 Statutory Tree Protection and Guidance

6.1 Town and Country Planning (Tree Preservation) (England) Regulations 2012

The Town and Country Planning (Tree Preservation) (England) Regulations 2012 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.

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

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.

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 National Planning Policy Framework 2024

The National Planning Policy Framework (NPPF 2024) seeks to ensure that new development is sustainable and underlines the importance of green infrastructure, of which trees form an integral part. This includes recognition of the importance of trees in relation to the management of air, soil and water quality along with other associated ecosystem services and climate change adaption. The NPPF also seeks to achieve the protection and enhancement of landscapes and a net gain in biodiversity. Finally, it specifically identifies veteran and ancient trees and woodland as a highly valuable and irreplaceable habitat.

At the heart of the National Planning Policy Framework (NPPF) is a presumption in favour of sustainable development, and specifically states that for decision making, the LPA should be approving development proposals that accord with the development plan without delay.

Section 15 of the NPPF recognises the importance of conserving and enhancing the natural environment and specifically acknowledges the role of trees and woodland in the provision of natural capital and ecosystem services.

It further acknowledges the importance of ancient woodlands and veteran trees for habitats and biodiversity and requires that planning consent should be refused where development schemes require the removal of such features unless there are wholly exceptional reasons, stating that:

“development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists.” (Paragraph 193, C)”

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 the NPPF.

It was confirmed that there are no designated ancient woodlands within the study area using online data sources listed in Section 2.9. and no veteran trees were identified during the walkover survey.

7.3 Local Planning Policy

Relevant policy from the Knowsley Local Plan Core Strategy (Knowsley Council 2016) states the following:

Policy CS21: Greenspaces and Trees

Enhancement of Natural and Semi-Natural Greenspace and Tree Protection

10) The Council will encourage proposals for new development to incorporate:

- a) Retention of existing trees, woodland, vegetation and other habitat features which offer a positive contribution to the local environment in terms of visual amenity, recreation value or biodiversity/wildlife interest;*
- b) Appropriate planting of trees, other soft landscaping and installation of habitat features for the benefit of biodiversity; and*
- c) Adequate replacement provision where tree loss is unavoidable, comprising two additional trees for every tree lost and taking account of species and size.*

No trees are due to be removed as a result of proposed works

8 Summary

A total of 14 arboricultural features were recorded within the study area, these were recorded as 10 individual trees (T) and four groups of trees (G).

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

- Category A features: no arboricultural features have been identified as Category A (trees of high quality) as part of this survey;
- Category B features: five individual trees (T) have been identified as Category B (trees of moderate quality) as part of this survey;
- Category C features: five individual trees (T) and four groups of trees (G) have been identified as Category C (trees of low quality) as part of this survey;
- Category U features: no arboricultural features have been identified as Category U (trees of poor quality unsuitable for retention) as part of this survey.

It was confirmed by Knowsley Council that no trees surveyed are subject to Tree Preservation Order 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.

A total of 13 arboricultural features (T7, T8, T9, T10, T11, T12, T13, T14, T16, G2, G3, G4 and G5) to be fully or partially retained within the study area will be subject to potential incursions within their calculated RPAs.

Some facilitation pruning works to five individual trees (T7, T9, T10, T11 and T12) and four groups of trees (G2, G3, G4 and G5) will be necessary to facilitate the proposed fencing works.

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

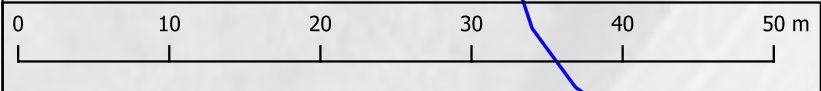
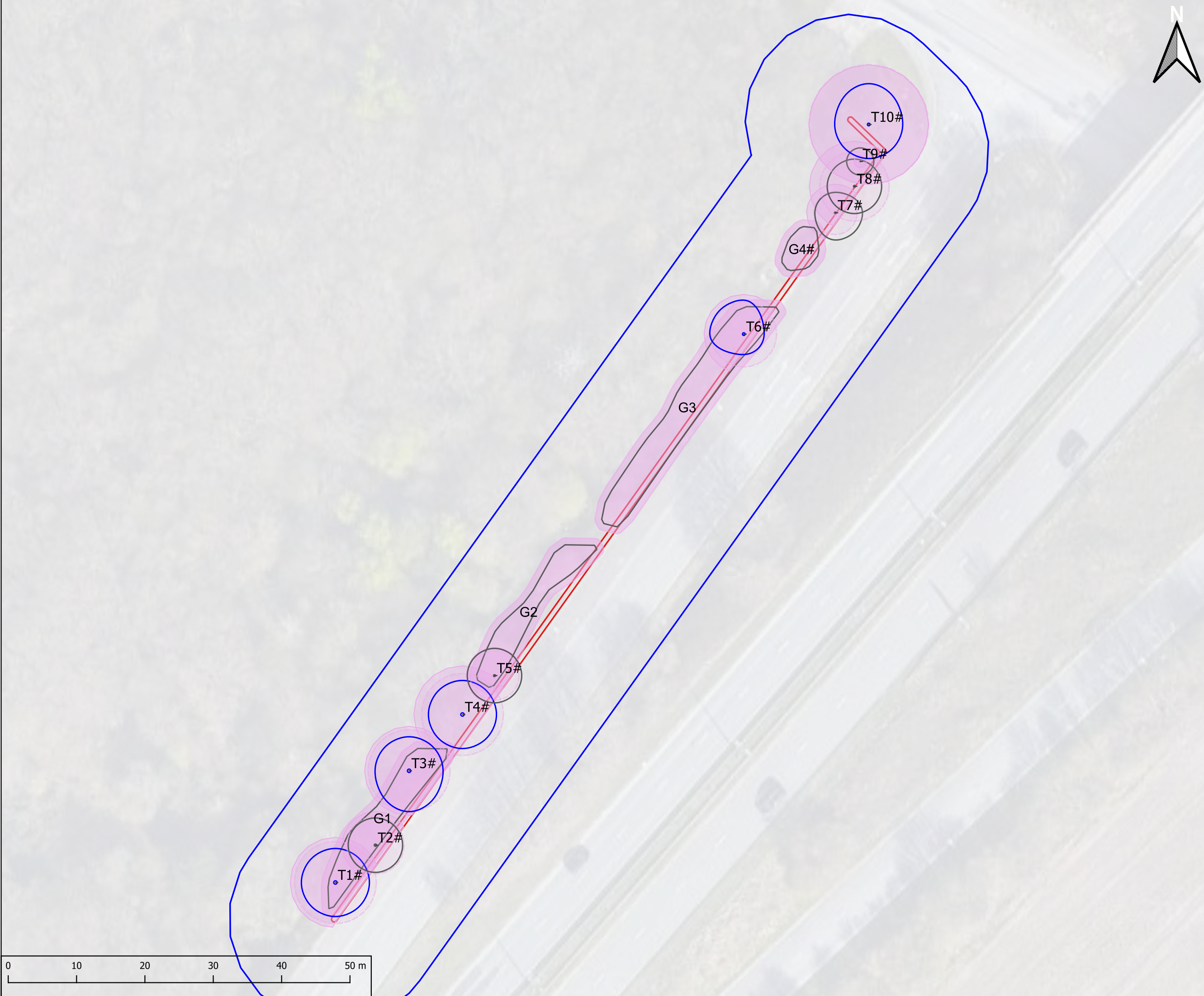
Given the minimal potential impact to existing trees resulting from proposed works, a site-specific Arboricultural Method Statement is not considered necessary for proposed fencing installation.

9 References

- British Standards Institution (2010) BS 3998:2010, Tree Work Recommendations.
- British Standards Institution (2012) BS 5837: 2012 Trees in relation to design, demolition and construction – Recommendations.
- British Standards Institution (2014) BS 8545:2014 Trees: From nursery to Independence in the Landscape – Recommendations.
- DEFRA (2025) Magic Map: <https://magic.defra.gov.uk/MagicMap.aspx> [Accessed July 2025].
- Knowsley Council Planning Map (2025). Available at: <https://localplanmaps.knowsley.gov.uk/> [Accessed July 2025].
- Knowsley Local Plan Core Strategy (January) 2016. Available at: <https://localplanmaps.knowsley.gov.uk/documents/knowsley-local-plan-adopted-core-strategy.pdf> [Accessed July 2025].
- Mattheck, C. and Breloer, H (1994) The Body Language of Trees: A Handbook for Failure Analysis Research for Amenity Trees No.4. HMSO.
- National Planning Policy Framework (December) 2024. England. Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2> [Accessed July 2025].
- The Town and Country (Tree Preservation) (England) Regulations 2012. England. Available at: <https://www.legislation.gov.uk/uksi/2012/605/contents/made> [Accessed July 2025].
- The Town and Country Planning (General Permitted Development) Order 1995. England and Wales. Available at: <https://www.legislation.gov.uk/uksi/1995/418/article/2/made> [Accessed July 2025].
- Town and Country Planning Act 1990. England and Wales. Available at: <https://www.legislation.gov.uk/ukpga/1990/8/contents> [Accessed July 2025].
- Woodland Trust (2025). *Ancient Tree Inventory*. [online] Available at: <https://ati.woodlandtrust.org.uk/> [Accessed July 2025].

JLR Halewood, New Fence Line
BS 5837: 2012 Arboricultural Impact Assessment

Figure 1. Tree Constraints Plan



- Legend:**
- Site Boundary
 - Survey Boundary
 - Canopy extent of B Category Tree/Group
 - Canopy extent of C Category Tree/Group
 - BS 5837:2012 Root Protection Area (RPA) Adjusted for Site Constraints
 - Indicative Calculated BS 5837:2012 Root Protection Area (RPA)



P1	16/07/25	For information	IL	JP	BM
Rev	Date	Description	Drawn	Check	Approv

Client

Jaguar Land Rover

JLR

PROJECT:
Halewood Flytip
Fence

ARCADIS

Registered office:
Arcadis
80 Fenchurch Street
London
EC3M 4BY
www.arcadis.com

Coordinating office:
Arcadis
80 Fenchurch Street
London, EC3M 4BY
Tel: 44 (0)20 7812 2000

TITLE:

**FIGURE 1
TREE CONSTRAINTS PLAN**

SHEET 1 OF 1

Designed:	JP	Date:	16/07/25	Sign:	
Drawn:	IL	Date:	16/07/25	Sign:	
Checked:	JP	Date:	16/07/25	Sign:	
Approved:	BM	Date:	16/07/25	Sign:	
Scale:	1:500	Datum:	AOD		
Original Size:	A3	Grid:	OS		
Suitability Code:	00	Project Number:	30237621		

Suitability Description:

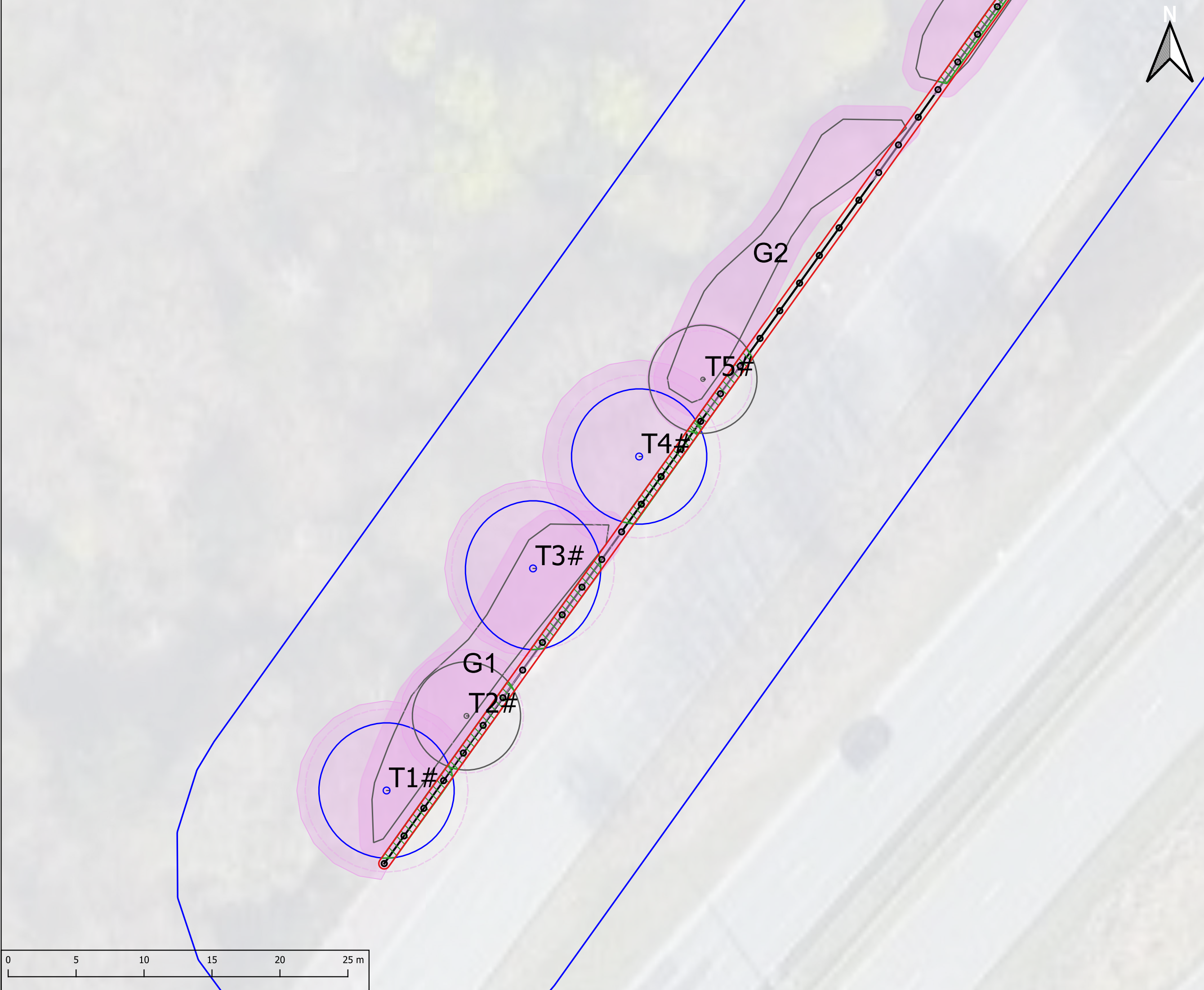
FOR INFORMATION

NOT TO BE USED FOR DESIGN OR CONSTRUCTION

Drawing Number:	Revision:
30237621-ARC-ARB-DR-01	P01

JLR Halewood, New Fence Line
BS 5837: 2012 Arboricultural Impact Assessment

Figure 2. Tree Impact and Protection Plan



Legend:

- Site Boundary
- Survey Boundary
- Canopy extent of B Category Tree/Group
- Canopy extent of C Category Tree/Group
- BS 5837:2012 Root Protection Area (RPA) Adjusted for Site Constraints
- Indicative Calculated BS 5837:2012 Root Protection Area (RPA)
- Root Protection Area (RPA) Incursions
- Facilitation Pruning

Key Plan:

P1	16/07/25	For information	IL	JP	BM
Rev	Date	Description	Drawn	Check	Approv

Client

Jaguar Land Rover

PROJECT:
Halewood Flytip Fence

Registered office:
Arcadis
80 Fenchurch Street
London
EC3M 4BY
www.arcadis.comCoordinating office:
Arcadis
80 Fenchurch Street,
London, EC3M 4BY
Tel: 44 (0)20 7812 2000

TITLE:

**FIGURE 1
TREE CONSTRAINTS PLAN**

SHEET 1 OF 3

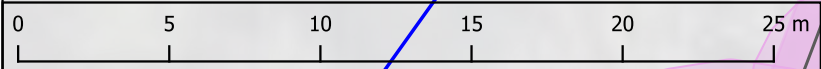
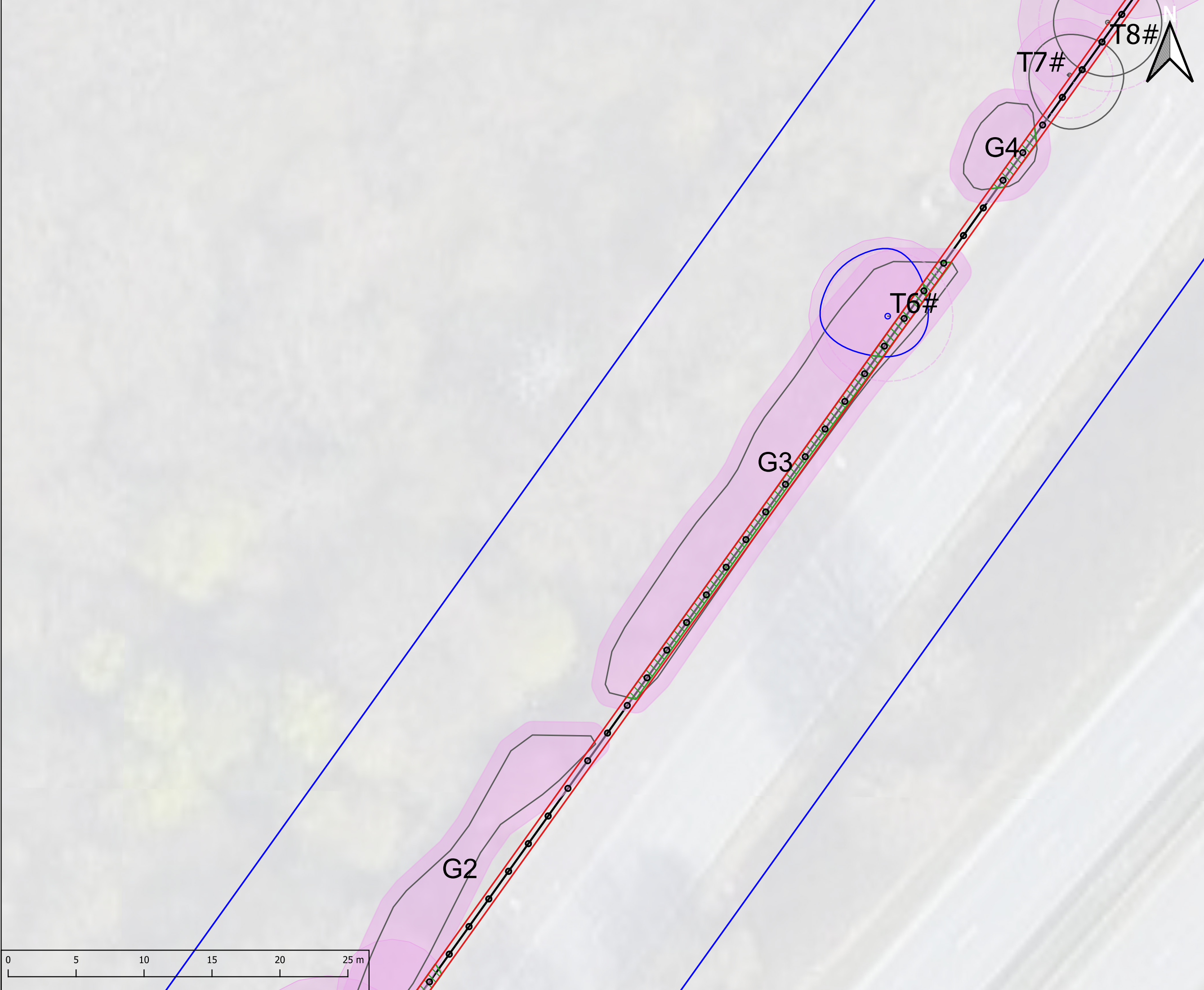
Designed:	JP	Date: 16/07/25	Signed:
Drawn:	IL	Date: 16/07/25	Signed:
Checked:	JP	Date: 16/07/25	Signed:
Approved:	BM	Date: 16/07/25	Signed:
Scale:	1:250	Datum:	AOD
Original Size:	A3	Grid:	OS
Suitability Code:	00	Project Number:	30237621

Suitability Description:

FOR INFORMATION
NOT TO BE USED FOR DESIGN OR CONSTRUCTION

Drawing Number:
30237621-ARC-ARB-DR-02

Revision:
P01



Legend:

- Site Boundary
- Survey Boundary
- Canopy extent of B Category Tree/Group
- Canopy extent of C Category Tree/Group
- BS 5837:2012 Root Protection Area (RPA) Adjusted for Site Constraints
- Indicative Calculated BS 5837:2012 Root Protection Area (RPA)
- Root Protection Area (RPA) Incursions
- Facilitation Pruning

Key Plan:

P1	16/07/25	For information	IL	JP	BM
Rev	Date	Description	Drawn	Check	Approv

Client

Jaguar Land Rover

PROJECT:
Halewood Flytip Fence

Registered office:
Arcadis
80 Fenchurch Street
London
EC3M 4BY
www.arcadis.com

Coordinating office:
Arcadis
80 Fenchurch Street,
London, EC3M 4BY
Tel: 44 (0)20 7812 2000

TITLE:

FIGURE 1
TREE CONSTRAINTS PLAN
SHEET 2 OF 3

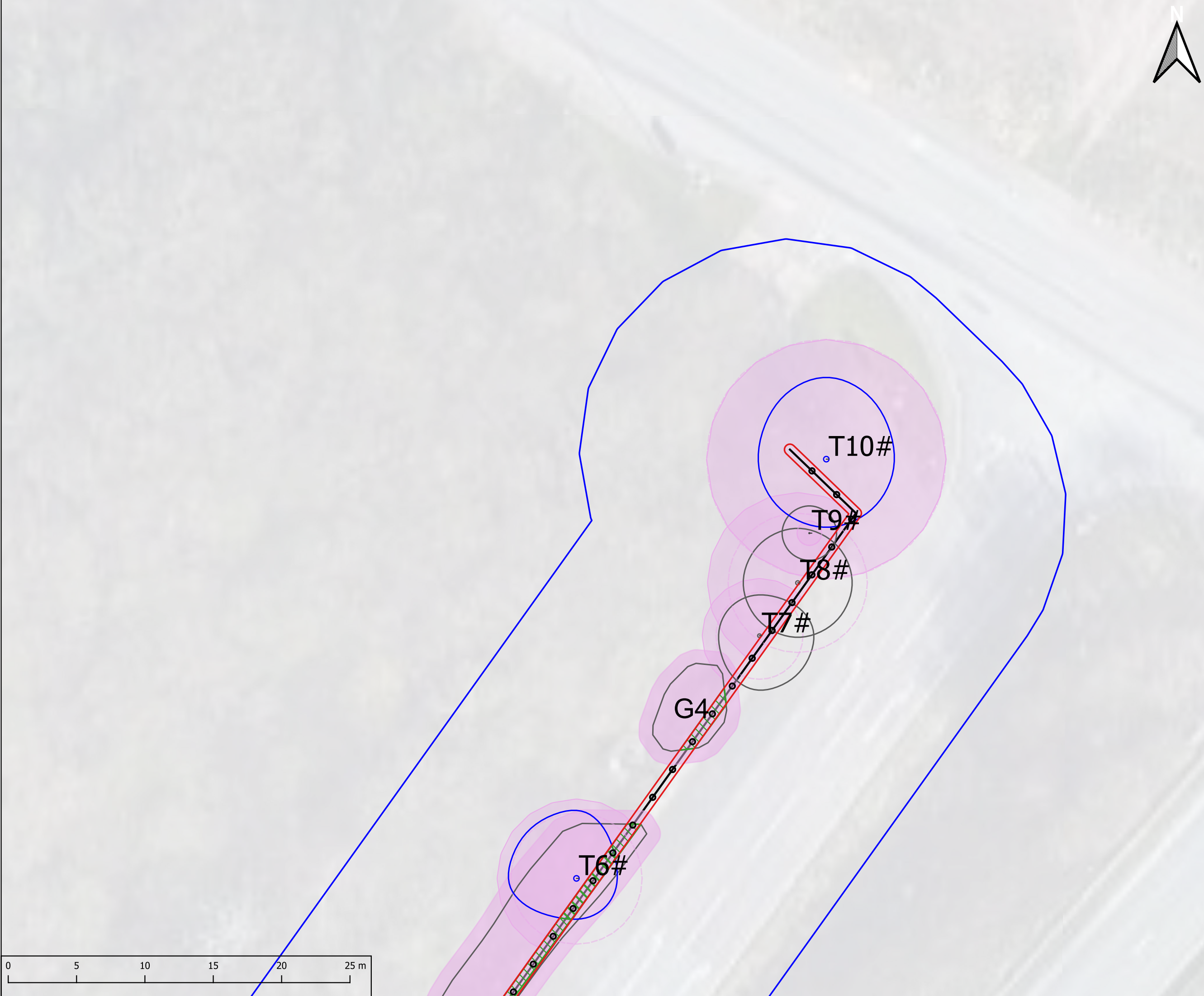
Designed:	JP	Date:	16/07/25	Sign:	
Drawn:	IL	Date:	16/07/25	Sign:	
Checked:	JP	Date:	16/07/25	Sign:	
Approved:	BM	Date:	16/07/25	Sign:	
Scale:	1:250	Datum:	AOD		
Original Size:	A3	Grid:	OS		
Suitability Code:	00	Project Number:	30237621		

Suitability Description:

FOR INFORMATION
NOT TO BE USED FOR DESIGN OR CONSTRUCTION

Drawing Number:
30237621-ARC-ARB-DR-02

Revision:
P01



Legend:

- Site Boundary
- Survey Boundary
- Canopy extent of B Category Tree/Group
- Canopy extent of C Category Tree/Group
- BS 5837:2012 Root Protection Area (RPA) Adjusted for Site Constraints
- Indicative Calculated BS 5837:2012 Root Protection Area (RPA)
- Root Protection Area (RPA) Incursions
- Facilitation Pruning

Key Plan:



P1	16/07/25	For information	IL	JP	BM
Rev	Date	Description	Drawn	Check	Approv

Client

Jaguar Land Rover

JLR

PROJECT:
Halewood Flytip Fence

ARCADIS

Registered office:
Arcadis
80 Fenchurch Street
London
EC3M 4BY
www.arcadis.com

Coordinating office:
Arcadis
80 Fenchurch Street,
London, EC3M 4BY
Tel: 44 (0)20 7812 2000

TITLE:

FIGURE 1
TREE CONSTRAINTS PLAN
SHEET 3 OF 3

Designed:	JP	Date: 16/07/25	Signed:
Drawn:	IL	Date: 16/07/25	Signed:
Checked:	JP	Date: 16/07/25	Signed:
Approved:	BM	Date: 16/07/25	Signed:
Scale:	1:250	Datum:	AOD
Original Size:	A3	Grid:	OS
Suitability Code:	00	Project Number:	30237621

Suitability Description:

FOR INFORMATION
NOT TO BE USED FOR DESIGN OR CONSTRUCTION

Drawing Number:
30237621-ARC-ARB-DR-02

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

Client: Jaguar Land Rover
Survey date: 11 July 2025

Project: JLR Halewood Flytip Fence
Surveyor: James Potts BSc (Hons), MArbora

Table B1 Tree Schedule

Tree reference number	Species	Height (m)	Stem diameter (mm)	Crown spread (m)				Crown clearance			RPA Radius (m)	RPA (m²) (T) / RPA Offset (m) (G, H, W)	Age class	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W	Canopy Cl (m)	Branch Cl (m)	Branch Dir								
T1#	Pedunculate Oak (<i>Quercus robur</i>)	13	500	5	5	5	5	2	4	N	6.0	113.1	EM	Good	Fair	Set back 2m from fence line. Southern and eastern canopy overhanging.	40+	B1
T2#	Sycamore (<i>Acer pseudoplatanus</i>)	8	350	4	4	4	4	2	4	E	4.2	55.4	EM	Poor	Fair	Set back 1m from fence line. Major squirrel damage.	40+	C1
T3#	Pedunculate Oak (<i>Quercus robur</i>)	13	500	5	5	6	5	2	4	N	6.0	113.1	EM	Good	Fair	Set back 3m from fence line. Southern and eastern canopy overhanging.	40+	B1
T4#	Sycamore (<i>Acer pseudoplatanus</i>)	16	500	5	5	5	5	2	4	E	6.0	113.1	EM	Good	Good	Multistemmed from 1.5m sucker growth overhanging fence. Set back 2m from existing fenceline.	40+	B2
T5#	Wild Cherry (<i>Prunus avium</i>)	12	300	4	4	4	4	2	2	E	3.6	40.7	EM	Good	Good	Set back 1m from fence line. Minimal overhanging.	40+	C1
T6#	Pedunculate Oak (<i>Quercus robur</i>)	13	400	5	3	3	5	2	2	E	4.8	72.4	EM	Good	Fair	Set back 1m from pavement. East canopy reduced in line with boundary.	40+	B2
T7#	Pedunculate Oak (<i>Quercus robur</i>)	7	265	3	4	4	3	3	3	E	3.2	31.8	SM	Good	Fair	Crown lifted over pavement to 4m. Set back 0.5m from pavement boundary.	40+	C1
T8#	Pedunculate Oak (<i>Quercus robur</i>)	7	300, 300	4	4	4	4	3	3	E	5.1	81.4	EM	Good	Fair	Crown lifted over pavement to 4m. Set back 0.5m from pavement boundary.	40+	C1
T9#	Sycamore (<i>Acer pseudoplatanus</i>)	3	75	2	2	2	2	3	3	E	0.9	2.5	SM	Fair	Fair	Set back 2m from fence line.	40+	C1
T10#	Sycamore (<i>Acer pseudoplatanus</i>)	17	400, 500, 350	6	5	5	5	4	4	S	8.8	240.9	EM	Fair	Fair	Multi stem from base. Basal cavity on north stem. Directly adjacent to pavement.	40+	B1

Tree reference number	Species	Height (m)	Stem diameter (mm)	Crown spread (m)				Crown clearance			RPA Radius (m)	RPA (m ²) (T) / RPA Offset (m) (G, H, W)	Age class	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W	Canopy Cl (m)	Branch Cl (m)	Branch Dir								
G1	Mixed species: Elder (<i>Sambucus nigra</i>), Hawthorn (<i>Crataegus monogyna</i>), Sycamore (<i>Acer pseudoplatanus</i>)	4	50	1	1	1	1	0	0	E	0.6	1	EM	Fair	Fair	Mixed boundary shrub following fence line.	20+	C2
G2	Mixed species: Elder (<i>Sambucus nigra</i>), Hawthorn (<i>Crataegus monogyna</i>), Sycamore (<i>Acer pseudoplatanus</i>)	4	50	1	1	1	1	0	0	E	0.6	1	EM	Fair	Fair	Mixed boundary shrub following fence line.	20+	C2
G3	Mixed species: Elder (<i>Sambucus nigra</i>), Hawthorn (<i>Crataegus monogyna</i>), Sycamore (<i>Acer pseudoplatanus</i>), Wild Cherry (<i>Prunus avium</i>)	6	75	1	1	1	1	0	0	E	0.9	1	EM	Fair	Fair	Mixed boundary shrub following fence line.	20+	C2
G4	Mixed species: Hawthorn (<i>Crataegus monogyna</i>), Ash (<i>Fraxinus excelsior</i>), Elder (<i>Sambucus nigra</i>)	4	75	1	1	1	1	0	0	E	0.9	1	SM	Fair	Fair	Low overgrown scrub.	20+	C2

Denotes estimated value

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 Scaffold back propped panelling for high activity areas, Heras Panel Fencing for areas of moderate activity areas, or chestnut pail fencing or orange weldmesh barrier fencing for areas of low activity

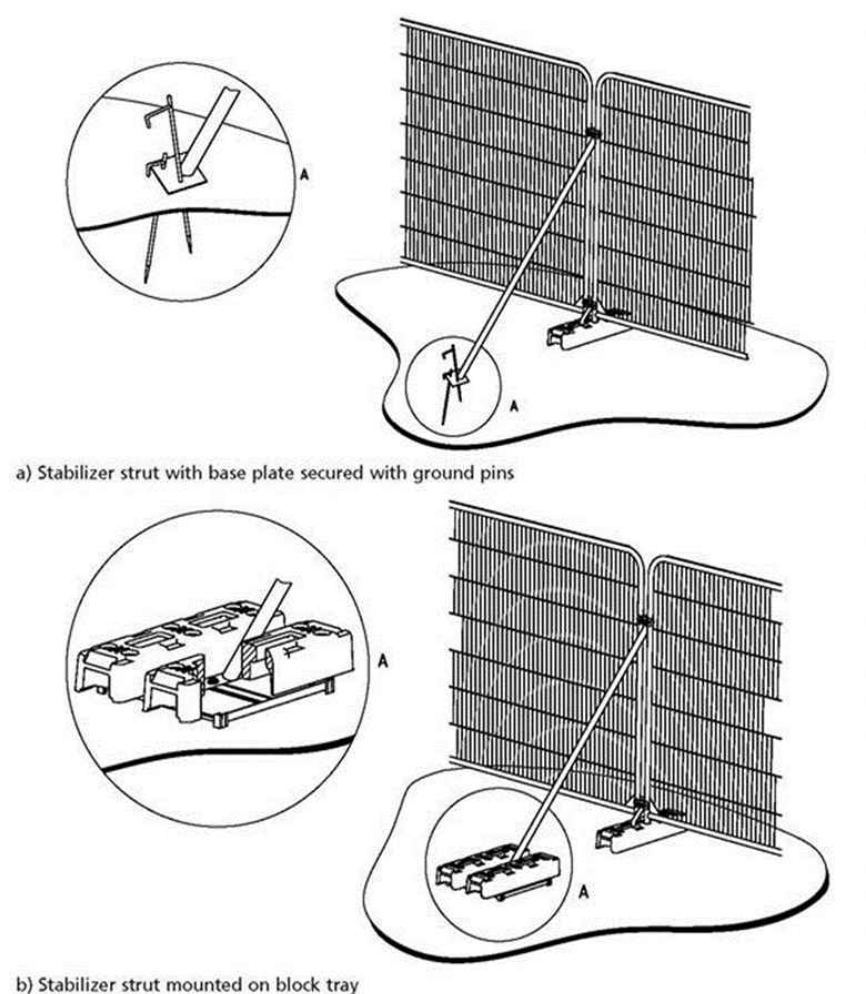


Figure C1 Tree protection fencing specification (extract from BS 5837: 2012)

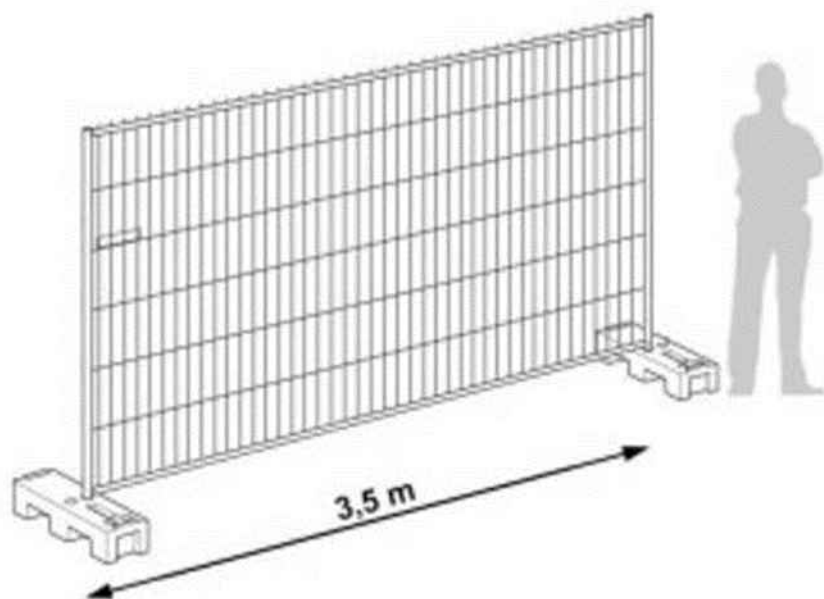


Figure C2 Tree protection fencing specification (Heras Panneling)



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 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 B1 Pedunculate Oak (<i>Quercus robur</i>)	
T2#	Category C1 Sycamore (<i>Acer pseudoplatanus</i>)	

Tree No.	Description	Photograph
T3#	Category B1 Pedunculate Oak (<i>Quercus robur</i>)	
T4#	Category B2 Sycamore (<i>Acer pseudoplatanus</i>)	

Tree No.	Description	Photograph
T5#	Category C1 Wild Cherry (<i>Prunus avium</i>)	
T7#	Category C1 Pedunculate Oak (<i>Quercus robur</i>)	

Tree No.	Description	Photograph
T8#	Category C1 Pedunculate Oak (<i>Quercus robur</i>)	
T9#	Category C1 Sycamore (<i>Acer pseudoplatanus</i>)	

Tree No.	Description	Photograph
T10#	Category B1 Sycamore (<i>Acer pseudoplatanus</i>)	

Arcadis (UK) Limited

Arcadis
80 Fenchurch St
London
EC3M 4BY

[arcadis.com](https://www.arcadis.com)

