



Outline Trees, Arboricultural Consultancy
Report Reference: JH052148WILL
May 2021



**British Standards 5837:2012 Tree Survey,
Arboricultural Impact Assessment &
Arboricultural Method Statement
(including Tree Protection Plan)**

**at
48 Willington Road, Etwall
for
Jack Taylor-Day**

QUALITY ASSURANCE			
Client:	Jack Taylor-Day		
Project:	48 Willington Road, Etwall		
Project Ref:	JH052148WILL		
Report Content:	British Standards 5837:2012 Tree Survey, Arboricultural Impact Assessment & Arboricultural Method Statement		
Written & issued by:	Jason Humphreys FdSc (Arb) MArborA		12 th May 2021

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Cover image – Looking South West with T1 lime in the right foreground.



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1 Executive Summary

1.1 The Project, Purpose and Scope of this Report

The primary purpose of this report is to provide site-specific arboricultural detail, which will enable the determination of the impact of a planning application associated with an extension of the existing property.

An existing, scale site plan in AutoCAD format has been used for the Tree Survey Plan, whilst a full suite of drawings and elevations, have been provided in AutoCAD format by the architect and used to ascertain the impact of the proposals and subsequently produce the following documents:

- BS 5837:2012 Tree Survey Schedule (TSS) - Appendix A
- Current Tree Survey Plan (TSP) - Appendix B
- Proposed Layout & Tree Protection Plans (TPP) - Appendix C
- Site-Specific Arboricultural Method Statement (AMS) - Section 6 & Appendix J
- Auditable Site Monitoring Records – Appendix K

1.2 Findings and Recommendations

The tree survey recorded the details of 1 lime tree. Full results of the tree survey are provided in the Tree Survey Schedule (Appendix A).

No tree works were identified as being necessary to implement the proposed project and/or to facilitate the construction.

The foundations of the extension footprint, will have no significant impact on the projected RPA of the surveyed lime tree, which might be considered detrimental to the tree.

The final distance between the extent of the crown spread and the extension (approx. 2.5m), will place no significantly greater level of potential pruning pressures on the lime tree, than those that already exist.

Upon consideration of the layout, the site and the anticipated manner that the construction activities will be undertaken, tree protection measures, which are primarily additional ground protection and some protective fencing, have been recommended.

Some amelioration measures have also been recommended in order to potentially improve the rooting environment for the lime tree, that currently exists. Protective fencing will protect this area.

Anticipated construction activities associated with the project have been assigned a 'Development Stage' (DS) number (see Section 6 & Appendix J). An auditable record of these key activities should be maintained and kept at the site. Appendix K has an appropriate template for this specific purpose. Tool box talks and briefing sessions are encouraged and should be delivered by the Site Manager and/or the Site Arboriculturalist as appropriate.

It is considered that the project and its associated construction activities, will not have any notable or foreseeable, adverse effect on the longevity or condition of the lime tree.

Reference plans and documents for guidance including the Tree Survey Schedule, Tree Survey Plan and the Tree Protection Plan, will be kept on site and made available for contractors, as necessary.

2 Limitations, Regulations & Location

2.1 Tree Survey & Report Limitations

Recommendations included within this report are the professional opinion of an experienced Arboriculturist¹ and are the view of the Author (see section 3.2). This is based on a review of the information provided by The Client, the brief and a survey of the site. This report pertains to these results only. No investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information.

Whilst not definitive, the findings and any associated recommendations detailed within this report are considered to be reasonable, practicable and in the interests of promoting sensible arboricultural management.

No liability can be accepted by the author in respect of the trees, unless the recommendations of this report are carried out under his supervision and within his timescale. Acceptance of this report represents an agreement to adopt the recommendations and guiding principles detailed within.

The findings and recommendations contained within this report are, assuming its recommendations are observed, valid for a period of twelve months from the date of survey. Trees are living organisms and their condition can change significantly over a relatively short period of time – good practice dictates they are inspected on a regular basis for reasons of safety.

Tree rooting characteristics and soils are both enormously variable as are their interactions. This makes attempts to quantify subsidence risk assessment impossible. No effort has been made to assess subsidence risk potential nor should any be construed.

The report relates only to the trees referred to in this report, which are recorded in the attached tree survey schedule (Appendix A) and shown on the annotated plans at Appendices B & C.

Where trees were extensively ivy clad, this was recorded in the survey schedule. It is not possible to ascertain the presence of cavities or other defects beneath the ivy and, therefore, ivy should be removed and a re-inspection carried out.

2.2 Regulatory and Policy Framework

Tree Preservation Orders (TPOs) and Conservation Areas place various statutory restrictions on the felling, pruning or damaging of trees, subject to various exemptions (Department for Communities and Local Government, 2014). See Section 4.1 for site-specific information.

Tree felling on non-residential land is also controlled by the need to obtain a Felling Licence from the Forestry Commission before felling more than 5m³ of timber in any calendar quarter, subject to various exemptions and variations (Forestry Commission, 2007).

There is an overriding exemption for the above statutory controls for tree felling and pruning for works where it has been deemed necessary to implement development that has already received full planning permission.

¹ As per the Terms and Definitions detailed in British Standards 5837:2012-Trees in relation to design, demolition and construction – Recommendations.

2.3 Site Location

The application site is 48 Willington Road, Etwall DE65 6NR. Approximate OS Grid reference SK 272 318.

The location of the site is shown in Figure 2.1 below, with its approximate extents, indicated by a red line.

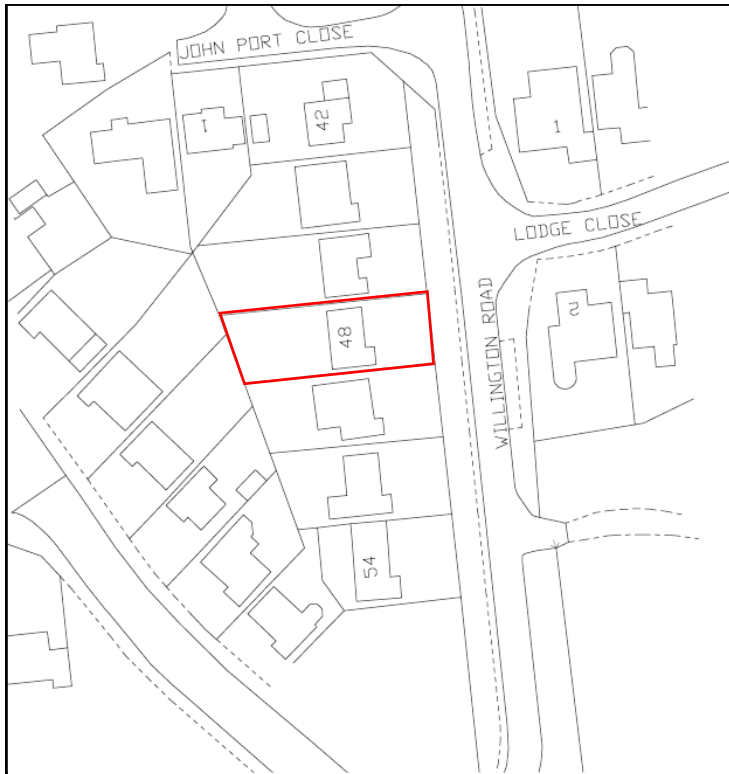


Figure 2.1: Map view of the Site © Crown Copyright and Database rights 2021

3 Survey Methodology

3.1 Tree Survey Methods

The site was visited on Monday 10th May 2021, to carry out an assessment of the trees in accordance with BS 5837:2012 – Trees in relation to Design, Demolition and Construction - Recommendations.

Each of the surveyed trees and/or groups has been plotted and recorded as an individual tree or a tree group, in accordance with the criteria detailed in section 4.4.2.5 of BS 5837:2012.

Any survey work undertaken will have been subject to limitations, including seasonal and phenological aspects.

Trees were assessed from ground level using the Visual Tree Assessment (VTA) method (Mattheck 2007). No climbed inspection, removal of ivy or detailed investigation of decay was made.

The weather at the time of the survey was still, dry, clear and adequate for conducting the survey during which, the following information was collected for each tree/group:

- Sequential reference number;
- Species;
- Height;
- Stem diameter @ 1.5m height;
- Branch spread;
- Existing height above ground level of:
- First significant branch and direction of growth (*e.g.* 3 NW);
- Canopy spread;
- Life stage:
 - **Y** – Young,
 - **SM** – Semi Mature,
 - **EM** – Early Mature,
 - **M** – Mature,
 - **OM** – Over Mature;
- General observations, particularly of structural and/or physiological condition;
- Estimated remaining contribution;
- Retention category 'U' or 'A' to 'C' grading with the subcategory 1, 2 or 3 reflecting arboricultural, landscape or cultural values, respectively.

3.2 Survey Personnel

The author, Jason Humphreys FdSc (Arb) MArborA is a former Local Planning Authority Arboricultural Officer and experienced Arboriculturalist with over 19 years of experience in the Horticultural and Arboricultural Industry.

He is a professional member of the Arboricultural Association (MArborA), and holds a Foundation Degree in Science (Arboriculture), the Technician's Certificate in Arboriculture and the LANTRA Professional Tree Inspection certificate.

4 Results

4.1 Statutory Tree Protection

No formal attempt was made to establish whether or not any of the surveyed trees were afforded any degree of Statutory Tree Protection *i.e. whether or not they were protected by a Tree Preservation Order (TPO) or located within a Conservation Area.*

Results from checks using South Derbyshire District Council's interactive facility <http://maps.south-derbys.gov.uk/iShareLIVE.web/atmyresponsivecouncil.aspx> (10/05/21) and

Derbyshire County Council's interactive mapping service https://maps.derbyshire.gov.uk/connect/analyst/mobile/#/main?mapcfg=Ordnance_Survey_Maps indicated that the surveyed lime tree is protected by TPO number 89, which was confirmed in 1967. Neither search appeared to indicate that the property is located within a Conservation Area.

It is the Author's understanding that, subject to receiving planning consent which may detail specific conditions, no further recourse to the LPA, is considered necessary.

4.2 Tree Survey

The tree survey recorded the details of 1 individual lime tree.

Full results of the tree survey are provided in the Tree Survey Schedule (Appendix A). The overall condition of the tree can, at best, be described as fair and any tree works detailed in the Tree Survey Schedule, at Appendix A, have been identified **solely** in the context of the sites current use and should be considered irrespective of any development proposals and should not be inferred as being necessary to implement any proposed development.

No trees, of high quality and value (Category 'A'), were recorded during the survey. Trees assigned to this category would include attractive trees with high visibility and no significant defects, which are able to make a substantial contribution for a minimum of 40 years.

No trees of moderate quality and value category (Category 'B') trees, were identified during the survey. Trees assigned to this category include healthy attractive trees with remediable defects that are in a condition as to be able to make a significant contribution for a minimum of 20 years.

One tree (T1 lime), of low quality and value category (Category 'C') trees, was identified during the survey. Trees in this category include unremarkable trees of limited merit that are easily replaced, small-growing, young species which have a relatively low potential amenity value, and low landscape benefits. Trees assigned to this category typically also include self-seeded trees of limited life span, small and young trees and trees of poor form and limited amenity value.

This low category valuation was assigned due to the significant amount of dead wood present in the crown and its relatively sparse level of foliation (see Tree Survey Schedule at Appendix A).

The crown reduction works, which the tree has been subject to, predate the client's ownership of the property.

No trees were identified as being unsuitable for retention (Category 'U'). Trees assigned to this category are 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 and/or are considered to be unsuitable for retention in the proximity of new development or areas of public open space.

5 Arboricultural Impact Assessment

5.1 Tree Survey Schedule & Management Recommendations

Management recommendations shown in bold text, in the Tree Schedule (Appendix A) have been identified **solely** in the context of the current layout and existing site use and should not be interpreted as being necessary to implement any proposed development.

No tree works were identified as being necessary to implement the proposed project and/or to facilitate the construction.

5.2 Trees Suitable for Retention

Where possible, it is generally considered desirable for Category 'A' and Category 'B' trees to be retained and incorporated into new developments and layouts. Category 'U' trees are not considered to be appropriate for retention.

T1 lime tree will be retained.

In assessing the arboricultural Impact on the trees of the proposed development and which trees might be suitable for retention in the context of the proposed layout, the following factors have all been considered:

- Shading
- Future Pressure for Tree Removal and Pruning
- Seasonal Nuisance
- Infrastructure
- Direct Damage
- Root Protection Areas
- Future Management
- Anticipated Demolition, Excavation, Ground Works & Construction Activities

5.3 Shading

Shading can be represented using drawn segments, with radii equivalent of the current tree height, taken from the centres of those surveyed tree stems that are considered to be relevant, drawn from due north-west to due-east.

These segments represent a basic illustration of the shade pattern through the main part of the day and are based on advisory comments detailed in section 5.22, Note 1 of BS 5837:2012.

Upon consideration of the above points, no further investigation, illustration or mitigation is considered necessary due to the favourable layout orientation *i.e. only the far north eastern aspect of the extension will be subject to a relatively short period of shade cast from T1 lime in the morning* and that consequently this potential shading is not considered to be significant to the client.

The deciduous nature of the lime, also means that available winter light will pass freely through the crown.

5.4 Direct Damage

Any proposed layout should consider the likelihood of direct damage occurring from incremental root and stem growth.

Upon consideration of this aspect, the likelihood of direct damage occurring in the manner described above, is not considered to be significant.

5.5 Root Protection Areas (RPAs)

The RPAs shown in the Tree Survey Plan (Appendix B) have been drawn as a circle, using the Protective Linear Radius (PLR), which has been calculated as per section 4.6 of BS5837:2012. In this instance and upon consideration of the immediate growing environment, the projected RPA, is not considered to be a practical reflection of anticipated root morphology and distribution. It's likely that the root development of the lime will have been limited by the existing stone driveway, the presence of an existing drainage run, which runs parallel to the front aspect of the property and the pavement and highway to the east.

This report recommends that the existing lawned area is extended to the west, in order to improve the current ground and soil conditions, making this area more favourable for future root growth and development.

In this instance, it's considered a practical solution for ground protection measures to be adopted, which will facilitate the necessary access required by the contractors' operatives.

Following completion of the construction, the client will explore the use of a cellular confinement system to improve the existing driveway. Decompaction and soil amelioration measures will be undertaken, prior to the installation of such a product, if it's deemed practical.

As a further precautionary measure however, protective fencing will be erected at the extent of the area where the soil and ground amelioration works will be carried out, as per Appendix C.

5.6 Demolition, Excavation, Ground Works & Construction Activities

The potential for significant, detrimental damage to the retained trees, can be minimised during the project, provided that the construction and its activities are carried out using the following recommended practices and that the recommended tree protection measures are adopted.

All plant and vehicles engaged in demolition work, ground works and construction will either operate outside the RPAs, or if necessary, run on the recommended ground protection. The existing stone driveway is considered to be appropriate for vehicular traffic although additional ground protection has been recommended as a precautionary measure.

Where practical, excavation should be undertaken inwards, from within the footprint of those areas outside of the projected RPAs.

Whilst not anticipated, during any excavation works, should tree roots be exposed and their severance proves absolutely necessary then it should be carried out in accordance with the principles and guidance, detailed in NJUG4, which is provided as an operative's handout at Appendix G and should therefore be made available to the contractors prior to work commencing.

Where necessary, it will be limited only to the extent, which is necessary to implement any planning consent and then carried out in the presence of an appointed Site Arboriculturalist, who will be able to assess its impact.

5.7 Hard Surfacing Within the Root Protection Area

The use and installation of a 'no-dig' type surface, within the RPAs of retained trees is not anticipated although its use will be explored (see section 5.5). Should its use prove practical and achievable, then guidance on the installation of such a product will be sought from the Author.

5.8 Future Pressure for Tree Pruning/Removal

No notable future pruning pressures are anticipated given the relatively favourable layout juxtaposition and distance of the new extension, in relation to the lime tree, which will be reduced from the current distance by approximately 1.3m, achieving a final clearance of approximately 2.5m

Regardless of the history of the tree pruning and whether it was carried out either with or without consent from the LPA, the current lateral dimensions of the crown spread could be maintained on a cyclical basis to maintain the future 2.5m clearance, without lessening any perceived amenity value, afforded to the streetscene and the immediate and wider areas, that the LPA might consider it to have.

5.9 Seasonal Nuisance

Foliage, fruit and cone fall can be considered by some to be a nuisance and requests to Local Planning Authorities to carry out pruning works to negate these issues are often refused, due in part to their brief, seasonal nature of the problem. Leaf fall will be evident but at no greater level than that which already exists and will have no impact on the proposals, or the client's reasonable expectations of use and enjoyment of the property.

5.10 Infrastructure

No new service runs are anticipated within the RPAs of the trees. Where necessary, any new service runs will be located outside of the RPAs of the surveyed trees. There is no evidence to suggest that there will be an impact on lighting, CCTV sightlines or visibility splays from the lime tree.

5.11 Miscellaneous

There are no other aspects to consider.

5.12 Trees to be removed

No trees will be removed.

5.13 Trees to be pruned

No tree pruning works are required.

5.14 Landscaping

No new landscaping has been proposed.

5.15 Tree loss evaluation

No trees will be removed.

5.16 Issues to be addressed by an Arboricultural Method Statement

The Arboricultural Method Statement (Section 6 and Appendix J) details a recommended sequence and construction methodology for the implementation of those aspects that have the potential to result in loss or damage to retained trees. By carefully following and adopting the detailed recommendations and guidance, any foreseeable detriment to the retained trees can be minimised.

5.17 Tree Protection Plan

The TPP (Appendix C), when read in conjunction with sections 6 and Appendix J of this report, will inform on and describe any recommended tree protection measures recommended for this project in the context of the proposed layout. It shows the position for the erection of protective fencing, only if it's considered necessary and conditioned by the LPA.

Adopting the recommendations detailed in sections 6 and Appendix J, will help to minimise the potential for any detrimental impact that the construction activities might foreseeably have on the lime tree.

6 Site Specific Arboricultural Method Statement (AMS)

6.1 AMS Content

Appendix J summarises, identifies and provides details on those roles, works and activities that are anticipated as being key to successful tree retention. The detailed steps are considered to have a degree of arboricultural importance and connectivity and they have been set out in a logically, recommended sequence, which the contractors should follow.

Consequently, it is important that the client and if appointed, the Site Arboriculturalist (SA), effectively communicates with the appointed contractors the recommendations detailed within this report, specifically the extents of the RPAs and how they could be damaged from incursions within them, making soil compaction a foreseeable risk.

Tool box talks and briefing sessions are encouraged and should be delivered by the Site Manager and/or the Site Arboriculturalist as appropriate. Operative handouts will be made available for reference *e.g.* NJUG handout (see Appendix K).

Other relevant plans and tables for reference including the Tree Survey Schedule (TSS), Tree Survey Plan (TSP, and the Tree Protection Plan (TPP) will be kept on site and made available for contractors, as necessary.

The following activities have been assigned a sequential 'Development Stage' (DS) number, which refers directly to the table at Appendix J. An auditable record should be maintained and kept at the site. Appendix K has an appropriate template for this specific purpose.

DS1 – Appoint Site Arboriculturalist (SA)

The client will, if necessary, appoint the SA, whose role it will be to supervise and provide guidance on, any aspects of the development, which have the potential to cause detrimental damage to the retained trees directly and/or indirectly *e.g. the use of ground protection measures*.

DS2 – Pre-construction Site Meeting

To identify and discuss the constraints of the site to determine whether or not additional TPMs, not detailed in the TPP, will prove necessary.

To establish approximate construction timescales to identify those key stages, where the presence of the SA will likely be required *e.g. check appropriateness and specification of Tree Protection Measures*.

To provide the SM with any information, handouts or specific details to facilitate the delivery of tool box talks and education of ALL contractors and deliveries associated with the construction on how their activities might affect the trees adjacent to the site.

Operative handouts will be made available to the SM for distribution *e.g. NJUG handout*.

Plans and tables for reference including the TSS, TSP, TPP will be kept on site and made available for contractors, if necessary.

Identify specific areas for the storage of materials, plant and spoil and space for mixing outside of the projected RPA of the lime tree and without placing significant constraints on the working space available for any proposed excavation, construction and/or associated activities.

DS3 – Pre-construction Tree Works

No tree works are necessary.

DS4 – Identification & Marking out of RPAs and Tree Protection Measures (TPMs).

Where practical to do so, the client and/or the SA, will communicate to the appointed contractors the projected extents of the RPA of the lime tree and where possible, mark clearly on the ground, using a non-toxic line marking paint, the extents and/or location of the tree protection measures, as per Appendix C.

DS5 – Installation of Ground Protection Measures (GPM).

The use of ground protection, will facilitate any anticipated contractor movement/activity within the projected RPA of the lime tree. Example specifications, as per BS 5837:2012, are detailed below.

a) 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;

b) 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;

c) 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.

DS6 – Erection of Tree Protection Fencing (TPF).

For the reasons presented in section 5.5, protective fencing will be erected as per the TPP (Appendix C). In this specific instance, where the associated risk of damaging incursion into the RPAs is not considered to necessitate the default level of protection, an alternative specification is considered to be appropriate. For example, 2m tall welded mesh panels on rubber or concrete feet as illustrated in Figure 6.1 (see below).

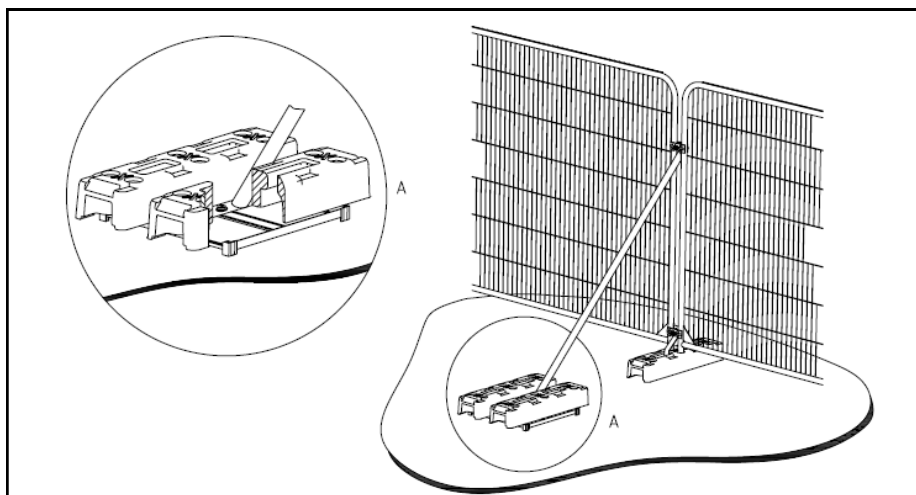


Figure 6.1 Stabilizer strut mounted on block tray © British Standards Institute

Once erected and/or installed, the protective measures should be regarded as sacrosanct and should not be removed or altered without prior recommendation by the SA and, should be retained throughout the duration of the project, until all likelihood of any damage or detriment occurring to the retained trees has passed.

All-weather notices should be attached to the fencing; a suitable example for use has been attached at Appendix D.

DS7– Demolition, Ground Works & Construction

All plant and vehicles engaged in demolition work, ground works and construction will operate outside the RPAs or existing hard surfacing and where necessary, run on the provided ground protection.

Where practical, any excavation should be undertaken inwards, from within those areas outside of the RPAs and/or using ground protection.

Should root severance prove absolutely necessary in order to implement any consent, then it should be carried out under the supervision of the Site Arboriculturalist and in accordance with the principles and guidance, detailed in NJUG4, which is provided as an operative's handout at Appendix G and should therefore be made available to the contractors prior to work commencing.

Any variations to this anticipated construction methodology, will be discussed in detail by the SA and the SM, during the pre-works site meeting with any modifications made accordingly.

DS8 – No-Dig Surfacing

The installation of a 'no-dig' type surface, is not anticipated although following completion of the construction the client will explore the use of a cellular confinement system to improve the existing driveway. Should it prove to be a practical solution, then guidance on the installation of such a product should be provided by the SA.

DS9 – Miscellaneous

As a minimum, the area highlighted in Appendix C will be subject to decompaction measures, in order to facilitate unimpeded drainage and improve the soil structure, whereupon further soil amelioration measures, will take place, including the addition of other materials, preferably of a bulky, organic nature (but excluding peat), to improve structure and provide an area considered to be favourable for future potential root development. If it's considered to be practical and achievable, then the client will consider increasing the size of this area.

DS10 – Tree Planting

No new trees to be planted.

DS11 – Landscaping

Should reinstatement of the lawn edge prove necessary within the projected RPA of the lime tree, then it will be carried out by hand, with any voids to be filled with good quality topsoil and these areas will be grass seeded or turfed by hand.

DS12 – TPM Removal

Tree Protection Measures will be retained in situ throughout the duration of the project and removed only when their use is considered unnecessary and any risk of damage to the retained trees and/or their respective RPAs *e.g. soil compaction from vehicular plant or machinery, has passed.*

DS13 – Tree Maintenance

SA will survey the retained trees for any obvious signs of ill health, damage *e.g. soil compaction*, stress or other physiological aspects that the development might have caused.

DS14 – Completion

Notification to LPA of completion.

6.2 Tree Works

No tree works are necessary.

6.3 Contacts

Site Arboriculturalist – Jason Humphreys (Outline Trees) jason@outlinetrees.co.uk

Project Manager – The Client

Appendix A Tree Survey Schedule



Tree Ref. No.	Species	Height (m)	Stem Ø (mm)	Protective Linear Radius (m)	RPA m ²	Branch Spread (m)				Height (m)		Life Stage	General Observations and Preliminary Management Recommendations (In bold).	Estimated Remaining Contribution	Category
						N	E	S	W	Significant Branch	Canopy				
T1	Common Lime (<i>Tilia X europaea</i>)	17	740	8.9	248	5	5	5	5	3 NW	2.5	M	Fair condition. Individual tree. Tree has been subject to a reduction, throughout the entire circumference of the crown approximately 3 -4 years ago. Some pruning stubs are evident and there is a notable amount of dead wood present in crown. Appears to be relatively sparse crown although foliage is still at an early phenological stage. Evidence of past, historical ground works within the projected RPA of tree; no obvious signs however, of any root severance in excess of 25mm diameter roots evident. Remove deadwood over 30mm diameter. This provisionally low category valuation was assigned due to the significant amount of dead wood present in the crown, its historical pruning and its relatively sparse level of foliage. A summer survey would allow the author to revise this assessment, when the tree is fully foliated.	10+	C2



Appendix B Current Layout & Tree Survey Plan



Plan to be read in conjunction with Tree Survey Schedule and associated report. The original of this drawing was produced in colour - a monochrome copy should not be relied upon.

LODGE CLOSE

48

Existing stone driveway

T1

Grass verge

WILLINGTON ROAD

Scale bar.

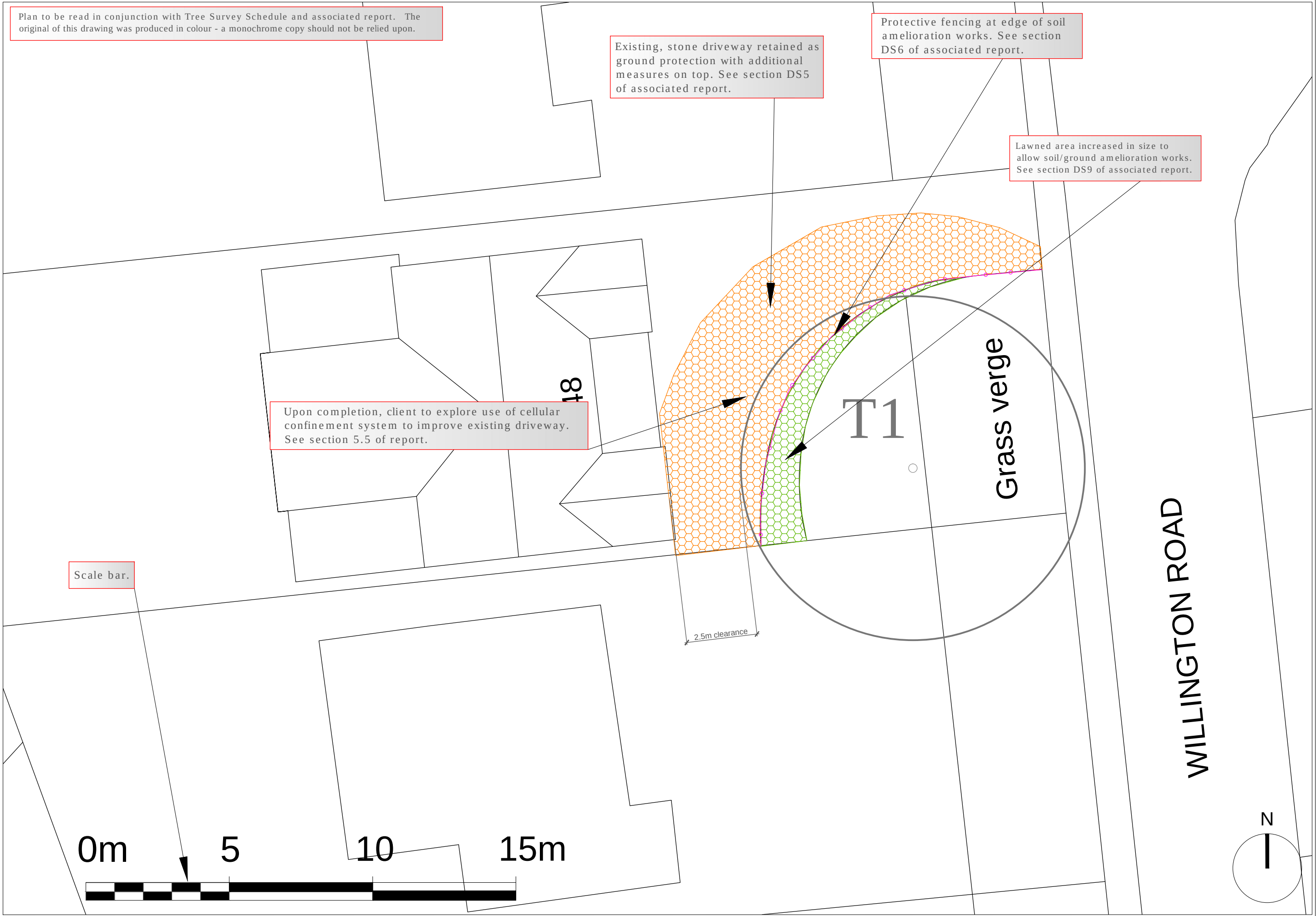


N

Key & Notes		Cat C Trees & Groups		T1, T2, T3, T4 etc...	Tree Tag	W1,W2,W3 etc...	Woodland Tag	Ground Protection Areas		Date: May 2021	Plan to be read with associated report.		Outline Trees Arboricultural Consultancy 4 Kings Drive Littleover Derby	
Cat A Trees & Groups		Cat U Trees & Groups		G1,G2, G3, G4 etc...	Group Tag	H1,H2, H3 etc...	Hedgerow Tag	Specialized Foundations		Title: Tree Survey Plan		DWG: JH- TSP - V1		
Cat B Trees & Groups		Trees/Groups for removal		Hedgerows		No-dig Surfacing Areas		Fencing Location		RPA Extent		Site: 48 Willington Road Etwall	1:100 @A3	

Appendix C Proposed Layout & Tree Protection Plan





Key & Notes		Cat C Trees & Groups  		T1, T2, T3, T4 etc... Tree Tag	W1,W2,W3 etc... Woodland Tag	Ground Protection Areas 		Date: May 2021	Plan to be read with associated report.		Outline Trees Arboricultural Consultancy 4 Kings Drive Littleover Derby	
Cat A Trees & Groups  		Cat U Trees & Groups  		G1,G2, G3, G4 etc... Group Tag	H1, H2, H3 etc... Hedgerow Tag	Specialized Foundations 		Title: Tree Protection Plan (Proposed)		DWG: JH- TPP - V1		
Cat B Trees & Groups  		Trees/Groups for removal  		Hedgerows 	No-dig Surfacing Areas 		Fencing Location 	RPA Extent 	Site: 48 Willington Road Etwell	1:100 @A3		

Appendix D Protective Fencing Signage





**PROTECTIVE FENCING. THIS
FENCING MUST BE
MAINTAINED IN ACCORDANCE
WITH THE APPROVED PLANS
AND DRAWINGS FOR THIS
DEVELOPMENT.**



**TREE PROTECTION AREA
KEEP OUT !**

(TOWN & COUNTRY PLANNING ACT 1990)

**TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY
PLANNING CONDITIONS AND/OR ARE THE SUBJECTS OF A
TREE PRESERVATION ORDER.**

**CONTRAVENTION OF A TREE PRESERVATION ORDER MAY
LEAD TO CRIMINAL PROSECUTION**

**ANY INCURSION INTO THE PROTECTED AREA MUST BE
WITH THE WRITTEN PERMISSION OF THE LOCAL
PLANNING AUTHORITY**



Appendix E References

- British Standards Institute (BSi) BS 5837:2012, Trees in relation to design, demolition and construction – Recommendations.
- (BSi) BS 3998:2010, Tree Work - Recommendations.
- (BSi) BS 8545:2014, Trees: from nursery to independence in the landscape –Recommendations
- (BSi) BS 3936 (1992) Nursery Stock, Pt 1 – Specification for trees and shrubs
- Department for Communities and Local Government (2014) Tree Preservation Orders and Trees in Conservation Areas.
- Forestry Commission (2007) Tree Felling – Getting Permission.
- National House Building Corporation (NHBC) 2003. Standards, Chapter 4.2. Building near trees.
- Claus Mattheck (2007) Updated field guide for Visual Tree Assessment.
- Arboricultural Practice Note Number 12 (2007) Through the Trees to Development. Arboricultural Advisory and Information Service
- Arboricultural Guidance note 12 (2020) The Use of Cellular Confinement Systems Near Trees: A Guide To Good Practice
- Davis, C., Fay, N & Mynors, C. (2000). Veteran Trees: a guide to risk and responsibility.
- Helliwell, D.R. (1967). The Amenity Value of Trees and Woodlands. Journal of Arboricultural Association 1, 128–131.
- Watson G. & Green T. (2011) Fungi on Trees; An Arborist’s Field Guide. Arboricultural Association
- International Society of Arboriculture (ISA) (2001) – New Tree Planting (Leaflet)
- ISA (2001) – Proper Mulching Techniques (Leaflet)
- L. Chalker-Scott (2007) – J. Environ. Hort. 25(4) pp. 239-249
- R. J. Davies (1987) - Forestry Commission Bulletin 65; Weed Competition and Broadleaved Tree Establishment
- P. Gilbertson & A.D. Bradshaw (1985) – Tree survival in cities: the extent and nature of the problem. J. Arboric. 4(1):14-17
- Arboricultural Association (1991) - Leaflet Number 2; Guide to Tree Planting.
- Forestry Commission (2002) Information Note ODW 10:02 – Tree Planting



Appendix F Life Stage & Condition Key

Condition	Life Stage *
Good	Newly Planted
Those trees that are relatively free from defects and any visible signs of structural defects, which also exhibit normal signs of vitality and vigour when compared with trees of a similar species in a similar environment.	Those trees that have been planted in the past 5 years.
Fair	Young
Those trees that exhibit some minor/manageable defects or display evidence of minor remedial pruning, which also exhibit normal signs of vitality and vigour when compared with trees of a similar species in a similar environment.	Those trees that are considered to be in the first third of their life expectancy.
Poor	Semi to Early Mature
Those trees that exhibit a high level of defects and/or significant past pruning works, which also exhibit relatively low signs of vitality and vigour when compared with trees of a similar species in a similar environment.	Those trees that have not yet reached maturity and can be considered to be in the second third of their life expectancy.
In Decline	Mature
Those trees that are close to the end of the useful life expectancy and displaying associated symptoms of branch die back and low vigour.	Those trees that can be described as being in the final third of their life expectancy.
	Over Mature
	Those trees that can be described as having exceeded their life expectancy that have yet to replicate those features typical of Veteran trees.
	Veteran
	A tree that exhibits typical signs and characteristics of such as described in the introduction of Veteran Trees: A guide to risk and responsibility (Davis, Fay & Mynors 2000)

* Typical useful life expectancy of common trees. (Taken from Helliwell's Amenity Tree Valuation notes)

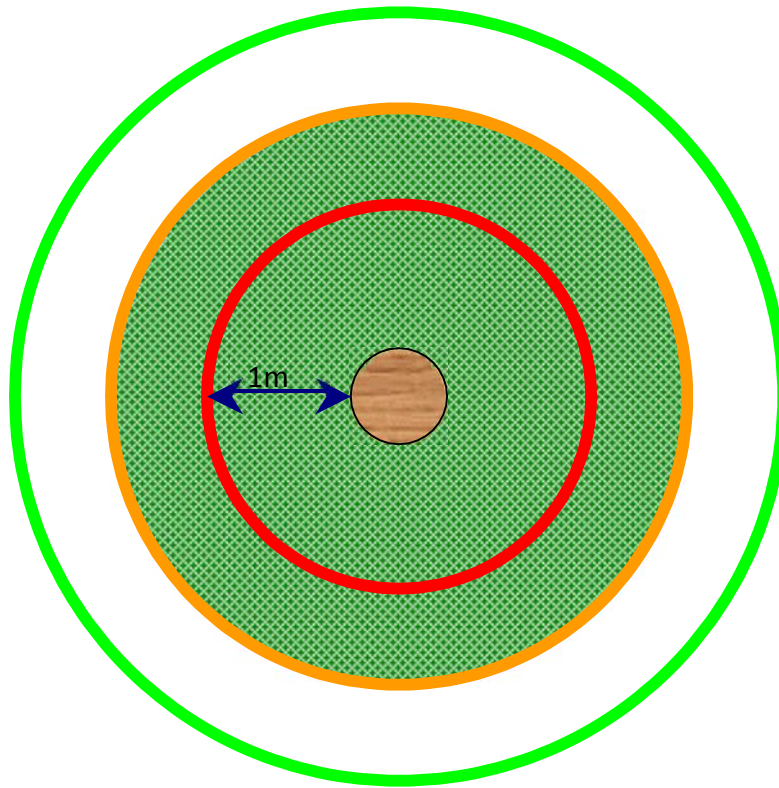
300+	- Yew
200-300	- Oak, Sweet Chestnut, Plane, Sycamore, Lime
150-200	- Scots Pine, Hornbeam, Beech, Tulip tree, N Maple, Lebanon Cedar
100-150	- Ash, Spruce, Walnut, Red Oak, Horse Chestnut, Field Maple, Monkey Puzzle, Mulberry, Pear
70-100	- Rowan, Whitebeam, Apple, Wild Cherry, Catalpa, Robinia, Ailanthus
50-70	- Poplars, Willows, Cherries, Alders, Birches



Appendix G NJUG Operatives Hand Out



NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees – Issue 2

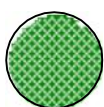


TREE PROTECTION ZONE

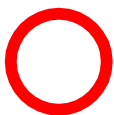
Key to Diagram



Trunk of Tree



Spread of canopy or branches



PROHIBITED ZONE – 1m from trunk. Excavations of any kind must not be undertaken within this zone unless full consultation with Local Authority Tree Officer is undertaken. Materials, plant and spoil must not be stored within this zone.



PRECAUTIONARY ZONE – 4 x tree circumference. Where excavations must be undertaken within this zone the use of mechanical excavation plant should be prohibited. Precautions should be undertaken to protect any exposed roots. Materials, plant and spoil should not be stored within this zone. Consult with Local Authority Tree Officer if in any doubt.



PERMITTED ZONE – outside of precautionary zone. Excavation works may be undertaken within this zone however caution must be applied and the use of mechanical plant limited. Any exposed roots should be protected.

DAMAGE TO TREES

Tree roots keep a tree healthy and upright. Most roots are found in the top 600mm of soil and often grow out further than the tree's height. The majority of these roots are very fine; even close to a tree few will be thicker than a pencil. Most street tree roots grow under the footway but may also extend under the carriageway. If roots are damaged the tree may suffer irreversible harm and eventually die.

PROTECTING ROOTS - DO'S and DON'TS

There are three designated zones around a tree each of which has its own criteria for working practices.

THE PROHIBITED ZONE

Don't excavate within this zone.

Don't use any form of mechanical plant within this zone.

Don't store materials, plant or equipment within this zone.

Don't move plant or vehicles within this zone.

Don't lean materials against, or chain plant to, the trunk.

Do contact the local authority tree officer or owner of the tree if excavation within this zone is unavoidable.

Do protect any exposed roots uncovered within this zone with dry sacking.

Do backfill with a suitable inert granular and top soil material mix as soon as possible on completion of works.

Do notify the local authority tree officer or the tree's owner of any damage.

THE PRECAUTIONARY ZONE

Don't excavate with machinery. Where excavation is unavoidable within this zone excavate only by hand or use trenchless techniques.

Don't cut roots over 25mm in diameter, unless advice has been sought from the local authority tree officer.

Don't repeatedly move / use heavy mechanical plant except on hard standing.

Don't store spoil or building material, including chemicals and fuels, within this zone.

Do prune roots which have to be removed using a sharp tool (*e.g. secateurs or handsaw*). Make a clean cut and leave as small a wound as possible.

Do backfill the trench with an inert granular material and top soil mix. Compact the backfill with care around the retained roots. On non-highway sites backfill only with excavated soil.

Do protect any exposed roots with dry sacking ensuring this is removed before backfilling.

Do notify the local authority tree officer or the tree's owner of any damage.

THE PERMITTED ZONE

Don't cut roots over 25mm in diameter, unless advice has been sought from the local authority tree officer.

Do use caution if it is absolutely necessary to operate mechanical plant within this zone.

Do prune roots which have to be removed using a sharp tool (*e.g. secateurs or handsaw*). Make a clean cut and leave as small a wound as possible.

Do protect any exposed roots with dry sacking ensuring this is removed before backfilling.

Do notify the local authority tree officer or the tree's owner of any damage.



Appendix H BS5837:2012 Cascade Chart for Tree Quality Assessment



Table 1 Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	- Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) - Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline - Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality <i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i>			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



Appendix I Glossary of Terms & Definitions

Arboriculturist - person who, through relevant education, training and experience, has gained recognized expertise in the care of trees.

Facilitation Pruning - tree pruning works, the nature and effects of which are without significant adverse impact on tree physiology or amenity value, which is anticipated as being necessary to provide access for construction associated activities on site.

Heartwood - central core of mature and hardened timber.

Root Protection Area (RPA) - layout design tool indicating 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.

Cavity - hole in a tree resulting from decay or damage.

Canopy/Crown - that part of a tree which is composed of the branches and foliage.

Minor Deadwood - deadwood which appears to have a stem diameter <30mm.

Epicormic Shoot - growth from dormant or adventitious buds on the stem or main branches.

Included Bark - bark tissue lodged in the union between a branch and the parent stem, in the crotch of two branches, or between the bases of co-dominant stems, indicating potential weak attachment.

Wound - injury to a tree caused in a biotic or abiotic manner.

Stub - broken or severed short remaining section of a branch extending beyond a crotch.

Stem - principal above-ground structural component of a tree that supports the branches;

- This either extends throughout most of the height of the tree (primary stem), or is one of a number of such components (secondary stems) which divide from each other either near the ground or at a higher level.
- Trees comprising two or more stems arising from, or immediately above, ground level are commonly referred to as 'twin-stemmed' or 'multi-stemmed'.
- 'Stem' is synonymous with 'trunk' for single-stemmed trees, particularly those of a large diameter.

Crotch/Fork - forked region formed by the junction of a branch and the stem, or by two branches.

Crown Lifting - removal of lower branches to achieve a stated vertical clearance above ground level or other surface.

Branch/Crown Reduction - operation that results in an overall reduction in the height and/or spread of the crown of a tree by means of a general shortening of twigs and/or branches, whilst retaining the main framework of the crown.

Hazard Beam – a type of structural defect present on a branch, which has internal, longitudinal cracks present (see image below).



© C. Mattheck (2007) Updated Field Guide for Visual Tree Assessment



Appendix J AMS Proposed Development Stages



Arboricultural Method Statement (AMS) - Proposed Sequence of Works

Development stage.	Persons/Roles to be present.	Nature of tasks.	Relevant Documents/Plans.	Date and comments.
DS1 - Appoint Site Arboriculturalist.	Client	The client will, if necessary, appoint the SA, whose role it will be to supervise and provide guidance on, any aspects of the development, which have the potential to cause detrimental damage to the retained trees directly and/or indirectly e.g. the use of ground protection measures.	- TPP (Appendix C) - TSS (Appendix A) - TSP (Appendix B)	
DS2 - Pre-works site meeting.	SA, SM (Contractor), Client	- To identify and discuss the constraints of the site to determine whether or not additional TPMs, not detailed in the TPP, will prove necessary. - To establish approximate construction timescales to identify those key stages, where the presence of the SA will likely be required e.g. <i>check appropriateness and specification of Tree Protection Measures</i>. - To provide the SM with any information, handouts or specific details to facilitate the delivery of tool box talks and education of ALL contractors and deliveries associated with the construction on how their activities might affect the trees adjacent to the site. - Operative handouts will be made available to the SM for distribution e.g. <i>NJUG handout</i>. - Plans and tables for reference including the TSS, TSP, TPP will be kept on site and made available for contractors, if necessary. - Identify specific areas for the storage of materials, plant and spoil and space for mixing outside of the projected RPA of the lime tree and without placing significant constraints on the working space available for any proposed excavation, construction and/or associated activities.	- TPP - TSS & TSP - Client Specified Drawings (Proposed Layouts)	
DS3 - Pre-construction tree works.	n/a	No tree works necessary.		
DS4 - Identification and marking out of RPAs and Tree Protection Measures (TPM).	SA, SM (Contractor), Client	Where practical to do so, the client and/or the SA, will communicate to the appointed contractors the projected extents of the RPA of the lime tree and where possible, mark clearly on the ground, using a non-toxic line marking paint, the extents and/or location of the tree protection measures, as per Appendix C.	- TPP - TSS & TSP	
DS5 - Installation of Ground Protection Measures (GPM).	SM SA	- The use of ground protection, will facilitate any anticipated contractor movement/activity within the projected RPA of the lime tree. Example specifications, as per BS 5837:2012, are detailed below. <i>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;</i> <i>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;</i> <i>c) 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.</i>	- TPP - TSS & TSP	
DS6 - Erection of Tree Protection Fencing (TPF).	n/a	- For the reasons presented in section 5.5, protective fencing will be erected as per the TPP (Appendix C). - SM and SA to oversee the erection of protective fencing as per the TPP at Appendix C. - Once erected and/or installed, the protective measures should be regarded as sacrosanct and should not be removed or altered without prior recommendation by the SA and, should be retained throughout the duration of the project, until all likelihood of any damage or detriment occurring to the retained trees has passed. - All-weather notices should be attached to the fencing; a suitable example for use has been attached at Appendix D.	- TPP - TSS & TSP	
DS7 – Demolition, Ground Works, & Construction.	SA, SM (Contractor), Client	- All plant and vehicles engaged in demolition work, ground works and construction will operate outside the RPAs or existing hard surfacing and where necessary, run on the provided ground protection. - Where practical, any excavation should be undertaken inwards, from within those areas outside of the RPAs and/or using ground protection. - Should root severance prove absolutely necessary in order to implement any consent, then it should be carried out under the supervision of the Site Arboriculturalist and in accordance with the principles and guidance, detailed in NJUG4, which is provided as an operative's handout at Appendix G and should therefore be made available to the contractors prior to work commencing. - Any variations to this anticipated construction methodology, will be discussed in detail by the SA and the SM, during the pre-works site meeting with any modifications made accordingly.	- TPP - NJUG Publication	
DS8 – No-dig surfacing	n/a	The installation of a 'no-dig' type surface, is not anticipated although following completion of the construction the client will explore the use of a cellular confinement system to improve the existing driveway. Should it prove to be a practical solution, then guidance on the installation of such a product should be provided by the SA.	TPP	
DS9 - Miscellaneous	n/a	As a minimum, the area highlighted in Appendix C will be subject to decompaction measures, in order to facilitate unimpeded drainage and improve the soil structure, whereupon further soil amelioration measures, will take place, including the addition of other materials, preferably of a bulky, organic nature (but excluding peat), to improve structure and provide an area considered to be favourable for future potential root development. If it's considered to be practical and achievable, then the client will consider increasing the size of this area.	TPP	
DS10 - Tree Planting	n/a	Not applicable		



Arboricultural Method Statement (AMS) - Proposed Sequence of Works

DS11 – Soft Landscaping	n/a	Should reinstatement of the lawn edge prove necessary within the projected RPA of the lime tree, then it should be carried out by hand, with any voids to be filled with good quality topsoil and these areas will be grass seeded or turfed by hand.	TPP	
DS12 – TPM Removal	n/a	Tree Protection Measures removed only when their use is considered unnecessary and any risk of damage to the retained trees and/or their respective RPAs <i>i.e. soil compaction from vehicular plant or machinery, has passed.</i>	TPP	
DS13 - Tree Maintenance	SA	SA will survey the surveyed trees for any obvious signs of ill health, damage, stress or other physiological aspects that the development might have caused.	TPP	
DS14 - Completion	SA, SM LPA Tree Officer	Notification to LPA of completion.		

48 Willington Road, Etwell



Roles, Responsibilities and Definitions

Site Arboriculturalist (SA): The appointed person will supervise and provide guidance on, those aspects of the project, which have the potential to cause detrimental damage to the retained trees. They will work closely with the Site Manager and together they will be responsible for maintaining an auditable record of key activities on the site, which could prove detrimental to retained trees, either directly or indirectly.

They will be present, or readily available for supervising key stages, which will include the setting out and installing/erection of specified TPMs and GPMs, identifying those trees requiring removal and facilitation pruning, excavation in proximity to trees, overseeing required changes to the TPMs and if necessary, the receipt of the new trees, their planting, securing and immediate irrigation.

They will be the first point of contact for the Site Manager, where advice, instruction, guidance or supervision is considered to be necessary.

Site Manager (SM): The Site Manager, will ensure that all contractors, site operatives, the deliveries and storage of materials, ground works, excavations, removal of arisings, use of cranes, plant and other machinery and indeed, any other activities associated with the development and its construction are carried out in accordance with the Tree Protection Plan, the Arboricultural Method Statement and specific instruction from the Site Arboriculturalist. They will be responsible for cascading information, instructions and the delivering of tool box talks to all contractors on site, where necessary.

Tree Protection Plan (TPP): A scale plan, which shows amongst other things; Root Protection Areas, Tree Protection Measures, Ground Protection Measures, the siting of service runs, areas requiring hand-dig, areas requiring no-dig surfacing, trees to be removed and the locations of new trees.

Tree Planting Plan (TPLP): A scale plan, which shows the locations, species and planting methodology of those new trees, which are to be planted as part of the project either as mitigation or otherwise.

Tree Protection Measures (TPM): Tree Protection Measures will include Tree Protection Fencing and Ground Protection Measures, erected or installed as per the Tree Protection Plan.

Ground Protection Measures (GPM): Ground protection will be adopted in the locations shown on the Tree Protection Plan and will be specified as per the anticipated incursions *i.e. they will be specified to reflect the anticipated nature and type of the activities and weight of the incursions.*

Tree Protection Fencing (TPF): Protective Fencing will be erected as per the specification and in the locations shown on the Tree Protection Plan.

Root Protection Area (RPA): Areas shown on the TPP, which once protected will be considered sacrosanct and incursions will be excluded within them, without prior agreement from the SA and or the SM.

Tree Works Contractor (TWC): The developer in conjunction with the SA, will appoint a Tree Works Contractor, who will be an Arboricultural Association approved contractor, for the purpose of carrying out the necessary tree works prior to the commencement of works. They will also be suitably experienced in the planting of new trees. It is recommended that the TWC is appointed to provide the 5-year maintenance and after care package for the new trees.

Tree Survey Schedule (TSS): BS 5837:2012 Tree Survey. (See Appendix A).

Tree Survey Plan (TSP): Existing scale plan showing trees on site (See Appendix B), to be read with TSS.



Appendix K Arboricultural Supervision Record



Development Stage (DS) Audit Record

Record to be maintained throughout duration of project by Site Arboriculturalist, Site Manager or other appointed persons. See examples for completion.

Development Stage DS1, DS2 etc...	Nature of record e.g. site meeting, delivery, new contractor on site, incident etc...	Date of Record	Comments, Observations, Actions taken etc...	Recorded by:
DS3	Meeting with Tree Works Contractor.	12/12/20	Trees identified for removal and date (15/12/20) scheduled for tree works.	SA
DS6	Delivered Tool box talk to contractors on excavation near trees.	14/12/20	Issued NJUG handout to operatives.	SA & SM

