

BS 5837 Arboricultural Report

& Impact Assessment



at
29a Lawford Rd
London
NW5 2LG

Dated
25th May 2024



Branching out through England and Wales

Contents

1.	Introduction	3
1.1.	Instruction	3
1.2.	Purpose of this Report	3
1.3.	References	3
1.4.	Author	3
2.	The Survey	4
2.2.	Methodology	4
2.3.	Survey Extent	5
2.4.	Summary of Observations	5
3.	Vegetation Overview (independent of proposals)	6
3.1.	Preliminary Management Recommendations	6
3.2.	Work Priority and Future Inspections	6
3.3.	Statutory Protection	6
4.	Local Geology and Soils	7
4.1.	Desktop Research	7
4.2.	Site Investigations	7
4.3.	Conclusion and Relevance	7
5.	Arboricultural Impact Assessment	8
5.1.	Overview	8
5.2.	Tree Removal	8
5.3.	Mitigation Planting	9
5.4.	Tree Pruning	9
5.5.	Impact of Foundations	9
5.6.	Impact of Surfacing	10
5.7.	Underground Services	10
5.8.	Changes in Ground Levels	10
5.9.	Soil Compaction	10
5.10.	Demolition Activities	10
5.11.	Waste and Materials Storage	10
5.12.	Cabins and Site Facilities	10
5.13.	Boundary Treatments	10
5.14.	Impact of Retained Trees on the Development	11
5.15.	Arboricultural Method Statement	11
6.	Photographs	12
	Appendix 1: BS 5837: 2012 – Interpretation Guide	13
	Appendix 2: Glossary of Tree Data	14
	Appendix 3: Author’s Qualifications	15
	Appendix 4: Tree Data Schedule and Drawings	17

1. Introduction

1.1. Instruction

1.1.1. We are instructed by Martin Jakobson to:

- Undertake a Tree Survey to BS 5837 at 29a Lawford Rd and assess all trees potentially within influencing distance of proposed development within the site.
- Plot the trees on a Tree Constraints Plan and record the data in a Tree Data Schedule.
- Provide preliminary management recommendations for the tree stock (independent of development proposals).
- Assess the potential impact of the development proposals and provide guidance as to appropriate mitigation measures.
- Produce an Arboricultural Impact Assessment for submission to the local authority.
- Produce a Tree Protection Plan showing locations of tree protection barriers and where ground protection will be required.

1.2. Purpose of this Report

1.2.1. This report is produced according to the guidance and recommendations within *BS 5837: 2012 - Trees in Relation to Design, Demolition, and Construction*. It is tailored to accompany a planning application. It assesses the impact of all proposed construction works on the tree population. Tree removal, canopy pruning, and the impact upon roots from various groundworks are all considered in detail. Best practice mitigation is specified wherever appropriate.

1.2.2. Consideration is also given to the impact of the changed juxtaposition between trees and buildings and how that may influence future tree management.

1.2.3. This document should not be used to inform management decisions relating to liability or risk management. Such decisions should be based on a more detailed inspection of the trees than was carried out for this report.

1.3. References

1.3.1. We have liaised with our client and studied projected ground levels to attain an adequate understanding of the project to enable us to carry out an accurate assessment of the proposals.

1.4. Author

1.4.1. This report was compiled by Sarah Alway- FdSc (Arboriculture), M.Arbor A. Sarah's resumé can be found in Appendix 3.

2. The Survey

2.1.1. A visual ground-level assessment of all trees was undertaken on the 1st of May 2024 by Carl Lothian. No climbed inspections or specialist decay detection were undertaken.

2.2. Methodology

2.2.1. Structural condition was assessed by inspecting the stem and scaffold branches, looking for weak branch junctions, symptoms of decay, or other structural defects. Any recommended works were made to ensure the trees are in acceptable structural condition. The position of the tree and its potential targets were considered.

2.2.2. Physiological condition was assessed by inspecting the stem, branches, and foliage for symptoms of disease. The vigour of the tree was also considered.

2.2.3. Key measurements were obtained using a diameter tape, clinometer, distometer and logger’s tape. Where this was not practical, measurements were estimated.

2.2.4. Some trees may be surveyed as groups, though this is usually avoided close to areas likely to be developed.

2.2.5. The locations of all key trees have been plotted according to measurements taken on-site.

2.2.6. Finally, a Retention Category is allocated. The relevant BS5837 2012 cascade chart is duplicated below.

Table 1 Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	<ul style="list-style-type: none"> Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality <p><i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i></p>			See Table 2
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation	
Trees to be considered for retention				
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	See Table 2
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	See Table 2
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	See Table 2

2.2.7. Further guidance on interpreting BS 5837 and our survey methodology is given in Appendix 1.

2.3. Survey Extent

- 2.3.1. The area indicated below¹ shows the extent of the site. Our survey included all trees within the curtilage of the property and those adjacent to it.



2.4. Summary of Observations

- 2.4.1. Number 29 Lawford Road is a terraced residential property with gardens to the front and rear.
- 2.4.2. Within the curtilage of the site, we identified three Retention Category C trees and small shrubby specimens.
- 2.4.3. Beyond the curtilage of the site, we identified two Retention Category C trees, and a Retention Category U Street tree at the front of the neighbouring property.
- 2.4.4. The Tree Constraints Plan and Tree Data Schedule (see Appendix 4) should be referred to for descriptions and locations of all trees.

¹ Image taken from Google Earth and may not be current

3. Vegetation Overview (independent of proposals)

This section summarises all the recommendations within the Tree Data Schedule regardless of whether trees are to be retained, felled or pruned to facilitate the proposed development. It does not specify works that may be required to facilitate the development proposals.

3.1. Preliminary Management Recommendations

- 3.1.1. The following recommendations are made in order to maintain the trees in an acceptable condition:
- 3.1.2. T1 is an early mature Lime tree; dead bark was found at the base of its stem with significant decay present which extended into the tree’s heartwood. This tree is recommended for removal, or its condition should be very closely monitored.
- 3.1.3. All other trees were deemed to be in satisfactory condition.

3.2. Work Priority and Future Inspections

3.2.1. The table below suggests a schedule for completing the works recommended in the Tree Data Schedule based on the perceived risk:

Work Priority	Definition	Tree Number
Urgent	As soon as possible	None
Very High	Within 1 Month	None
High	Within 3 Months	T1
Moderate	Within 1 year	None
Low	Within 3 years	None

3.2.2. The table below suggests a schedule of future inspections based on the condition and location of each tree:

Inspection Frequency (years)	Tree Number
0.5	T1
1	None
1.5	None
3	T2, T3, T4, T5 and T6

3.2.3. The trees should be inspected sooner if there is a noticeable decline in their condition or following extreme weather events.

3.3. Statutory Protection

Before undertaking most works on trees protected by a tree preservation order², consent needs to be formally obtained from the local authority. Where trees are in a conservation area (but not protected by a TPO), works are generally not permitted without first giving the local authority six weeks’ notice of intention³. Unauthorised works to protected trees or trees in a conservation area may result in criminal prosecution and a fine. Where works are required to implement a fully approved development, no such consent or notice is required.

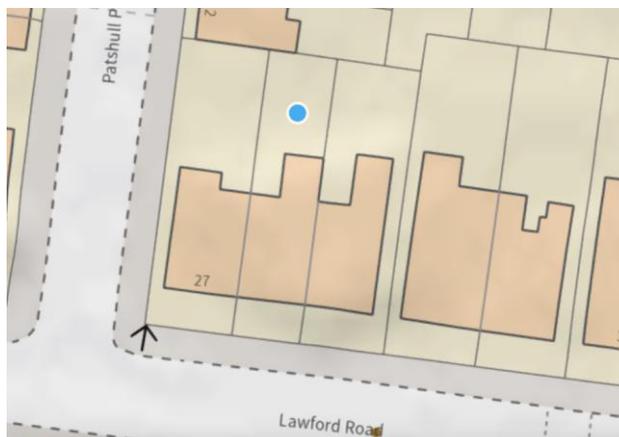
² <https://www.gov.uk/guidance/tree-preservation-orders-and-trees-in-conservation-areas>

³ During this time, the local authority may elect to create a tree preservation order or to inform the applicant that they have no objection to the proposed works. If the local authority does not respond within six weeks, then the intended work may be undertaken. Note: the local authority cannot refuse consent for works to trees within a conservation area; they may only create a tree preservation order if they wish to have further control over what works are undertaken.

4. Local Geology and Soils

4.1. Desktop Research

4.1.1. Desktop research into local geology based on the postcode **NW5 2LG** obtained the following results:

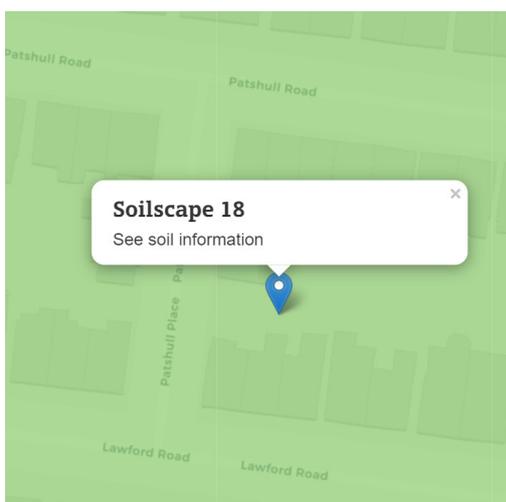


Geology

Bedrock geology

London Clay Formation - Clay, silt and sand. Sedimentary bedrock formed between 56 and 47.8 million years ago during the Palaeogene period.

Source: https://geologyviewer.bgs.ac.uk/?_ga=2.100849601.17774785.1660229567-1737936254.1660229567



Soilscape 18:

Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils

Texture:

Loamy and clayey

Coverage:

England: 19.9%, Wales: 2.4%, England & Wales: 17.5%

Drainage:

Impeded drainage



Source <http://www.landis.org.uk/soilscales/>

4.2. Site Investigations

4.2.1. We are unaware of any specific investigations into soil properties at the site.

4.3. Conclusion and Relevance

4.3.1. Based on the information reproduced in Section 3.1, local soils are assumed to have a loamy & clayey texture.

4.3.2. Loamy soils contain a mixture of clay and sand. Soil compaction may occur due to vehicular activity on building sites, so ground protection is recommended wherever vehicles operate. Most tree species will grow well in loamy soils.

4.3.3. Clay soils may be especially prone to compaction and slurring caused by general construction activity. Both of which significantly impair root function. This must be guarded against using boards to protect any soils where roots are growing. When planting new trees, species that can tolerate heavy soils should be selected.

5. Arboricultural Impact Assessment

5.1. Overview

- 5.1.1. It is proposed to extend the lower ground floor to the rear of the property. The proposal shall extend out across the entire width of the existing building. Part of the extension shall be below the existing ground floor extension, which is currently sitting above an outdoor space used for storage. The rear-facing wall of this section shall have bi-folding glass doors which open out on to the garden's lower levels. Where the proposal extends across the other side, the roof and frontings shall be made from glass, giving a glass box effect.
- 5.1.2. In the garden, it is proposed to extend the lower levels deeper into the garden by excavating approximately 1100mm below the existing ground levels close to the proposal. The existing levels shall be retained at the rear of the garden. Steps shall lead up from the lower garden levels to the upper garden.
- 5.1.3. The above is indicated on the drawings in Appendix 4. The existing layout is indicated in black; the footprint of the proposed layout is indicated in pink.
- 5.1.4. The table below summarises the potential impact on trees due to various activities.

Activity	Trees Potentially Affected
Tree Removal: Retention Category A	None
Tree Removal: Retention Category B	None
Tree Removal: Retention Category C	T3 & T4
Tree Removal: Retention Category U	None
Tree Pruning	T6
RPA: House Foundations	None
RPA: Other Foundations	None
RPA: New Hard Surface	None
RPA: Replace Existing Hard Surface	None
RPA: Underground Services	None Anticipated
RPA: Change of Ground Levels	None
RPA: Soil Compaction	Trees adjacent the construction area (preventable by installing tree protection measures)

- 5.1.1. Other potentially damaging activities often associated with construction sites include demolition or the careless use of plant machinery, hazardous materials, or fires. All of the above potential impacts are considered in detail throughout this Section.

5.2. Tree Removal

- 5.2.1. To enable the development, it is proposed to remove two Retention Category C trees, T3 and T4, and three shrubs. All other trees shall be retained. T3 is a plum tree and T4 is a cherry laurel. Both trees are located within the rear garden of No 29a Lawford Road and are not visible from public vantage points.
- 5.2.2. These trees are not considered to have a significant landscape value so the impact on local amenity levels shall be minimal.

5.3. Mitigation Planting

- 5.3.1. The trees/shrubs to be removed are of such low amenity value that no mitigation planting is considered necessary. However, should mitigation planting be desired, there is space to plant additional suitable trees at the rear of the garden.

5.4. Tree Pruning

- 5.4.1. As ground levels are being lowered beneath the canopy of T6, no pruning is likely to be required. However, to prevent accidental damage from construction activity during the build, it may be necessary to prune some of the lower branches that grow towards the proposed extension. If pruning is necessary, it shall be minimal and will not have a significant impact on tree health or local levels of visual amenity. Hence these works are not considered to be a material planning consideration.
- 5.4.2. All other tree canopies shall be unaffected by the proposals.

5.5. Impact of Foundations

- 5.5.1. Trial excavations have been undertaken just inside the boundary of No 29, close to the stem of T6. The purpose of the excavation was to determine the depth of the boundary wall between the garden of No 29 and No 27 Lawford Road, and to establish whether the wall foundations were deep enough to prevent the roots from T6 encroaching into the garden of No 29. Photographs from the client below indicate that the wall extends approximately 530mm below ground level to the top of the wall footings. The foundations then extend to an unknown depth beyond this. During the excavation, my client encountered no significant roots. The only roots present were small ones that had penetrated the wall through small holes between the bricks.
- 5.5.2. Consequently, we consider these findings sufficient evidence that the roots from T6 do not encroach into the rear garden of No 29. To account for these findings, we have amended the RPA accordingly (see the tree report drawings in appendix 4). Therefore, no foundations are proposed within the Root Protection Area of any retained tree, and no restrictions on foundation design or implementation are considered necessary from an arboricultural perspective.



5.6. Impact of Surfacing

- 5.6.1. No new hard surfaces are proposed within the Root Protection Areas of any trees.

5.7. Underground Services

- 5.7.1. The proposal requires no underground services to be excavated through any Root Protection Areas.

5.8. Changes in Ground Levels

- 5.8.1. No changes to ground levels are proposed over Root Protection Areas. See Section 5.5.

5.9. Soil Compaction

- 5.9.1. The majority of tree roots lie within the upper soil horizons. This is because the availability of oxygen decreases with depth, and roots need to breathe to stay alive. In addition, nutrients are more readily available in the form of organic matter close to the soil surface.

- 5.9.2. Healthy soils contain about 25% air space between solid particles. Increased loading of the soil caused by construction activity causes air to be squeezed out as the soil becomes compacted, preventing roots from breathing. Even an increase in pedestrian activity may cause some soil compaction.



- 5.9.3. It is important, therefore, that ground compaction and soil disturbance over Root Protection Areas should be avoided during the construction phase. Where access is required over Root Protection Areas, suitable ground protection measures must be installed.

5.10. Demolition Activities

- 5.10.1. A brick boundary wall separates the gardens and protects the closest trees from the proposal and any demolition activities. The only retained tree within the rear garden of No 29 is T5, which is located adjacent to the rear boundary, away from any proposed demolition.

5.11. Waste and Materials Storage

- 5.11.1. All hazardous materials (including cement and petrochemical products) will need to be controlled according to COSHH regulations in order to ensure there is no detrimental impact on tree health. Provision shall need to be made to ensure that cement spillage avoids all Root Protection Areas.
- 5.11.2. Areas designated for the storage of building materials and waste products will need to be approved by the local authority. Root Protection Areas should be avoided. Where this is not possible, suitable ground protection measures will need to be installed.

5.12. Cabins and Site Facilities

- 5.12.1. Any cabins and welfare facilities should be located outside of Root Protection Areas wherever possible. Otherwise, the project arborist should be consulted, and approval obtained from the local authority.

5.13. Boundary Treatments

- 5.13.1. No changes are proposed to the existing boundary features that might impact trees.

5.14. Impact of Retained Trees on the Development

- 5.14.1. The existing building is located 1.2m from the nearest retained tree (T2), and 2.4m from the next nearest retained tree (T6). However, both trees are located on third party land, and a boundary wall separates the site from these trees. Some minor future pruning may be required of these trees where the canopy overhangs the boundary, however, this would likely be required irrelevant of the development proposals.
- 5.14.2. The nearest retained tree within the garden of No 29 is T5 at 7.3m, which is a sufficient distance from the proposal and provides ample room for future growth.
- 5.14.3. Consequently, the proposal shall not result in increased pressure to remove or overly prune any of the retained trees.
- 5.14.4. The glass bi-fold doors and glass ceiling and walls shall ensure there is ample available light to the property throughout the day.
- 5.14.5. The foundations and any new surfaces should be designed to accommodate all potential impacts due to future tree-rooting activity. These include potential vegetation-related subsidence, vegetation-related heave, and lifting of surfaces / light structures due to direct root pressure.

5.15. Arboricultural Method Statement

- 5.15.1. BS 5837 recommends that a detailed methodology is agreed in the form of an Arboricultural Method Statement, which shall ensure that trees are well protected during the construction phase. This should detail all tree protection measures and limitations on construction activity. All of the issues raised within this Impact Assessment should be covered by the Method Statement.

6. Photographs

Refer also to the Tree Constraints Plan for photo locations.

Photo 1.



Photo 2.



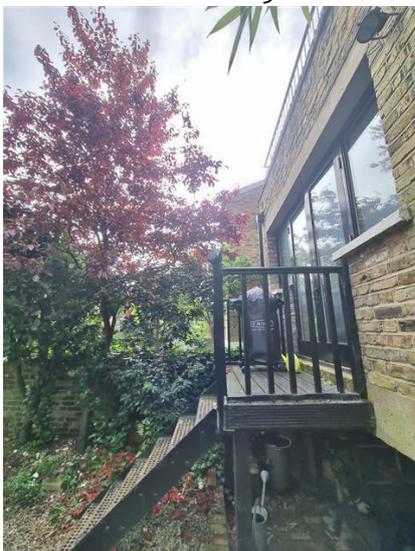
Photo 3.



Photo 4.



Photo 5.



Appendix 1: BS 5837: 2012 – Interpretation Guide

This Standard prescribes the principles to be applied to achieve a satisfactory juxtaposition of trees and structures. It sets out to assist those concerned with planning applications to form balanced judgments.

Stage 1: Survey Details and Notes

A ground-level visual survey is undertaken. Only trees with a stem diameter over 75mm, which lie within the site boundary or relatively close to it, are included.

Where applicable, trees with significant defects are highlighted and appropriate remedial works are recommended.

Wherever practicable dimensions are obtained using diameter tapes, logger's tapes, distometers and clinometers. Where obstacles prevent accurate measurement, dimensions are estimated. Trees on privately owned third-party land are surveyed from the best available vantage point and observations relating to the condition of these trees should be treated accordingly. All height measurements should be regarded as approximate.

Data is recorded for each tree and is presented in a Tree Data Schedule. Each tree is allocated a **Retention Category** according to its size, amenity value, condition, and safe useful life expectancy. The categories are allocated independently of development proposals. Our interpretation of the Retention Categories is explained below:

Retention Categories

A Category: Trees of high quality and amenity value. Usually, mature trees with a significant life expectancy which would enhance any development. Retention of these trees is strongly encouraged.

B Category: Trees of moderate quality and amenity value. Usually these are maturing trees or younger trees with exceptional form. Retention of these trees is desirable though the removal of occasional specimens may be acceptable.

C Category: Trees of low quality or small specimens with a relatively low amenity value. These trees are not considered to be a material planning constraint and their removal will generally be seen as acceptable in order to facilitate development.

U Category: Trees of such low quality that their removal is recommended regardless of development proposals.

Occasionally trees are borderline and do not fall neatly into one of these categories. In such cases we apply a superscript (+/-) such that:

C⁺ Indicates borderline C/B, though Category C is deemed to be most appropriate.

B⁻ Indicates borderline C/B, though Category B is deemed to be most appropriate.

The British Standard suggests that each of the A, B and C categories may be further subdivided (A1, A2, A3, B1, B2, B3 etc) such that subcategory 1 denotes mainly arboricultural values, subcategory 2 denotes mainly landscape values and subcategory 3 denotes mainly cultural values (including conservation). Multiple subcategories may be used.

Our experience suggests that these subdivisions lack clarity and can be confusing. Within this report subcategories are **not** denoted. Where appropriate, the use of phrases such as '*Part of a formal group*', or '*Has a high ecological value*', or '*Offers good screening to the site*' are incorporated into the observation section of the Tree Data Schedule. We believe this conveys all relevant landscape and cultural information without any confusion.

Tree Constraints Plan (TCP). This indicates the position, crown spread, Retention Category and Root Protection Area of each tree. It is used to inform where development may proceed without causing damage to trees.

Root Protection Area (RPA). This is the area around each tree likely to contain the majority of roots. It should ideally remain undisturbed to avoid a detrimental impact on tree health. For single stemmed trees It is calculated according to the formula "radius of RPA" = "12 x stem diameter". Where a tree has more than one stem, the equivalent-single-stem diameter is usually recorded. This is calculated by adding the squares of the stems and then finding the square root of this total. The radius of the Root Protection Area is then calculated by multiplying the equivalent-stem-diameter by 12.

Stage 2: Arboricultural Impact Assessment

After the initial survey and the production of the Tree Constraints Plan, arborists and designers are encouraged to work together to establish a design proposal with minimal impact on the high-quality trees. An assessment should be made of all possible impacts including the impact that the trees may have on the proposal. The arborist may recommend mitigation strategies to minimise these impacts and help achieve a more harmonious juxtaposition between buildings and trees.

Stage 3: Arboricultural Method Statement

This type of report specifies the measures necessary to protect trees against damage from construction activity. The Method Statement should be written in a manner that it may be conditioned and enforced by the local authority upon granting of planning permission. The site manager should be familiar with all aspects of the Method Statement and should ensure that all persons working on the site are aware of those aspects which appertain to their work. This includes service installation engineers and operators of plant machinery.

Appendix 2: Glossary of Tree Data

This section explains the terms used in the **Tree Data Schedule** (see Section 3 and Appendix 4).

A2.1 General Observations

Numbering System:	Each item of vegetation has its own unique number prefixed by a letter such that T1=Tree 1, G2=Group 2, H3=Hedge 3 and W4=Woodland 4, S5=Shrub 5.
Age Categories:	
Young	Usually less than 10 years old.
Semi-Mature	Significant future growth to be expected, both in height and crown spread (typically below 30% of life expectancy).
Early-Mature	Full height almost attained. Significant growth may be expected in terms of crown spread (typically 30-60% of life expectancy).
Mature	Full height attained. Crown spread will increase but growth increments will be slight (typically 60% or more of life expectancy).
Veteran	A level of maturity whereby significant management may be required in order to keep the tree in a safe condition.
Over Mature	As for veteran except management is not considered worthwhile.
Species:	Common names and Latin names are given.
Height:	Measured from ground level to the top of the crown.
Stem Diameter:	Taken at 1.5m above ground level where possible. On multi-stemmed trees this measurement may be taken at ground level, though usually an indication of the number of stems and average diameter is given, e.g. 3 x 30cm.
Crown Height:	Measured from ground level to the height at which the main crown begins. Where the crown is unbalanced it is measured on the side deemed to be most relevant. This is usually the side facing the area of anticipated development.
Tree Diagram:	This scaled drawing is computer generated based on measurements taken for stem diameter, crown height and spread, and overall height. It is designed to help the reader rapidly assess the data. It is not an accurate representation of the form of the tree.
Crown Spread:	Measured N, E, S & W, taken from the centre of the stem and usually rounded up to the nearest metre.
Observations:	If a tree's position is considered to be relevant it will be commented upon (e.g. overhanging a children's play area). Tree form and pruning history are also recorded along with an account of any significant defects. Defects and descriptive terms are dealt with in more detail at the end of this section.
Recommendations:	Usually based on any defects observed and intended to ensure that the tree is in an acceptable condition.
Priority Scale:	Depending upon the threat posed by the tree, and the likelihood of failure, recommendations should be carried out according to the following priority scale:
Urgent	To be carried out as soon as possible.
Very High	To be carried out within 1 month.
High	To be carried out within 3 months.
Moderate	To be carried out within 1 year.
Low	To be carried out within 3 years.
Inspection Frequency:	An interval of 6 months, 1 year, 1.5 years or 3 years is allocated before the next inspection is due. Wherever practical, consideration should be given to seasonal changes so that deciduous trees are not always surveyed in winter when they have no leaves, or in summer when leaves may obscure branches within the upper crown.
Vigour:	An indication of growth rate and the tree's ability to cope with stresses:
High	Having above average vigour.
Moderate	Having average vigour.
Low	Having below average vigour.
Very Low	Tree is struggling to survive and may be dying.
Physiological Condition:	
Good	Healthy and with no symptoms of significant disease.
Fair	Disease present or vigour is impaired.
Poor	Significant disease present or vigour is extremely low.
Very Poor	Tree is dying.
Structural Condition:	
Good	Having no significant structural defects.
Fair	Some defects observed though no high priority works are required.
Poor	Significant defects found. Tree requires monitoring or remedial works.
Very Poor	Major defects which will usually require significant remedial works or tree removal.
Amenity Value:	
Very High	Exceptional specimen, observable by a large number of people.
High	Attractive specimen, observable by a significant number of people.
Moderate	One of the above factors is not applicable.
Low	Unattractive specimen or largely hidden from view.
Life Expectancy:	The estimated number of years before the tree may require removal. Classified as (<10), (10 – 20), (20 – 40), or (40+).
Retention Category:	These are explained in detail in Appendix 1.

A2.2 Evaluation of Defects

Cavities, wounds, deadwood etc are all evaluated as follows:	
Major	Such that structural integrity is, or will become, compromised and the tree is, or will inevitably become, hazardous.
Significant	A defect that may over time become a major defect, though not necessarily so. This will depend on the vigour of the tree and its ability to deal with decay etc.
Minor	A defect that is unlikely to develop into a major defect.

Appendix 3: Author's Qualifications

Qualifications & Experience of Ivan Button N.C.H. (Arb), FDS Sc (Arb), BSc (Hons), P.G.C.E., M. Arbor. A.

Early Career

Before and whilst attending college and university (1983 – 1990) Ivan worked as a gardener and also within the building industry where he received training in a broad range of building skills. In 1989 Ivan obtained a BSc (Hons) in psychology at Leeds University followed by a P.G.C.E at The University of Wales in 1990. After one year of teaching he returned to the construction activity and worked on new builds, refurbishments and groundworks until 1995.

Arboriculture

In 1996 Ivan obtained a NCH (Arboriculture) at the University of Lincoln and became a member of the Arboricultural Association. He then received further arboricultural consultancy training with Peter Wynn Associates for one year before establishing a tree surgery and landscaping business in 1998.

In 2005 Ivan commenced full time employment with JCA Ltd, an Arboricultural Association registered consultancy where he soon adopted a senior role responsible for five consultants. During this time he obtained a FDS Sc (Arboriculture) at the University of Lancashire, which he passed with distinction.

Since 2013, Ivan has been the Director and Principal Consultant of Crown Consultants Ltd which provides Arboricultural Reports for the purposes of Development, Safety, Management, Mortgage, Subsidence, Mitigation and Litigation. In 2015, he acted as tree officer for Barnsley Council and has since provided consultancy services to other local authorities.

He has obtained the LANTRA *Professional Tree Inspector* Qualification promoted by the Arboricultural Association and recognised as appropriate for all levels of tree inspection.

He is a long-standing member of the Consulting Arborist Society and has obtained CAS accreditations for Tree Inspection, Planning, Mortgage Reports (Subsidence Risk Assessment) and for his expert witness work.

At the time of writing, he has written approximately sixty CPR-compliant reports (civil and criminal) covering a range of subjects including Subsidence Damage, Personal Injury, Direct Root Damage, Professional Negligence, TPO Breaches.

Ivan is a long-standing professional member of the Arboricultural Association and the International Society of Arboriculture.

He is a licensed Quantified Tree Risk Assessment user.

Ivan has undertaken Bond Solon expert witness training and has obtained the University of Cardiff Expert Witness certificate. He has given written and oral evidence.

Between 2008 and 2017 he was registered as a Sweet and Maxwell Checked Expert Witness.

Qualifications & Experience of Emma Hoyle FDS Sc (Arboriculture), ED (Forestry & Arboriculture), M. Arbor. A.

Emma is a qualified Arboricultural Consultant educated to Level 5 in Arboriculture at Askham Bryan College, is a professional member of the Arboricultural Association and is a LANTRA-accredited *Professional Tree Inspector*. She has worked for Crown Consultants since 2015 and has since written numerous reports relating to all aspects of arboriculture including; planning and development, vegetation-related subsidence, tree preservation orders and tree risk assessment. Emma regularly attends seminars and events in order to keep abreast with current knowledge and best practice in Arboriculture.

Prior to becoming an arboricultural consultant, Emma worked for two reputable tree surgery firms from 2008 and became an NPTC Qualified tree surgeon after completing a Level 3 Extended Diploma in Forestry and Arboriculture at Askham Bryan College. Emma also has experience in other areas of arboriculture such as forest clearance, tree planting, tree maintenance and landscaping.

Qualifications & Experience of Joe Taylor - MArborA, FdSc (Arboriculture)

Joe began his career in Arboriculture as a tree surgeon/climber. During his time as a tree surgeon, Joe has achieved City & Guilds NPTC qualifications in Chainsaw Maintenance and Cross Cutting, Tree Climbing and Rescue, Safe Use of Manually Fed Wood-chipper and Supporting Colleagues Undertaking Tree Related Operations.

Joe obtained a Foundation Degree in Arboriculture at Askham Bryan College in 2015 which he passed with merit. Joe is a professional member of the Arboricultural Association, the International Society of Arboriculture, and the Royal Forestry Society and regularly attends industry-related seminars in to keep abreast of industry best practices.

Studying at Askham Bryan College reinforced Joe's passion for trees and drove his enthusiasm to learn more. Learning how trees interact with their surrounding environment and their importance within our urban and rural landscapes highlighted an interest in pursuing a career in consultancy.

Since working for Crown Consultants Joe has undertaken numerous surveys and produced numerous reports for the purpose of planning (BS 5837), tree condition surveys, subsidence risk assessments, root surveys and decay detection investigations.

Qualifications & Experience of Sarah Alway - TechArborA, FdSc (Arboriculture).

Sarah recently obtained an FdSc in Arboriculture and Tree Management at the University of Central Lancashire which she passed with distinction. She is a member of the Arboricultural Association and regularly attends seminars and events to keep abreast of developments in industry knowledge and current best practice in Arboriculture.

Sarah has been working closely alongside the principal consultant and managing director of Crown Consultants since the company was established in 2008. During that time, she has gained experience in all aspects of the business such as reporting, CAD, administration, accounting, and business management. Additionally, she has assisted consultants with numerous reports relating to all aspects of arboriculture including BS:5837 planning and development, vegetation-related subsidence, tree preservation orders, and tree risk assessment. She has also assisted with tree surveys for several years and since qualifying has been undertaking her own surveys.

In addition to working for Crown Tree Consultants Ltd producing reports, Sarah also likes to expand her knowledge of the wider Arboricultural industry by training in other areas of tree services and management. She has recently completed a training programme in tree-planting and volunteer management, including education in tree planting and natural dam building to help mitigate against the risks of heavy flooding (Natural Flood Management). Sarah also regularly volunteers with two local climate action groups who plant trees and build leaky dams.

As Sarah's career develops, she intends on focusing her attention on sustainable innovation in arboriculture and how green urban spaces could pave the way for the forests of the future.

Qualifications & Experience of Carl Lothian – BSc (Hons) (Arboriculture).

Carl began his career undertaking a Level 3 extended diploma in arboriculture and forestry at Merrist Wood College in 2015. Upon completion of his diploma, Carl worked with several tree surgery firms completing a range of arboricultural works. In 2018 Carl began his BSc (Hons) in arboriculture and urban forestry, graduating with a first-class degree and attaining the Institute of Chartered Foresters student of the year award.

After graduating, Carl worked as a TreeRadar technician where he carried out tree root and decay surveys with specialist ground-penetrating radar equipment. During this time Carl was fortunate enough to work at prestigious sites, such as the Palace of Westminster and the National Maritime Museum.

Whilst working at Crown, Carl has undertaken a range of tree surveys and written reports relating to development, safety, subsidence, and decay detection. Carl is a professional member of the Consulting Arborist Society and an associate member of the Institute of Chartered Foresters.

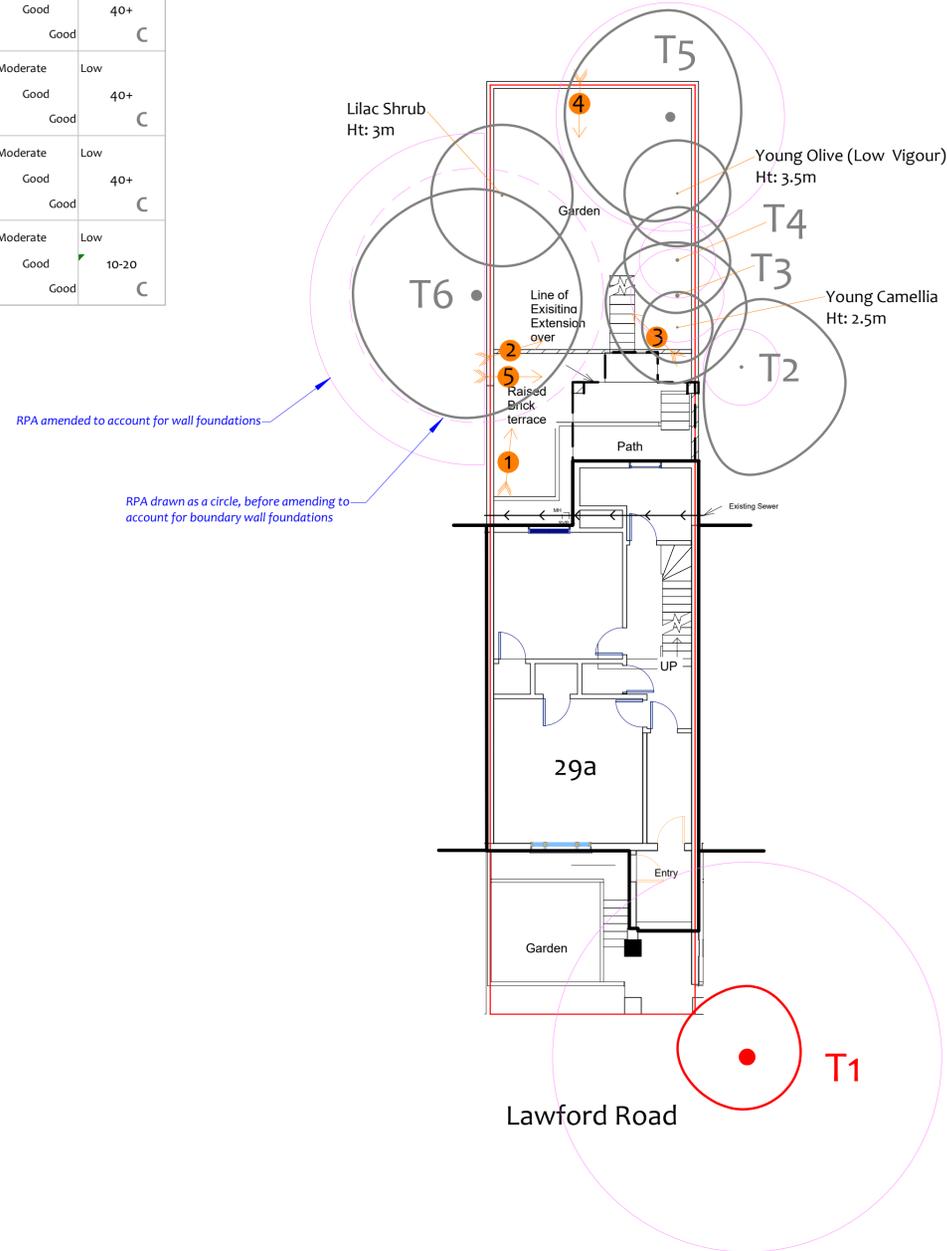
Appendix 4: Tree Data Schedule and Drawings

The Tree Data Schedule and any drawings accompanying this report follow this page. They are also provided as separate documents for ease of printing and screen viewing.

Reference G = Group H = Hedge	Age & Species	Height (m)	Crown Ht (m)	Diameter (cm)	Crown Spread (m)			Scaled Tree Diagram (m)	Notes	Recommendations (Independent of any development proposals)		Vigour		Amenity Value	
					W	N	E			Priority	Inspect Freq (yrs)	Physiological Condition		Life Expectancy (yrs)	
												Structural Condition	Retention Category		
T1	Early-Mature Lime Tilia sp.	9.5	6	46	2	1.5	1.5		Position: Street tree. Form: Single stemmed and vertical with a balanced crown. History: Managed by cyclical pollarding and recently pollarded. Defects: Dead bark at the base on the northern side with significant decay beneath and into heart wood.	Monitor or Remove.		Moderate	High	<10	U
										High	0.5	Fair	Poor		
T2	Young Plum Prunus sp.	3.5	1.5	9	1	3	3		Position: Situated on third party land. Form: Single stemmed and leaning with a slightly unbalanced crown. History: No evidence of significant pruning. Defects: No significant defects. Other: Limited inspection, dimensions estimated.	No action required.		Moderate	Low	40+	C
										n/a	3	Good	Good		
T3	Young Plum Prunus sp.	6	2	11	2	2	2.5		Form: Single stemmed and vertical with a balanced crown. History: Multiple pruning wounds due to crown reduction. Defects: No significant defects observed.	No action required.		Moderate	Low	40+	C
										n/a	3	Good	Good		
T4	Young Cherry Laurel Prunus laurocerasus.	3.5	1.5	9	1.5	1.5	1.5		Form: Multi-stemmed at 1m with a slightly unbalanced crown. History: No evidence of significant pruning. Defects: No significant defects.	No action required.		Moderate	Low	40+	C
										n/a	3	Good	Good		
T5	Semi-Mature Bay Laurel Laurus nobilis.	6	1.5	27	3	2	3		Form: Multi-stemmed at ground level with a balanced crown. History: No evidence of significant pruning. Defects: No significant defects. Other: Recorded stem diameter is equivalent for five stems (19cm, 10cm, 11cm, 8cm, 8cm).	No action required.		Moderate	Low	40+	C
										n/a	3	Good	Good		
T6	Early-Mature Elder Sambucus nigra.	6.5	2	30	3.5	3	3.5		Position: Situated on third party land. Form: Single stemmed and vertical with a slightly unbalanced crown. History: No evidence of significant pruning. Defects: No significant defects. Other: Ivy prevented detailed inspection. Growing against and displacing the boundary wall.	No action required.		Moderate	Low	10-20	C
										n/a	3	Good	Good		

Tree Data Schedule

Reference C = Group H = Hedge	Age & Species	Height (m)	Crown Spread (m)			Scaled Tree Diagram (m)	Notes	Recommendations (Independent of any development proposals)		View		Amenity Value	
			W	N	E			Priority	Inspect (see 10.5)	Physiological Condition	Structural Condition	Life Expectancy (yrs)	Retention Category
T1	Early-Mature Lime Tilia sp.	9.5	6	4.6	2		Position: Street tree. Form: Single stemmed and vertical with a balanced crown. History: Managed by cyclical pollarding and recently pollarded. Defects: Dead bark at the base on the northern side with significant decay beneath and into heart wood.	Monitor or Remove.	Moderate	Fair	High	<10	U
T2	Young Plum Prunus sp.	3.5	1.5	9	1		Position: Situated on third party land. Form: Single stemmed and leaning with a slightly unbalanced crown. History: No evidence of significant pruning. Defects: No significant defects. Other: Limited inspection, dimensions estimated.	No action required.	Moderate	Good	Low	40+	C
T3	Young Plum Prunus sp.	6	2	11	2		Form: Single stemmed and vertical with a balanced crown. History: Multiple pruning wounds due to crown reduction. Defects: No significant defects observed.	No action required.	Moderate	Good	Low	40+	C
T4	Young Cherry Laurel Prunus laurocerasus.	3.5	1.5	9	1.5		Form: Multi-stemmed at 1m with a slightly unbalanced crown. History: No evidence of significant pruning. Defects: No significant defects.	No action required.	Moderate	Good	Low	40+	C
T5	Semi-Mature Bay Laurel Laurus nobilis.	6	1.5	27	3		Form: Multi-stemmed at ground level with a balanced crown. History: No evidence of significant pruning. Defects: No significant defects. Other: Recorded stem diameter is equivalent for five stems (19cm, 10cm, 11cm, 8cm, 8cm).	No action required.	Moderate	Good	Low	40+	C
T6	Early-Mature Elder Sambucus nigra.	6.5	2	30	3		Position: Situated on third party land. Form: Single stemmed and vertical with a slightly unbalanced crown. History: No evidence of significant pruning. Defects: No significant defects. Other: Ivy prevented detailed inspection. Growing against and displacing the boundary wall.	No action required.	Moderate	Good	Low	10-20	C



Drawing No: CCL 11850 / TCP Rev: 1
 Title: Tree Constraints Plan (Existing Layout)
 Site: 29a Lawford Road NWS 21G
 Scale: 1:100 Paper Size: A1



Tree Retention Categories	
	Category A tree
	Category B tree
	Category C tree
	Category U tree

Trees of high quality with an estimated life expectancy of 40+ years. Usually large trees with significant presence or smaller trees with excellent form. Retention of these trees is highly desirable.

Trees of moderate quality with a life expectancy of 20+ years. Usually maturing trees or younger trees with good form. Retention of these trees is desirable though less than Category A trees.

Unremarkable trees of low quality and merit. Individual specimens are not considered to be a material planning consideration.

Trees unsuitable for retention due to their very poor condition.

Tree Constraints Plan

Status: Final

	B5 S537 Root Protection Area (radius = 1xstem diameter)
	Root Protection Area needing amendment due to site conditions, e.g. presence of existing road or building
	Root Protection Area having been amended to account for site conditions

T1 = Tree No 1 G2 = Group No 2 H3 = Hedge No 3

Photo 1

MN = Measured North:
 Canopy spreads are sometimes measured to an approximate N defined by site features. Often more accurate, especially where rows of trees are not aligned N-S or E-W.

Tree Ref.	Species	Height (m)	Root Protection Area		
			Radius (m)	m ²	Square (m)
T1	Lime	9.5	5.5	96	9.8
T2	Plum	3.5	1.1	4	1.9
T3	Plum	6	1.3	5	2.3
T4	Cherry Laurel	3.5	1.1	4	1.9
T5	Bay Laurel	6	3.2	33	5.7
T6	Elder	6.5	3.6	41	6.4

Proposed Layout (Pink)



Tree Pruning

As ground levels are being lowered beneath the canopy of T6, no pruning is likely to be required. However, to prevent accidental damage from construction activity during the build, it may be necessary to prune some of the lower branches that grow towards the proposed extension. If pruning is necessary, it shall be minimal and will not have a significant impact on tree health or local levels of visual amenity. Hence these works are not considered to be a material planning consideration.

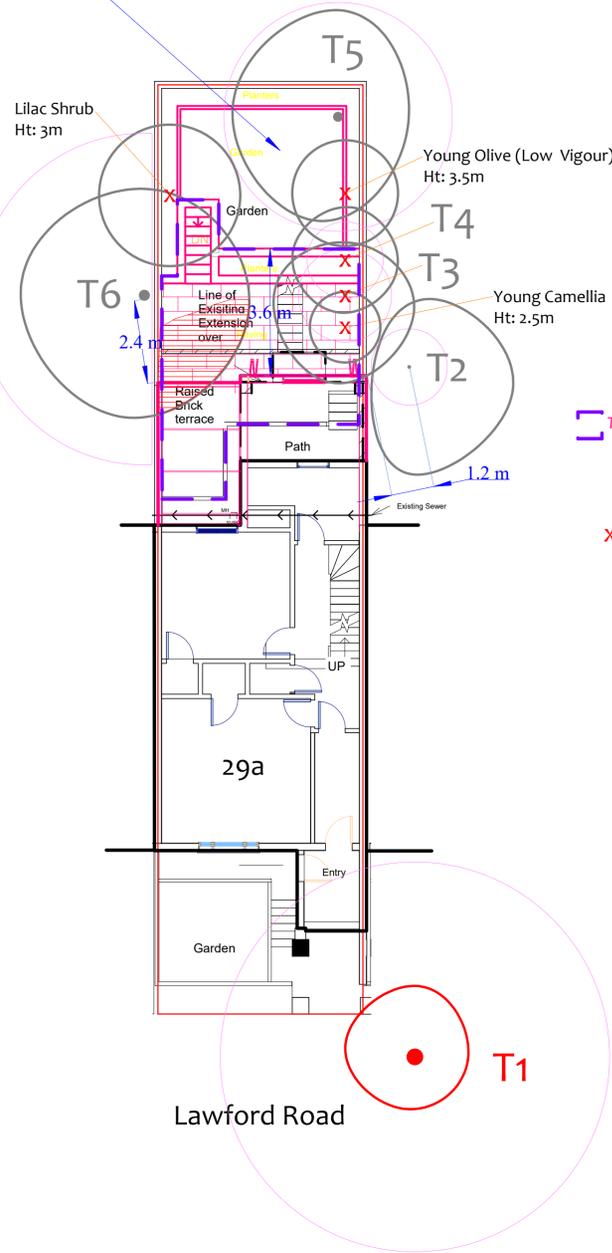


RPA amended to account for wall foundations.

Trial excavations indicate that the wall extends 530mm below the existing ground levels, with the foundations extending further below this point. Trial excavations also revealed there to be almost no rooting activity within the rear garden of No 29a (close to the stem of T6), other than some small roots that have penetrated the mortar. See adjacent photograph.

Consequently, the proposed excavation for the foundations and lower garden levels shall have a negligible impact on T6.

Existing ground levels to be retained



Total area of excavation

X Tree Removal

To enable the development, it is proposed to remove two Retention Category C trees, T3 and T4. All other trees shall be retained. T3 is a plum tree and T4 is a cherry laurel. Both trees are located within the rear garden of No 29a Lawford Road and are not visible from public vantage points.

It is also proposed to remove young olive, camellia and lilac shrub.

Drawing No:	CCL 11850 / IAP Rev: 1
Title:	Impact Assessment Plan
Site:	29a Lawford Road NWS 2LG
Scale:	1:100



Tree Retention Categories	
Stems & canopies shown	
	Category A tree
	Category B tree
	Category C tree
	Category U tree

Trees of high quality with an estimated life expectancy of 40+ years. Usually large trees with significant presence or smaller trees with excellent form. Retention of these trees is highly desirable.

Trees of moderate quality with a life expectancy of 20+ years. Usually maturing trees or younger trees with good form. Retention of these trees is desirable though less than Category A trees.

Unremarkable trees of low quality and merit. Individual specimens are not considered to be a material planning consideration.

Trees unsuitable for retention due to their very poor condition.

Impact Assessment Plan

Status: Final - for submission

	B5 s837 Root Protection Area (radius = 1x stem diameter)
	Root Protection Area needing amendment due to site conditions, e.g. presence of existing road or building.
	Root Protection Area having been amended to account for site conditions

Tree to be removed to facilitate the proposal

Tree to be removed due to its low quality

Proposed pruning

MN = Measured North

Canopy spreads are sometimes measured to an approximate N defined by site features. Often more accurate, especially where rows of trees are not aligned N/S or E/W.

Tree Ref.	Species	Height (m)	Root Protection Area		
			Radius (m)	m ²	Square (m)
T1	Lime	9.5	5.5	96	9.8
T2	Plum	3.5	1.1	4	1.9
T3	Plum	6	1.3	5	2.3
T4	Cherry Laurel	3.5	1.1	4	1.9
T5	Bay Laurel	6	3.2	33	5.7
T6	Elder	6.5	3.6	41	6.4

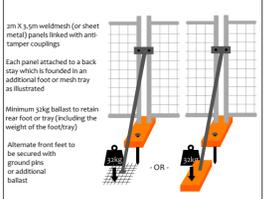


Tree Protection Plan

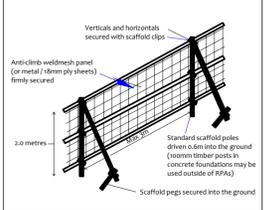
Tree Protection Barriers:

	Fixed protective barrier: The 'In-Ground System' or the 'Backstay System'. To remain in place for all construction activity		Construction Exclusion Zone Stem protected to a height of 2.5m with thick cloth & wire Tree Protection Boarding 1.2 x 1.2 x 2.4m high 25mm plywood
	Moveable protective barrier: The 'Backstay System'. To remain in place except when approved works are being undertaken in the Restricted Zone		Orange Barrier Mesh Fencing, 1.8m, on steel fencing pins and wooden posts To remain in place throughout all construction activity

The 'Back Stay System'

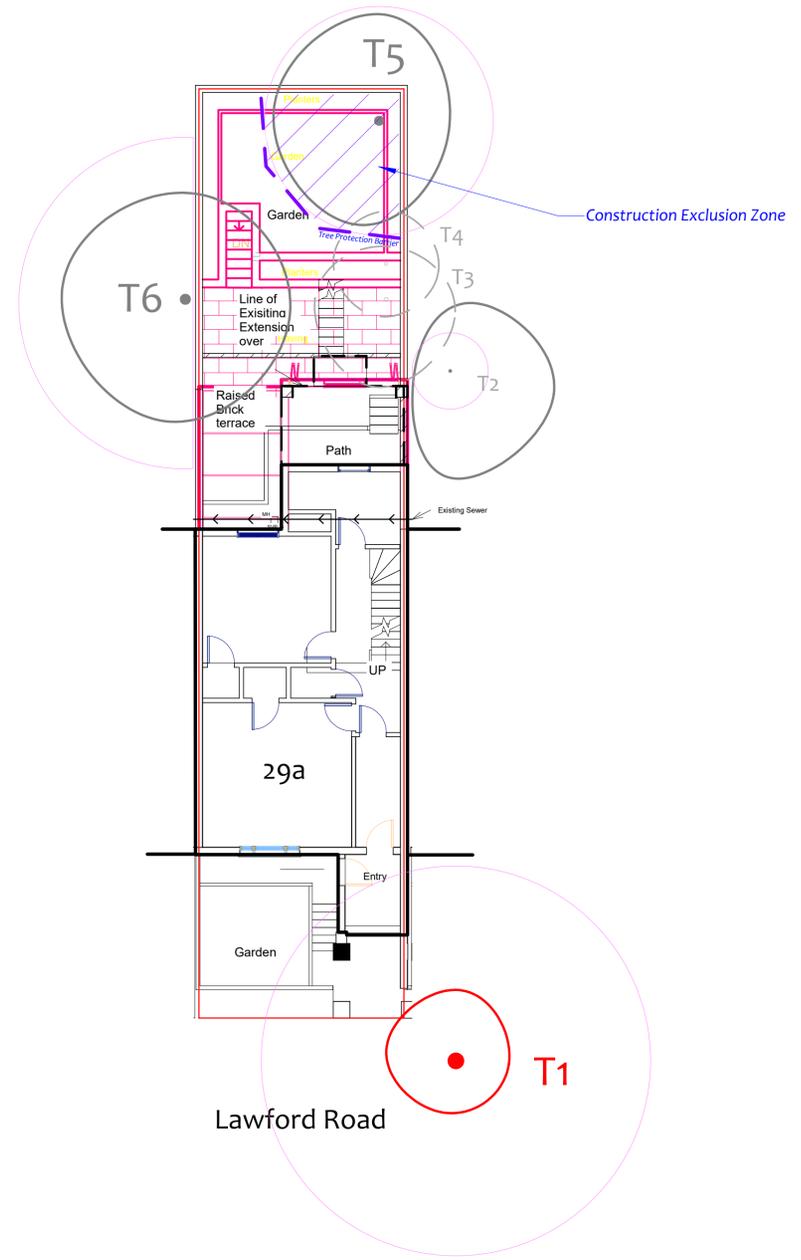


The 'In-Ground' System



Construction Exclusion Zone

- Within this area the following restrictions shall apply:
- No excavation or land regrading whatsoever.
 - No storage of materials, rubble, soil or spoil.
 - No fires within the exclusion zone or within 10m of any tree canopy.
 - No site cabins or other temporary structures.
 - No discharge of polluted water, cement or chemicals of any kind.
 - No use of any machinery, or passage or parking of vehicles.
 - No tree works without council consent.



Drawing No:	CCL 11850 / TPP Rev: 1
Title:	Tree Protection Plan (Existing Layout with Proposals Overlaid)
Site:	29a Lawford Road NWS 21G
Scale:	1:100
Paper Size:	A1



Tree Retention Categories		Stems & canopies shown
	Category A tree	Trees of high quality with an estimated life expectancy of 40+ years. Usually large trees with significant presence or smaller trees with excellent form. Retention of these trees is highly desirable.
	Category B tree	Trees of moderate quality with a life expectancy of 20+ years. Usually maturing trees or younger trees with good form. Retention of these trees is desirable though less than Category A trees.
	Category C tree	Unremarkable trees of low quality and merit. Individual specimens are not considered to be a material planning consideration.
	Category U tree	Trees unsuitable for retention due to their very poor condition.

Tree Protection Plan

	B5 s837 Root Protection Area (radius = 1xstem diameter)
	Root Protection Area needing amendment due to site conditions, e.g. presence of existing road or building.
	Root Protection Area having been amended to account for site conditions

MN = Measured North

Canopy spreads are sometimes measured to an approximate N defined by site features. Often more accurate, especially where rows of trees are not aligned N-S or E-W.

Tree Ref.	Species	Height (m)	Root Protection Area	
			Radius (m)	Square (m)
T1	Lime	9.5	5.5	96
T2	Plum	3.5	1.1	4
T3	Plum	6	1.3	5
T4	Cherry Laurel	3.5	1.1	4
T5	Bay Laurel	6	3.2	33
T6	Elder	6.5	3.6	41

T1 = Tree No 1 G2 = Group No 2 H3 = Hedge No 3