BS 5837
Arboricultural Impact Assessment
and
Arboricultural Method Statement

Location of property surveyed:

Rockhaven
Ribchester Road
Clayton Le Dale
BB1 9EG

Arboricultural report for:

David Graham

Date of site survey:

26/01/2021

Date of report:

04/02/2021

Job Ref: 1527

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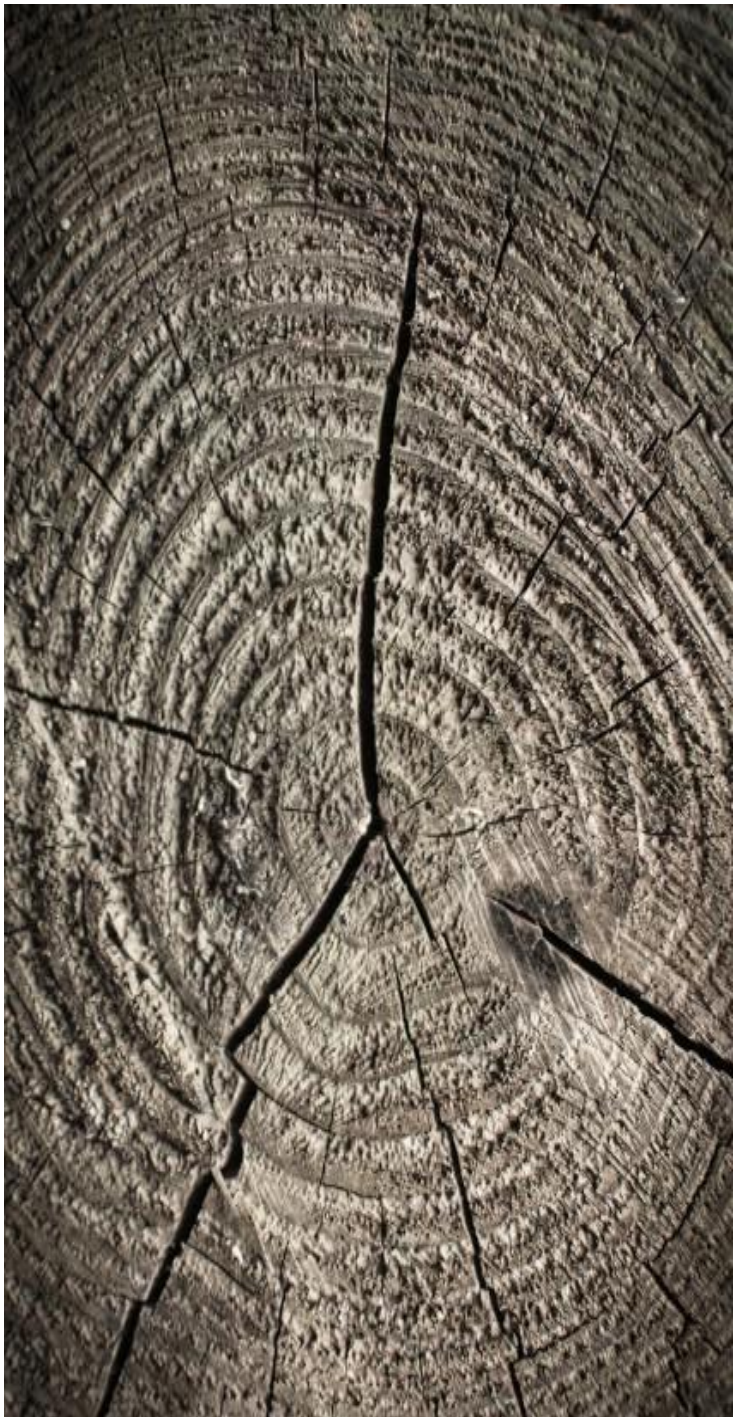

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I hope that this report provides all the necessary information, but should any further advice be needed please do not hesitate to contact me.

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Validation statement for council registration of this report

To allow the validation of planning applications, this report fulfils the recommended national list criteria for tree survey / arboriculture information. More specifically, it contains the following:

- A full tree survey compliant to the requirements of BS5837; (2012) Trees in relation to design, demolition, and construction – Recommendations, undertaken by a qualified arboriculturist.
- A plan to a suitable scale with a north point and showing tree survey information, retention categorisation and root protection areas, and tree height.
- An assessment of the arboricultural implications of development detailing trees to be retained / removed and appropriate protection measures.
- An arboricultural method statement detailing the means of tree protection, implementation, and phasing of works.

Summary

I have inspected all the relevant trees that could influence the development of this site and listed their details within this report, a root protection area and crown spread are indicated around each tree on the Tree Constraints Plan (TCP) with any protective measures indicated on the Tree Protection Plan (TPP).

In line with good tree management 5 individual trees are recommended for removal, these should be removed regardless of any granted or refused development proposals. As a result of the development and site activities no additional trees will need removing. All the significant boundary tree cover located on site will remain intact.

There is space for new planting and a new landscape scheme with standard sized tree planting is recommended as part of the proposal. The establishment of these new trees will significantly enhance the contribution of this site to local amenity and more than compensate for the loss of the trees.

The construction activity and proposed changes may adversely affect further trees if appropriate protective measures are not taken. However, if adequate precautions to protect the retained trees are specified and implemented through the arboricultural method statement included in this report, the development proposal will have no adverse impact on the contribution of trees to local amenity or character. Indeed, the new sustainable planting proposals will increase the potential of the site to contribute to local amenity well beyond the short term.

Gary Marsden FDSc Arb, M.Arbor.A

Introduction

1. Qualifications and experience:

I have based this report on my site observations and any provided information, and I have come to conclusions in the light of my experience. I have experience and qualifications in arboriculture and include a summary in Appendix 'A'.

2. Instruction:

I am instructed by David Graham (referred to as the 'client' from here on) to provide the following information to accompany the planning application:

- A schedule of the relevant trees to include basic data and a condition assessment as per section 4.4.2.5 of BS 5837:2012 Trees in relation to design, demolition, and construction - Recommendations.
- A tree constraints plan showing: Tree numbers, species, tree height, root protection areas, crown spreads and retention categories.
- An arboricultural impact assessment
- An arboricultural method statement
- Tree protection plan

3. Relevant background information:

Prior to the site survey, my client advised me that:

- A summary of the intended development is to construct a new garage within the existing front garden area.
- A tree survey has been carried by GMTC and documented in drawing ref: 1527/TCP/2021. This was used by the client to influence the potential development at the site so that any impact from trees could be assessed and factored into the designs.
- A design layout was produced prior to the tree survey being undertaken, since the tree survey the layout and position of the garage has been moved to accommodate the trees to minimise any impacts to the rooting areas.

4. Documents and information provided:

My client provided me with copies of the following documents or information:

- Their email of instruction outlining the situation.
- Their email commissioning this report and agreeing to the T&C and cost.
- Electronic map to plot tree locations in computer tree management software.
- Electronic topographical survey data.
- Proposed site layout drawing: Rockhaven Ribchester Road Clayton Le Dale planning Rev F

5. Correspondence with local arboricultural / planning officer:

There is no significant correspondence that needs documenting at the time of writing this report.

6. Purpose of this report:

The primary purpose of this report is to show the local authority that all due considerations have been made in relation to retaining suitable trees within the site layout while considering any impact this may have on the retained trees on site. It will also serve as a management tool for the methods of protecting the retained trees while the development is undertaken.

Within this planning process, this report will be available for inspection by people other than tree experts, so the information is presented to be helpful to those without a detailed knowledge of the subject.

7. Scope of this report:

This report is only concerned with the prominent trees within or around the proximity of the site that could influence the development of this site. It takes no account of any trees outside this remit or any building structural issues. It includes a preliminary assessment based on the site visit and any documents provided, listed in section 4 above.
The survey is based upon information that was available at the time of the inspection. Further inspections are necessary over time to give a fuller picture of the health of trees.

8. Mapping:

I have been provided with CAD based and/or paper site plans which I assume to be based upon an accurate land survey. This includes plots of tree locations and other topographical information relevant for the preparation of this report and appendices. All information in this report and appendices assumes accuracy of the land survey supplied and no responsibility for accuracy can be assumed or guaranteed by the author of this document.

To make the tree details clearer some elements of the topographical plan may have been “turned off” but are still available on the DWG file.

The topographical survey data forms the base layer of my associated drawings supplied as this includes information, such as levels, which may be an important consideration when designing around retained trees or in relation to proposed tree work operations.

Site plans showing all the tree locations and any relevant details can be found in Appendix ‘D’.

9. Technical references:

This arboricultural report is based on the following primary technical references:

- British Standards Institution (2012) BS 5837: Trees in relation to design, demolition, and construction - Recommendations
- National Joint Utilities Group (2007) Volume 4, Issue 2: Guidelines for the planning, installation, and maintenance of utility apparatus in proximity to trees
- British Standards Institution (2010) BS 3998 Recommendations for tree work

Arboricultural Implications Assessment

10. Summary of the impact on trees:

I have assessed the impact of the proposal on the trees / groups by the extent of disturbance in and around the RPAs and the current and future canopy height and spread. All the trees / groups that may be affected by the development proposal are listed in table 2.

Table 2: Summary of the trees / groups that may be affected by the development on this site if the current proposed plans are implemented.

Impact	Reason	Important trees		Unimportant trees	
		A	B	C	U
Trees / groups to be removed	Good arboricultural management regardless of development			T2, T3, T4, T5, T6	n/a
	Building construction, new surfacing, and / or, proximity	n/a	n/a	n/a	
Total number of trees to be removed per category		0	0	5	0
Tree / group that may be adversely affected through disturbance to RPAs or canopy due to removal of existing surfacing / structures / landscaping and or installation of new surfacing / structures / landscaping	Protect tree with protective fencing only	n/a	T9	T7, T8	
	Protect tree with protective fencing and ground protection / engineering solutions within RPA	n/a	T1	n/a	
Total number of trees to be retained per category		0	2	2	
*note - Any trees / groups not mentioned above will be unaffected by this development proposal					

11. Category A and B trees to be removed:

There are no category 'A' trees located on or immediately adjacent to the site that are to be removed.

There are no category 'B' trees located on or immediately adjacent to the site that are to be removed.

12. Category A and B trees that may be adversely affected through RPA disturbance:

There are no retained category 'A' trees located on or immediately adjacent to the site that may be adversely affected through RPA and canopy disturbance.

Two category ‘B’ trees may be adversely affected by site activities. These trees are considered important for retention and have potential to contribute to amenity, so any adverse impacts on them should be minimised. I have reviewed the situation carefully and my experience is that these trees could be successfully retained without any adverse effects if appropriate protective measures are properly specified and controlled through a detailed arboricultural method statement.

13. Category C trees to be removed:

Five category ‘C’ trees are to be removed; these trees are not considered to have any potential for long term retention. As such they are considered unworthy of influencing any layout. I believe it is not important in the overall planning context and their loss should not influence the determination of this application.

14. Retained category C trees that may be adversely affected through RPA disturbance:

One category ‘C’ tree has the potential to be damaged but is considered to have limited potential for long term retention. As such it is considered unworthy of influencing any layout. However, it is proposed for retention and so special precautions will be necessary to ensure that any adverse impact is minimized. These are set out in more detail in section 4 of this report. Although this tree is proposed for retention, I believe it is not important in the overall planning context and any risk of damage to it should not influence the determination of this application.

15. Category U trees:

Any trees that have been given a category ‘U’ rating should be removed regardless of any development works being undertaken, the reason for removal will be due to structural or physiological defects or in line with good arboricultural management. Further notes are available in the survey schedule.

16. Effects of new buildings on amenity value on or near the site:

The effect of the new construction on this site have been assessed and have been found not to have any significant effect on the amenity value of the remaining trees on site.

Any trees that are to be removed due to development reasons will be mitigated by replacement tree planting, see section 24.

17. Below ground constraints:

The zone of influence has been determined using the calculation outlined in Table 2, of section 5.2.2 of BS 5837:2012 Trees in relation to design, demolition, and construction - Recommendations. This calculation utilises the diameter of the trunk, at a height of 1.5m from the surrounding ground level; and calculates the root protection area (RPA) by multiplying the diameter by a value of 12; the result is then used to calculate the total area (m2) of the RPA. The calculations are illustrated in the tree survey data in Appendix ‘E’.

No construction of foundations or the installations of services are to take place within any retained Root Protection Area (RPA) therefore no conflict with below ground constraints are foreseen with the

planned proposal. Protective fencing, permanent and temporary ground protection will still be required to protect the retained trees as per the tree protection plan (TPP).

The area of parking will require the use of a cellular confinement system to reduce the loading onto the soil structure, again without any removal of soil / tree roots. This parking area is to be constructed without soil compaction or soil stripping and laid in accordance with the Arboricultural Method Statement.

18. Above ground constraints:

There is no development encroachment into the canopy areas of any retained trees on or off site, therefore no conflict with above ground constraints is foreseen with the planned proposal. Protective fencing will still be required to protect the retained trees as per the tree protection plan (TPP).

Some remedial pruning of the canopy is recommended but this is in line with good tree management and not due to the development.

19. Construction processes of the proposed development:

Development processes that lead to soil compaction in tree rooting zones and physical damage to trees can adversely affect long-term tree health. This can lead to unnecessary tree loss if not controlled properly on site during the demolition of a building and then the construction phases that follow.

No access to the RPAs of any retained tree will be permitted before or during construction activity unless the RPA falls within an already existing hard standing road or protected with suitable ground protection measures. This will limit the risk of contractors or machinery causing damage to root, trunk, and low branches.

Following completion of all construction activity on site the new driveway will be constructed. This driveway is to be constructed without soil compaction or soil stripping and laid in accordance with the Arboricultural Method Statement appendix 'I'.

The processes of construction are highly unlikely to have a detrimental effect upon the health of the retained trees assuming recommendations made in this report are always adhered to by the contractors e.g., the positioning of a stout fence between the retained trees construction activities is placed prior to commencement of works and remains intact and in position throughout the duration of the construction activities.

20. Modifications proposed to accommodate trees:

The siting of the dwellings dispenses with a need to modify building construction to accommodate retained trees. The retained trees are far enough away from the siting of the dwellings to permit light infiltration to the windows. This will negate the need for subsequent calls for tree pruning due to shading.

The original proposed footprint of the garage did encroach into the RPA of T9. After discussions with the client and architect it was agreed to move the garage away from the tree, therefore minimising any impact on the tree.

21. Infrastructure requirements – highway visibility, lighting, CCTV, services etc:

The installation of services within the rooting zones of trees can have a large detrimental impact on the long-term survival of retained trees leading to their unnecessary loss or root failure in high winds.

No services are to be installed within any tree RPA.

Any retained trees on site do not have any impact on highway visibility.

Undisclosed sighting of above ground services, CCTV cameras, electrical sub-stations, refuse stores, lighting and other infrastructure requirements can lead to unnecessary pruning of tree crowns or root loss during or post development. There are no such developments planned to take place adjacent or within the RPA of any retained trees.

22. Proximity of trees to structures:

With the impact of trees on buildings, and vice versa, allowances for future growth have all been considered in the sighting of the new dwellings. Tree size, future growth, light / shading, leaf and fruit nuisance etc. have received due attention and are not considered to be a significant issue. This is due to the distance of the retained trees from the development.

The structure/s have been placed outside of the RPAs of retained tree/s and therefore exceeds the recommendations of BS 5837:2012 Trees in relation to design, demolition, and construction - Recommendations.

Leaf-fall onto the roofs has been highlighted to the client and accept this issue, leaf guards in the gutters are recommended to minimise the risk of rainwater blockages.

23. Protection of retained trees:

The successful retention of trees depends on the protection and the administrative procedures to ensure those protective measures remain in place whilst there is an unacceptable risk of damage. An effective means of doing this is through an arboricultural method statement that can be specifically referred to in a planning condition. An arboricultural method statement for this site is included in this report.

24. Mitigating tree loss / New planting:

Some tree loss will take place because of the development of the site. A landscape plan will be drawn up. This will incorporate any new planting of trees sympathetic to the environment and to the benefit of the new development and the surrounding landscape. Suggested locations are shown on the TPP, specific tree species have yet to be confirmed.

Summary

25. Summary of the impact on local amenity:

In line with good tree management 5 individual trees are recommended for removal, these should be removed regardless of any granted or refused development proposals. As a result of the development and site activities no additional trees will need removing. All the significant boundary tree cover located on site will remain intact.

There is space for new planting and a new landscape scheme with standard sized tree planting is recommended as part of the proposal. The establishment of these new trees will significantly enhance the contribution of this site to local amenity and more than compensate for the loss of the trees.

The construction activity and proposed changes may adversely affect further trees if appropriate protective measures are not taken. However, if adequate precautions to protect the retained trees are specified and implemented through the arboricultural method statement included in this report, the development proposal will have no adverse impact on the contribution of trees to local amenity or character. Indeed, the new sustainable planting proposals will increase the potential of the site to contribute to local amenity well beyond the short term.

Other Considerations

26. Trees outside the property boundaries:

Any trees that are in adjacent properties are effectively out of the control of the client / landowner. It will not be possible to easily carry out any recommended works without the full co-operation of the tree owners. The implications of non-cooperation require legal interpretation and are beyond the scope of this report. By common law, branches from trees on adjacent properties extending over boundaries can be pruned back to the boundary line without the permission of the owners. However, the material belongs to the tree owner and the same guidance on statutory controls applies as.

27. Implementation of works:

All tree works should be carried out to BS 3998 Recommendations for Tree Work as modified by more recent research. It is advisable to select a contractor that has appropriate qualification and insurance to carry out the required works. Additional guidance can be obtained from the Arboricultural Association.

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Stroud Green,
Standish,
Stonehouse,
Gloucestershire
GL10 3DL, UK

Tel: +44 (0)1242 522152
Email: admin@trees.org.uk
Website: www.trees.org.uk/contractors.htm
Fax: +44 (0)1242 577766

28. Local Arboricultural Contractors:

If requested I can provide a list of reputable arboricultural contractors that have carried out work on previous projects.

29. Safety:

Tree works can be a hazardous profession, so it is important that all operatives have the necessary and relevant training, health and safety policy and valid forms of insurance.

30. Statutory wildlife obligations:

The Wildlife and Countryside Act 1981 as amended by the Countryside and Rights of Way Act 2000 https://www.legislation.gov.uk/ukpga/2000/37/contents and
The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 https://www.legislation.gov.uk/ukdsi/2019/9780111176573 ,
provide statutory protection to birds, bats and other species that inhabit trees.

All tree work operations are covered by these provisions and advice from an ecologist must be obtained before undertaking any works that might constitute an offence.

31. Future considerations:

Any remaining trees should be inspected on a regular basis by a qualified arboricultural consultant and should not exceed a 5-year interval.

Arboricultural Method Statement: Introduction

32. Terms of reference:

The arboricultural implications assessment identified the impact on trees and how that affects local character. The following sections are an arboricultural method statement setting out management and protection details that must be implemented to secure successful tree retention.

It assumes that the minimum general standards for development issues are those set out in:

- British Standard 5837:2012 Trees in relation to design, demolition and construction – Recommendations.
- The National Joint Utilities Group (2007) Volume 4, Issue 1: Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees.
- British Standards Institution (2010) BS 3998 Recommendations for tree work

I have used my arboricultural expertise to interpret these references in the context of evolving good practice and the specific circumstances on this site.

33. Tree Protection Plan (TPP):

The Tree Protection Plan in Appendix 'D' is illustrative and based on the site visit and report. This plan can only be used for dealing with the tree issues and all scaled measurements must be checked against the original submission documents. The precise location of all protective measures must be confirmed at the pre-commencement meeting before any demolition, site preparation or construction activity starts. The TPP shows all existing trees on site with their corresponding colours indicating:

- Tree classification.
- Trees to be retained.
- Trees to be removed - identified with a broken Red line.
- Protective fence positions therefore the Construction Exclusion Zones (CEZ).
- Any root protection area outside the protective fencing where special precautions must be taken.
- Any new tree planting.

Tree protection on site

34. Construction Exclusion Zone:

The Construction Exclusion Zone (CEZ) required by the current edition; BS5837; (2012) Trees in relation to design, demolition and construction - Recommendations; relates to the stem diameter of each tree when measured at a height of 1.5m from ground level, the values indicate the area of soil around the base of the tree to be retained undisturbed. The CEZs are always to be afforded protection and will be protected by fencing and /or ground protection This area should be protected with vertical barriers and considered sacrosanct. Signs should be erected on the fencing to indicate that the area is a Construction Exclusion Zone (CEZ). No works will be undertaken within any CEZ that causes compaction to the soil or severance of tree roots.

35. Protective Fencing:

Illustrative guidance for fencing design based on BS 5837 recommendations is included as Appendix 'G'. The location of the fencing and the RPAs is illustrated on the TPP as set out on the plan key.

The precise location of the fencing must be agreed with the council on site before any development activity starts e.g. before any materials or machinery are brought on site, development or the stripping of soil commences.

The fence will have signs attached to it stating that this is a Construction Exclusion Zone and that **NO WORKS ARE PERMITTED WITHIN THE FENCE OR GROUND PROTECTION**. The protected fence may only be removed following completion of all construction works.

There are no new areas of planting to be protected during the construction phase.

No access to the site from any other part of the property, other than the main entrance that will be constructed along the eastern boundary of the site will be permitted for construction traffic or delivery of supplies.

36. Permanent ground protection (left in-situ after construction):

Any RPAs outside protective barriers where construction will occur (for example a new road) must be covered in ground protection, so that there is no risk of damage from construction activities and movement over the tree roots once the development has finished.

Due to the nature of the site and the intended method of construction, permanent ground protection will need to be established using a three-dimensional cellular subbase product or another method designed by an engineer and passed by the local planning authority.

These proposals have been discussed and verbally agreed by the arboricultural officer.

This area will have signs attached to it stating that this is a Construction Exclusion Zone and that **NO WORKS ARE PERMITTED WITHIN THE FENCE OR BELOW THE GROUND PROTECTION**.

This product will be installed as identified on the Tree Protection Plan (TPP), prior to the commencement of any construction activity.

- The cellular confinement system will be placed on top of existing ground levels, (subject to limited clearance of 50mm to remove any spoil) before being filled with 40/20mm angular stone as per the manufacturers' specification.
- A geotextile fabric will then be placed in position before a temporary aggregate surface is deployed to act as a wearing course for the construction phase of the project.
- Once all construction activities are complete this temporary wearing course will be removed, to allow for the installation of a permeable final wearing course.

- Edge retention will be custom designed to avoid any significant excavation into existing soil levels either using pre-formed edging or wooden boards secured by metal pins or wooden pegs.
- Illustrative specifications for special surfacing are included as Appendix 'H' and installation methods should accord with guidance set out in Appendix 'I'.

37. Temporary ground protection (removed after construction):

Any RPAs outside protective barriers must be covered in ground protection where movement on site will occur either by people or vehicles, so that there is no risk of damage from construction activities.

Due to the nature of the site and the intended method of construction, temporary ground protection will not be needed.

38. Precautions when working in RPAs / CEZ:

Any work in RPAs must be done with care as set out in Appendix 'I' and with appropriate reference to the sections above.

If temporary access is required to a CEZ then access may only be gained after consultation with the Local Planning Authority and following placement of materials such as geo-textile fabrics that will spread the weight of any vehicular load and prevent compaction to the soil.

No temporary access into RPAs / CEZ will be required on this site.

Additional tree related site works:

39. Tree work recommendations:

Tree work proposals based on my preliminary inspection are set out in the management recommendations column of the tree schedule in Appendix 'E'. The location of each tree is shown on Tree Protection Plan (TPP) and all trees to be removed are indicated with a red dashed crown outline.

40. Site storage, cement mixing and washing points:

All site storage areas, cement mixing and washing points for equipment and vehicles must be outside CEZ unless otherwise agreed with the council.

Where there is a risk of polluted water runoff into CEZ, heavy-duty plastic sheeting and sandbags must be used to contain spillages and prevent contamination.

No storage or discharge of any materials likely to be injurious to the tree, i.e. oil bitumen, cement within 10m of a tree stem.

No fires are to be lit under or within 20m of a tree stem and will take into account fire size and wind direction so that, (where wind or radiated heat may be a problem) no flames come within 5m of any foliage or canopy of any retained tree.

No signs, cables or telephone wires or other services etc. are to be attached or fixed to trees.

Care must be exercised when using cranes or similar equipment near the canopies of trees. **Note:** No high-sided vehicles or cranes have access to the site therefore their movement on the site is not an issue.

No retained trees are to be used as anchorage for equipment used to remove stumps or other trees, nor for any other purpose.

41. Protection of soil in areas for proposed new planting:

No new planting is proposed in areas that are currently undisturbed soil.

42. Access Details:

There is no requirement for any special measures related to the retained trees as all access for construction vehicles will be outside of the CEZ.

Access to the site will be off Ribchester Road, the height of all vehicles, particularly high sided vehicles and cranes must be controlled as to omit any damage to the trees upon entering and exiting the site. The designated arboricultural consultant must be contacted if this is seen to be an issue.

43. Site Gradients:

No significant alterations of soil levels will take place within any CEZ of protected trees.

44. Demolition:

No demolition is required on this site.

45. Hard Surfaces:

Hard landscaping is scheduled to be carried out in a CEZ. Control measures detailed in Appendix “I” must be followed.

No hard surfaces are to be constructed within the CEZ except that of the driveway and will be constructed without soil compaction or soil stripping and laid in accordance with the Method Statement.

The construction of the driveway will only take place following completion of construction. Protective fencing will remain in place for as long as reasonably practicable while still allowing the driveway to be constructed.

46. Soft landscaping:

Soft landscaping is scheduled to be carried out in a CEZ. Control measures detailed in Appendix “I” must be followed.

47. Use of Herbicides:

If any herbicide is used within the RPA of a retained tree, it shall be systemic, spot applied, and mixed according to manufacturer's recommendations.

48. On site Monitoring Regime:

All operations will be monitored by the main contractor.

49. Use of subcontractors:

The main contractor will be responsible for ensuring sub-contractors do not carry out any process or operation that is likely to adversely impact upon any tree on site.

50. Contractors Parking:

Off site and not impacting on any trees or protective measures.

51. Site Huts and Toilets:

Off site and not impacting on any trees or protective measures.

52. Emergency Procedures:

Should any problem or emergency that relates to any tree or its protection arise, work in that area is to cease and the area is to be secured against the risk of further damage or possible injury to any person or property.

Once the area is secured both the Consulting arborist and the LPAs tree officer are to be informed so that appropriate action may be taken to remedy the situation.

Water is readily available on site and will be used to flush spilt materials through the soil and avoid contamination to tree roots. At the time of any spillage the main contractor will contact an arboriculturist for advice.

53. Remedial Tree Works:

Tree works including remedial pruning will be undertaken prior to any demolition / construction on site and the erection of protective fencing or ground protection to form the CEZ. All tree works are to be carried out in accordance with British Standard 3998: 2010 Recommendations for Tree Work.

54. Responsibilities:

It will be the responsibility of the main contractor to ensure that the planning conditions attached to planning consent are always adhered to and that a monitoring regime regarding tree protection is adopted on site.

The main contractor will be responsible for contacting the Local Planning Authority at any time issues are raised related to the trees on site.

If at any time pruning works are required permission must be sought from the Local Planning Authority first and then carried out in accordance with BS 3998: 2010 British Standard Recommendations for Tree Work.

The main contractor will ensure the build sequence is appropriate to ensure that no damage occurs to the trees during the construction processes. Protective fences will remain in position until completion of ALL construction works on the site.

The fencing and signs must always be maintained in position and checked on a regular basis by an onsite person designated that responsibility.

Specifications for new tree planting

55. Site preparation, supply and planting of trees:

Any new trees must be planted according to the relevant illustrative specification included within Appendix 'L' at the locations illustrated on the Tree Protection Plan. Extensive site preparation beyond the immediate planting pit must be carried out in compliance with this specification to maximize the chances of successful establishment of the new trees.

56. Maintenance:

These trees must be maintained according to the illustrative specification included as Appendix 'L' for 3—5 years as necessary until successful establishment is confirmed by the council. Any trees that die or progressively decline within this period will be replaced and the replacements will be maintained until successful establishment is confirmed by the council.

57. Root barriers / deflectors:

No root barriers will be required for this site.

58. Structured tree soil:

No structured tree soil will be required in the planting of the trees on this site.

Programme of tree protection and supervision

59. Overview:

Tree protection cannot be reliably implemented without arboricultural input. The nature and extent of that input varies according to the complexity of the issues and the resources available on site. An arboricultural consultant must be instructed to work within this framework to oversee the implementation of the protective measures and management proposals set out in this arboricultural method statement.

60. Supervision and the discharge of planning conditions:

Arboricultural planning conditions cannot be reliably or effectively discharged without supervision by an arboricultural consultant. These supervisory actions must be confirmed by formal letters / emails

circulated to all relevant parties, including the council. These permanent records of each site visit will accumulate to provide the proof of compliance and allow conditions to be discharged as the development progresses. The developer must instruct an arboricultural consultant to comply with the supervision requirements set out in this document before any work begins on site.

61. Phasing of arboricultural input:

Trees can only be properly budgeted for and factored into the developing work programme if the overall project management takes full account of tree issues once consent is confirmed. An arboricultural consultant must be involved in the following phases of the project management:

62. Administrative preparation before work starts on site:

It is normal for a development proposal to vary considerably from the expectations before consent as the detailed planning of implementation evolves. The early instruction of an arboricultural consultant ensures that tree issues are factored into the complexities of site management and can often help ease site pressures through creative approaches to tree protection. Pre-commencement discussions between the arboricultural consultant and the developer's team is an effective means of project managing the tree issues to maximize site efficiency within often difficult constraints.

63. Pre-commencement site visit:

A pre-commencement meeting must be held on site before any of the site preparation or construction work begins. This must be attended by the site manager, the arboricultural consultant and a council representative. If a council representative is not present, the arboricultural consultant must inform the council in writing of the details of the meeting. All tree protection measures detailed in this document must be fully discussed so that all aspects of their implementation and sequencing are understood by all the parties. Any clarifications or modifications to the consented details must be recorded and circulated to all parties in writing. This meeting is where the details of the programme of tree protection will be agreed and finalised by all parties, which will then form the basis of any supervision arrangements between the arboricultural consultant and the developer.

64. Site supervision:

Once the site is active, the arboricultural consultant must visit at an interval agreed at the pre-commencement site meeting. The supervision arrangement must be sufficiently flexible to allow the supervision of all sensitive works as they occur. The arboricultural consultant's initial role is to liaise with developer and council to ensure that appropriate protective measures are designed and in place before any works start on site. Once the site is working, that role will switch to monitoring compliance with arboricultural conditions and advising on any tree problems that arise or modifications that become necessary.

65. Site management:

It is the developer's responsibility to ensure that the details of this arboricultural method statement and any agreed amendments are known and understood by all site personnel. Copies of the agreed documents must always be kept on site and the site manager must brief all personnel who could have an impact on trees on the specific tree protection requirements. This must be a part of the site induction procedures and written into appropriate site management documents.

How to use this report in the planning process

66. Limitations:

It is common that the detail of logistical issues such as site storage and the build programme are not finalized until after consent is issued. As this report has been prepared in advance of consent, some of its content may need to be updated as more detailed information becomes available once the post-consent project management starts. Although this document will remain the primary legal reference in the event of any disputes, some of its content may be superseded by authorised post-consent amendments.

67. Suggestions for the effective use of this report:

The Arboricultural method statement of this report, including the relevant appendices, is designed as an enforcement reference. It is constructed so the council can directly reference the detail in a planning condition, Referencing the report by name and relating conditions to specific subsections is an effective means of reducing confusion and facilitating enforcement in the event of problems during implementation. More specifically, the following issues should be directly referenced in the conditions for this site:

1. **Pre-commencement meeting**
2. **Fencing**
3. **Ground protection**
4. **Installation of new surfacing**
5. **Services**
6. **Tree planting**
7. **Installation of new landscaping**
8. **Programming of tree protection**
9. **Arboricultural supervision**

Each of the above matters must be supervised by an arboricultural consultant and the relevant conditions can only be discharged once that supervision has been confirmed in writing to the council, normally via email. This is intended to act as a summary quick reference within the council file to help keep track of the progress of the supervision.

Gary Marsden FDSc Arb M.Arbor.A

APPENDIX 'A'

Brief details of qualifications and experience of Gary Marsden:

Qualifications:

- National Certificate in Arboriculture
- Foundation Degree in Science - Arboriculture
- BTEC Higher National Diploma in Arboriculture
- Certified Expert Witness by Cardiff Law School / Bond Solon
- LANTRA Professional Tree Inspection Award

Practical experience:

After qualifying at NC level in arboriculture I gained full time employment with Blackburn with Darwen Borough Council as an Arborist / Climber (September 1998) where I gained a wide range of practical Arboricultural experience ranging from pruning, dismantling and planting.

In January 2004, I was promoted to Team Leader Arborist where I developed my skills in Arboriculture, leadership, organisation and prioritising workloads.

In August 2005, I was promoted to 'Arboricultural Officer' this job involves:
Health and Safety of all Arboricultural aspects
Inspection and scheduling of tree complaints
Tree surveys and report writing
Staff management

In July 2008, I set up my own tree consultancy company – GM Tree Consultants – which I am constantly developing and evolving.

Continuing professional development:

As a conscious effort to stay in touch with the progression in modern techniques and practices in the arboricultural industry, I attend seminars, receive regular arboricultural literature and maintain membership of professional bodies, examples of which are listed below:

- Arboricultural Association Professional Member since November 2006
- Professional Member of the Consulting Arborist Society since May 2009
- Quantified Tree Risk Assessment licensed user since October 2008
- Attendance of Arboricultural Association annual conferences
- Attendance of specialist short courses in relation to specific fields in arboriculture including: Tree Preservation Orders, Subsidence and mortgage reports, Planning legislation and Tree inspection methods and skills.
- Accredited as an Expert Witness by Cardiff University Law School / Bond Solon since December 2011

A detailed breakdown of qualifications and continued professional development training is available; please contact me directly for this information if requested.

APPENDIX ‘B’

Site Location aerial photo taken from Google Maps showing generic site location:

APPENDIX 'C'

Tree survey index:

Tree Locations:	Tree Number:
This has been plotted using GPS to an accuracy of <1m and / or using permanent land features to measure accurate offsets with a laser distancing device.	Each surveyed feature is assigned a number prefixed by a 'T' for individual trees, 'G' or 'L' for groups / lines of trees and 'H' for hedgerows. It is used to locate the tree in the data survey and the relevant position on the plan.
Species:	DBH calculations
The species identification is based on visual observations and the common English name of what the tree appeared to be is listed first. In some instances, it may be difficult to quickly and accurately identify a tree without further detailed investigations.	The 3 first columns of figures calculate, the stem diameter rounded up to the nearest 25mm, the radius of the calculated RPA and the calculated overall area of the RPA all derived from the stem diameter @ 1.5m above ground level as per BS5837.
Number of stems:	Stem Diameter:
The number of main stems of each individual tree.	These figures relate to stem diameter in millimetres at 1.5m above ground level. This is measured using a girthing tape, unless access is restricted.
Height:	Height of first branch and direction:
Overall height of tree recorded in meters.	Existing height in metres of the first significant branch above ground level and the direction of growth in relation to the 4 cardinal points (NSEW).
Height of canopy above ground level:	Crown Spread:
Existing height in meters of the canopy above ground level.	This is measured in meters taken at the four cardinal points (NSEW) to derive a representation of the crown.
Life stages:	Physiological Condition:
Described as young, semi-mature, mature, over-mature / veteran.	Described as good, fair, poor, dead and notes as needed.
Preliminary management recommendations:	Structural Condition:
Practical arboricultural operations that are suggested and described as needed.	Described as good, fair, poor, dead and notes as needed.
Remaining Contribution:	Tree Retention Category Grading:
Estimated remaining contribution in years: e.g. <10, 10+, 20+, 30+, 40+. This is based upon Jeremy Barrels system of 'SULE' (Safe Useful Life Expectancy).	U or A to C category grading as referenced from BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations. (see Table 1 in appendix 'F')

APPENDIX 'D'

Inserted site plans showing tree locations and all other relevant details:

Inserted Tree Constraints Plan (TCP) showing all relevant tree information including:

- Tree location
- Trees species
- Tree classification

Inserted Tree Protection Plan (TPP) showing all relevant tree information including:

- Tree classification.
- Trees to be retained
- Trees to be removed - identified with a broken red line
- Protective fence positions therefore the Construction Exclusion Zones (CEZ)
- Ground protection positions therefore the Construction Exclusion Zones (CEZ)
- Root protection area outside the protective fencing where special precautions must be taken.
- Any new tree planting.

Ekuuse

Ekuuse

Rockhaven

Rockhaven

8 Pine
0.3 C1 RPA3.6m

6 Cherry
0.25 C1 RPA3m

9 Beech
0.45 B1 RPA5.4m

5 Conifer
0.15 C1 RPA1.8m

7 Beech
0.5 C1 RPA6m

4 Conifer
0.15 C1 RPA1.8m

LAWN

1 No. coniferous hedge to property frontage set approx. 2.5m back from carriageway

DRIVEWAY

Existing driveway a combination of block paviour edging strips and tarmac surfacing

HEDGE

Existing gates and approach from main road very narrow

3 Cherry
0.35 C1 RPA4.2m

1 Spruce
0.425 B1 RPA5.1m

2 Maple
0.3 C1 RPA3.6m

OAKS BROW

OAKS BROW

Bromley

Bromley

108.8m

108.8m

5 4 3 2 1 0 5 10 15m

Legend

tree number — common name — *tag number*

T13 oak *1234*
0.24m A1 RPA3.6m

diameter in metres*

British Standard category in words

root protection area (RPA) radius in metres.

root protection area (RPA) for retained trees

indicative crown spread based on measurements at cardinal points (N,S,E,W). Trees for removal shown in red canopy outline

British Standard category as colour coded circle:

A B C U

*where the tree is multi stemmed, the figure stated is the calculated combined stem diameter, as recommended by BS5837:2012 (unless otherwise stated in the drawing).

NORTH

BS5837:2012 Cascade chart for tree quality assessment

Category & Definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention				
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, immediate, structural defect, such that their early loss is expected due to collapse,including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve			Red on plan RGB 127,0,0
Trees to be considered for retention				
	1. Mainly arboricultural qualities	2. Mainly landscape qualities	3. Mainly cultural values, including conservation	
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)	Light Green RGB 0,255,0
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	Mid blue RGB 0,0,255
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	Grey RGB 091,091,091

TREE CONSTRAINTS PLAN

PROJECT:	Rockhaven, Ribchester Road, Clayton Le Dale, BB1 9EG
JOB REF:	1527
FIGURE REF:	1527/TCP/001
DRAWN BY:	Gary Marsden
SCALE:	1:200 @ A2
DATE OF DRAWING:	2nd February 2021
REVISION NUMBER:	1

Drawing to be read in association with arboricultural impact appraisal and method statement. If in any doubt, details should be confirmed with project arboricultural consultant prior to commencement. Any work within root protection areas of trees should only commence following briefing from project arboricultural consultant.

THE ORIGINAL OF THIS DRAWING WAS PRODUCED IN COLOUR
A MONOCHROME COPY SHOULD NOT BE RELIED UPON

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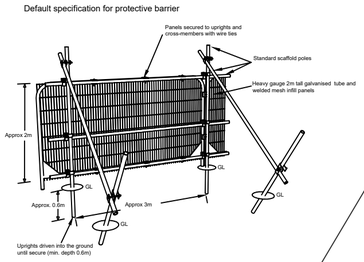
GMTREE CONSULTANTS

Arboricultural ASSOCIATION Professional Member



Rockhaven

Ekuuse

Bromiley

8 Pine
0.3 C1 RPA3.6m

9 Beech
0.45 B1 RPA5.4m

6 Cherry
0.25 C1 RPA3m

5 Conifer
0.15 C1 RPA1.8m

7 Beech
0.5 C1 RPA6m

4 Conifer
0.15 C1 RPA1.8m

3 Cherry
0.35 C1 RPA4.2m

1 Spruce
0.425 B1 RPA5.1m

2 Maple
0.3 C1 RPA3.6m

Detached garage to neighbours property in similar position on street frontage and in proximity to large trees

New front entrance and snug projections shown in red

Remainder of property footprint unaffected by proposed alterations and contained within existing external walls

Lawn

Path

Lawn

Detached double garage to frontage of low impact design to prevent overshadowing to neighbours. Garage to be built on slightly raised ground to minimise impact on the tree root zone of trees T1 and T2 on adjacent property

Garage

Drive

Hard surfacing to the same compliment and a permeable construction to allow natural drainage to sub strata

2no cantilevered sliding gate on custom made steel frame clad with timber

4.0m clear between 450x450mm entrance piers

Existing 3.0m high coniferous front boundary replaced with 2.0m high natural stone wall set approx 3.5m back from the carriageway. Refer to separate detail for construction/design information

43.0 x 2.0m visibilty splay maintained - Nothing to impair vision above 0.6m from ground level within visibility splay

Road access point widened to increase visibility and gate position moved further from highway to again increase safety

Grass Verge

OAKS BROW

108.8m

5 4 3 2 1 0 5 10 15m

TREE PROTECTION AREA
KEEP OUT!

TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY PLANNING CONDITIONS AND/OR ARE THE SUBJECT OF A TREE PRESERVATION ORDER. CONTRAVENTION OF A TREE PRESERVATION ORDER, MAY LEAD TO CRIMINAL PROSECUTION
THIS FENCING MUST NOT BE REMOVED WITHOUT PERMISSION FROM THE TREE AND LANDSCAPE OFFICER

BS5837:2012 Cascade chart for tree quality assessment

Category & Definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention				
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, immediable, structural defect, such that their early loss is expected due to collapse,including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve			Red on plan RGB 127,0,0
Trees to be considered for retention				
	1. Mainly arboricultural qualities	2. Mainly landscape qualities	3. Mainly cultural values, including conservation	
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)	Light Green RGB 0,255,0
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	Mid Blue RGB 0,0,255
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	Grey RGB 091,091,091

Legend

tree number | common name | *tag number* | root protection area (RPA) for retained trees

T13 oak *1234*
0.24m A1 RPA3.6m

indicative crown spread based on measurements at cardinal points (N,S,E,W). Trees for removal shown in red canopy outline

diameter in metres*

British Standard category as colour coded circle: A B C U

British Standard category in words

root protection area (RPA) radius in metres.

*where the tree is multi stemmed, the figure stated is the calculated combined stem diameter, as recommended by BS5837:2012 (unless otherwise stated in the drawing).

NORTH

Protective fencing to BS5837:2012. Refer to BS5837 figure 2 and figure 3 as appropriate.

Tree to be removed for the purpose of:
- Poor health and/or condition
- Significant encroachment into the development area preventing the development of the site

Low impact surfacing will be required to install new access and/or parking areas within RPA to prevent root damage. Protective fencing may be relaxed to undertake operations following approval by project arborist and should be replaced once operation is completed. Refer to relevant sections of arboricultural impact appraisal and method statement.

Indicative location and suggested species of new semi mature tree. Crown spread shown as 2m diameter

TREE PROTECTION PLAN

PROJECT:	Rockhaven, Ribchester Road Clayton Le Dale, BB1 9EG
JOB REF:	1527
FIGURE REF:	1527/TPP/001
DRAWN BY:	Gary Marsden
SCALE:	1:200 @ A2
DATE OF DRAWING:	4th February 2021
REVISION NUMBER:	1

Drawing to be read in association with arboricultural impact appraisal and method statement. If in any doubt, details should be confirmed with project arboricultural consultant prior to commencement. Any work within root protection areas of trees should only commence following briefing from project arboricultural consultant.

THE ORIGINAL OF THIS DRAWING WAS PRODUCED IN COLOUR
A MONOCHROME COPY SHOULD NOT BE RELIED UPON

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GMTREE CONSULTANTS
Arboricultural Association Professional Member

Rockhaven, Ribchester Road, Clayton le Dale

Oakwood Lodge

Rockhaven

Ekuuse

Bromiley

Clayton-Le-Dale

OAKS BROW

Grass Verge

8 Pine
0.3 C1 RPA 3.6m

6 Cherry
0.25 C1 RPA 3m

9 Beech
0.45 B1 RPA 5.4m

5 Conifer
0.15 C1 RPA 1.8m

7 Beech
0.5 C1 RPA 6m

4 Conifer
0.15 C1 RPA 1.8m

3 Cherry
0.35 C1 RPA 4.2m

1 Spruce
0.425 B1 RPA 5.1m

2 Maple
0.3 C1 RPA 3.6m

T6 T7 T8 T9 T10

Detached garage to neighbours property in similar position on street frontage and in proximity to large trees

Existing 3.0m high coniferous front boundary replaced with 2.0m high natural stone wall set approx 3.5m back from the carriageway. Refer to separate detail for construction/design information

43.0 x 2.0m visibility splay maintained - Nothing to impair vision above 0.6m from ground level within visibility splay

Road access point widened to increase visibility and gate position moved further from highway to again increase safety

New front entrance and snug projections shown in red

Remainder of property footprint unaffected by proposed alterations and contained within existing exterior walls

Detached double garage to frontage of low impact design to prevent overshadowing on neighbours. Garage to be built on either a raft or piled foundation to minimise impact on the trees root zone of Trees T7 and T8 in adjacent property.

Hard surfacing to be SUDs compliant and of permeable construction to allow natural drainage to sub strata

4.5m cantilevered sliding gate on custom made steel frame clad with timber.

4.0m clear between 450x450mm entrance piers

Lawn

Path

Steps

Garage

Lawn

Lawn

6525

4000

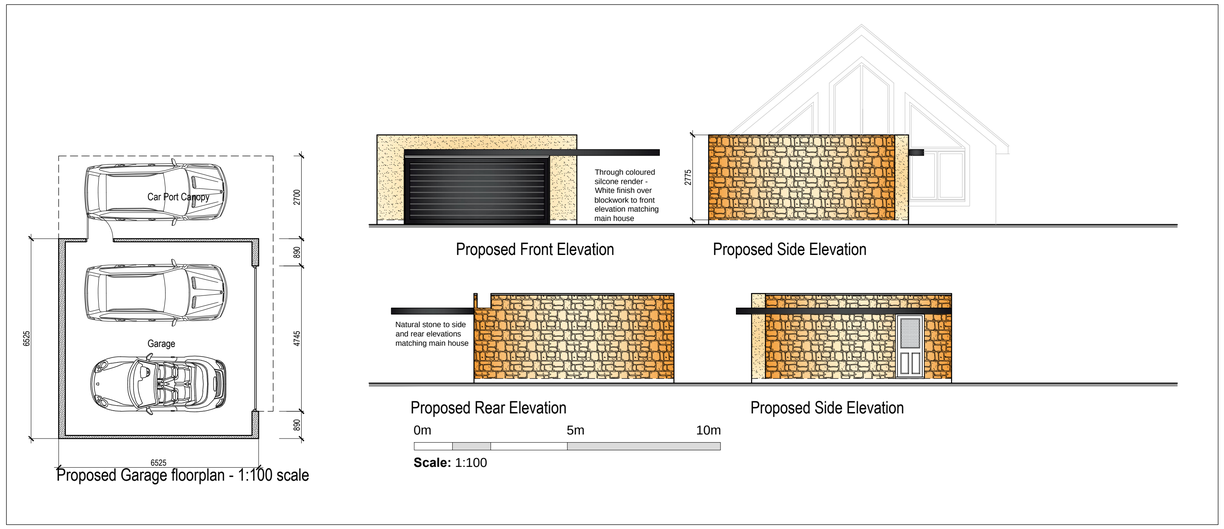
14500

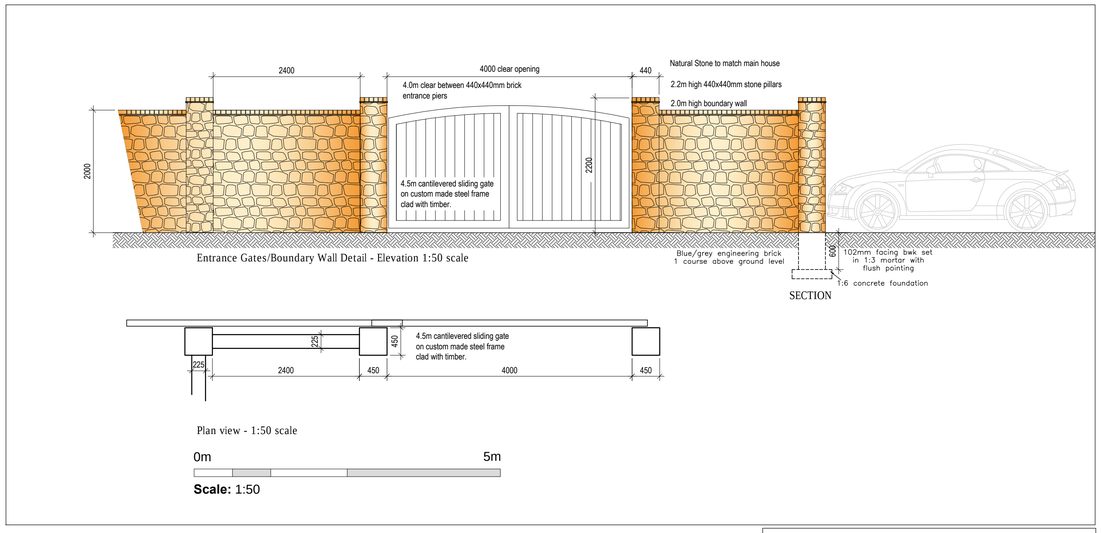
108.8m

Proposed Site Plan - 1:200 scale

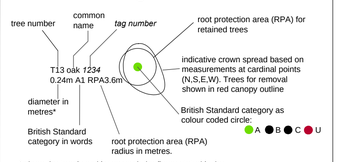
0m 5m 10m 20m

Scale: 1:200





Tree Legend



*where the tree is multi stemmed, the figure stated is the calculated combined stem diameter, as recommended by BS5837:2012 (unless otherwise stated in the drawing).

Rev C - Tree survey info shown, garage position tweaked. Feb 2021

bpd Architecture
CIAT Registered practice
Sitchstone, Brown House Lane, Higher Wheelton, Chorley, Lancashire PR6 8HR
Tel: 01257 220510
web: www.betterplan.co.uk
email: info@betterplan.co.uk

Chartered Institute of Architectural Technologists
Registered Practice

Project
Rockhaven, Ribchester Road, Clayton le Dale, BB1 9EG

Title
Proposed site layout plan and Garage Entrance details

Scale @ A1	Date	Ref	Drawn
Varies	Aug 2020	936	MDB

Drg No	Rev
936/RHR/SLP	**C**

APPENDIX 'E'

Tree survey data inserted including the calculations for the root protection zones:

- Initial tree survey data
- Root protection area calculations
- Tree work schedule – pre- and post-construction.

GMTREE CONSULTANTS	Job Ref:	1527	Survey Date:	26 January 2021	Surveyor:	Gary Marsden	Site Address:	Rockhaven, Ribchester Road, Clayton-Le-Dale	Tel: 077 6166 7384 www.gmtreeconsultants.co.uk	BS:5837 (2012) TREE SURVEY DATA

Stem diameter @ 1.5m rounded up to nearest 25mm	Calculated Root protection Area (radius in meters)	Calculated Root protection area (msq)	Type (Tree / Line / Group / Hedge)	Tree number	Species (common)	Number of stems	Stem diameter @ 1.5m (mm)	Height (m)	Height of canopy above G/L (m)	Height of first significant branch (m)	First significant branch direction (NSEW)	Crown Spread - NORTH (m)	Crown Spread - EAST (m)	Crown Spread - SOUTH (m)	Crown Spread - WEST (m)	Life Stage y - sm - m - om - v	Physiological Condition	Structural Condition	Comments on significant observations of the tree / Defects	Preliminary management recommendations to ensure SULE is at least 10 years	Remaining contribution <10 - 10+ 20+ 30+ 40+	Tree quality assessment category
425	**5.10**	**81.71**	T	1	Spruce	1	425	16	2	5	North	4	4	4	4	Mature	Good	Good	_ Tree not showing any significant defects	_ No work required at time of survey	20+	B1
300	**3.60**	**40.72**	T	2	Maple	1	300	10	2	1	East	4	4	4	4	Semi Mature	Good	Good	_Suppressed canopy	_ option to remove	10+	C1
350	**4.20**	**55.42**	T	3	Cherry	1	350	10	4	2	East	2	4	2	3	Semi Mature	Good	Fair	_ Minor deadwood <25mm dia+ _ Poor pruning cuts / stumps left	_ Remove dead wood / crown clean_ option to remove+	10+	C1
150	**1.80**	**10.18**	T	4	Conifer	1	150	6	0	1	South	1	1	1	1	Young	Good	Good	_Suppressed canopy	_ option to remove	10+	C1
150	**1.80**	**10.18**	T	5	Conifer	1	150	6	0	1	South	1	1	1	1	Young	Good	Good	_Suppressed canopy	_ option to remove	10+	C1
250	**3.00**	**28.27**	T	6	Cherry	1	250	6	3	1	East	3	3	2	1	Young	Good	Fair	_ Minor deadwood <25mm dia+ _ Poor pruning cuts / stumps left	_ option to remove	10+	C1
500	**6.00**	**113.10**	T	7	Beech	1	500	16	4	1	North	4	4	4	4	Mature	Good	Fair	_ Tree under 3rd party ownership+_ Minor deadwood <25mm dia+ _ Poor pruning cuts / stumps left	_ No work required at time of survey	10+	C1
300	**3.60**	**40.72**	T	8	Pine	1	300	10	8	8	West	3	1	3	3	semi Mature	Good	Fair	_ Tree under 3rd party ownership+_Suppressed canopy+_Poor form	_ No work required at time of survey	10+	C1
450	**5.40**	**91.61**	T	9	Beech	1	450	16	2	6	North	7	7	7	7	Mature	Good	Good	_ Tree under 3rd party ownership+ _ Low canopy+ _ Canopy encrochment	_ Lift crown to 5m	40+	B1

GMTREE CONSULTANTS			JOB REF:	1527		BS:5837 2012 TREE WORKS SCHEDULE			
Stem diameter @ 1.5m rounded up to nearest 25mm	Calculated Root protection Area (radius in meters)	Calculated Root protection area (msq)	Type (Tree / Line / Group)	Tree number	Species (common)	Number of stems	Trunk dia. @ 1.5m (mm)	TREE WORKS PRE CONSTRUCTION	TREE WORKS POST CONSTRUCTION
425	5.10	81.71	T	1	Spruce	1	425	No work needed	No work needed
300	3.60	40.72	T	2	Maple	1	300	Remove for good tree mangment	#
350	4.20	55.42	T	3	Cherry	1	350	Remove for good tree mangment	#
150	1.80	10.18	T	4	Conifer	1	150	Remove for good tree mangment	#
150	1.80	10.18	T	5	Conifer	1	150	Remove for good tree mangment	#
250	3.00	28.27	T	6	Cherry	1	250	Remove for good tree mangment	#
500	6.00	113.10	T	7	Beech	1	500	No work needed	No work needed
300	3.60	40.72	T	8	Pine	1	300	No work needed	No work needed
450	5.40	91.61	T	9	Beech	1	450	Crown lift to 5m over garden	No work needed

APPENDIX 'F'

Cascade chart showing tree retention categories exerted from: BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations:

Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)	Identification on plan
Trees unsuitable for retention (see Note)		
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve	RED
Trees to be considered for retention		
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
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	GREEN
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	BLUE
Category C **Trees of low quality** with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 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	GRAY

APPENDIX 'G'

Illustrative specifications for tree protection:

Illustration of default specification for tree protective barrier, taken from BS 5837 2012 with an example of scaffold framework with 'Heras' fencing attached (Photo taken from within the CEZ)

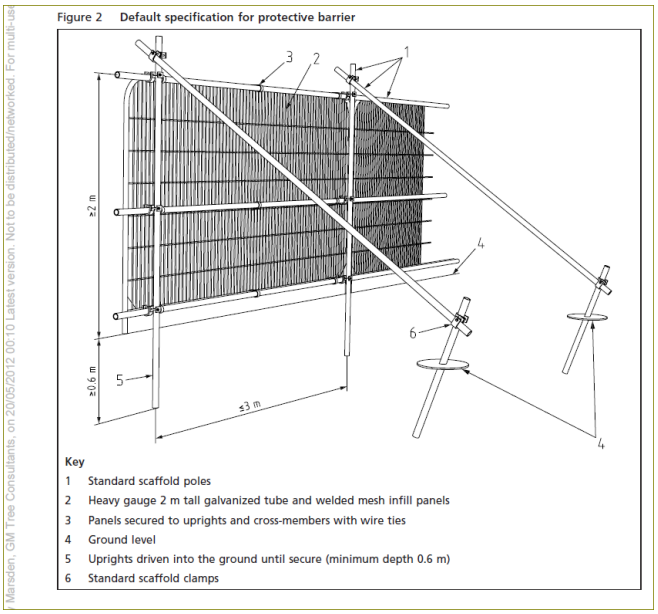
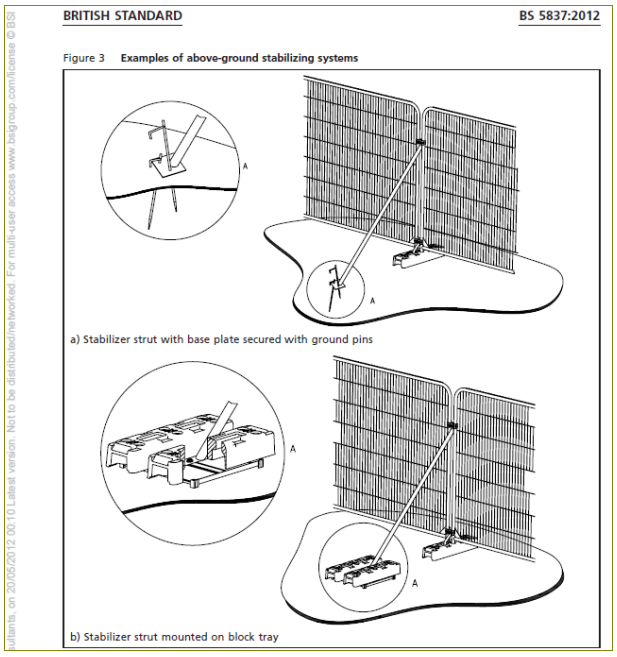


Figure 2 Default specification for protective barrier

Key
1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

Illustration of specification for tree protective barrier without significantly penetrating the ground / surface, taken from BS 5837 2012 with an example of protective fencing where it is not safe to drive scaffold poles into the ground (Risk of striking underground cables / damaging surfacing)



BRITISH STANDARD BS 5837:2012

Figure 3 Examples of above-ground stabilizing systems

a) Stabilizer strut with base plate secured with ground pins

b) Stabilizer strut mounted on block tray

Illustrative specification for protective fencing located inside the Root Protection Zone with an example of ground protection for pedestrian access under scaffolding prior to 'Heras' fencing being attached to the scaffold framework, this will prevent access to CEZ (grassed area)

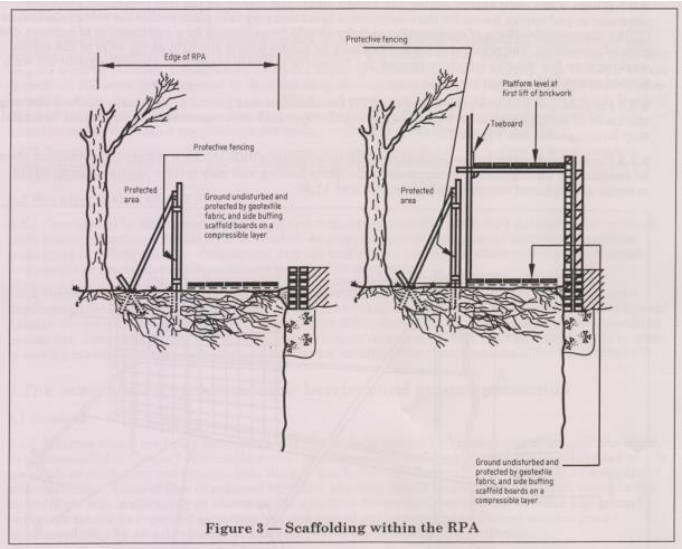
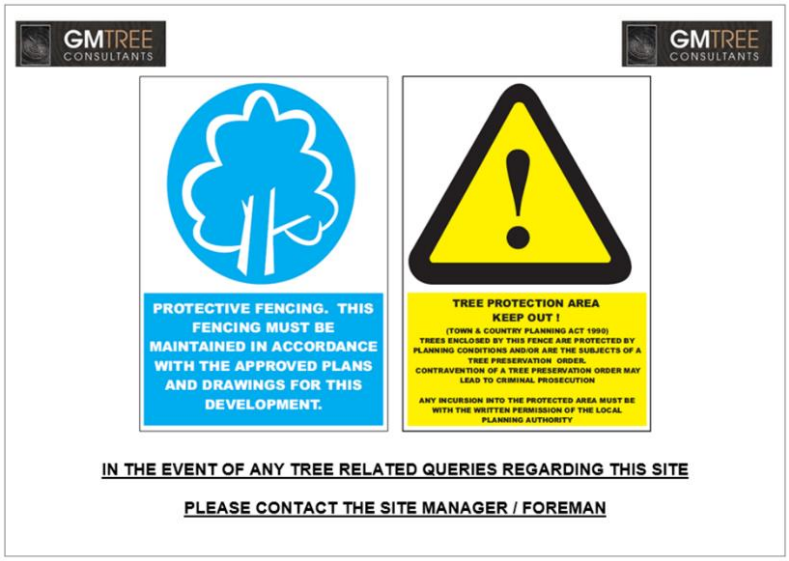


Figure 3 — Scaffolding within the RPA

Example of a warning / information sign to be fixed to the tree protection fencing.
*A PDF copy of this sign or a laminated version can be supplied if requested.
(Costs may be incurred for laminated version).



APPENDIX 'H'

Illustrative specification for permanent ground surface protection measures and special surfacing within root protection areas:

Laying of geotextile fabric with the cellular confinement system pined in place.

Appropriate aggregates are back filled filling all the cells.

Geotextile fabric laid over filled cells then covered with temporary / permanent wearing course as per construction specifications.

Illustrative specification for temporary ground surface protection measures within root protection areas:

*Not included as temporary ground surface protection is not required on this site.

Inserted specification for foundation design measures within root protection areas:

*Not included as specification for foundation design measures within root protection areas is not required on this site.

APPENDIX 'I'

Site guidance for working in root protection areas (RPAs):

1. GENERAL GUIDANCE FOR WORKING IN RPAs:

What is the purpose of this guidance?

This guidance sets out the general principles that must be followed when working in RPAs. Where more detail is required, it will be supplemented by illustrative specifications in other appendices in this document. Before work starts on site, the purpose of this guidance is to demonstrate to the council that tree protection issues have been properly considered and to provide a written record of how they will be implemented. Once the site works start, this guidance is specifically for the site personnel to help them understand what has been agreed and explain what is required to fully meet their obligations to protect trees. All personnel working in RPAs must be properly briefed about their responsibilities towards important trees based on this guidance.

What are RPAs?

RPAs are the areas surrounding important trees where disturbance must be minimised if they are to be successfully retained. All RPAs close to the construction area are illustrated on the tree protection plans accompanying this guidance. Damage to roots or degradation of the soil through compaction and/or excavation is likely to cause serious damage. Any work operations within RPAs must be carried out with great care if trees are to be successfully retained.

When should this guidance be followed?

Anyone entering an RPA must follow this guidance if important trees are to remain unharmed. Anyone working in an RPA must take care to minimize excavation into existing soil levels and limit any fill or covering that may adversely affect soil permeability. There are two main scenarios where this guidance must be followed when entering and working within an RPA:

Removal of existing surfacing / structures and replacement with new surfacing, structures and / or landscaping.
Preparation and installation of new surfacing, structures and / or landscaping.

Broad definitions of surfacing, structures and landscaping are set out in the following sections.

Where does this guidance apply?

This guidance should always be read in conjunction with the site plans illustrating the areas where specific precautions are necessary. Each area where precautions are required is annotated on the plans as identified on their keys. All plans are illustrative and intended to be interpreted in the Context of the site conditions when the work is started. All protective measures should be installed according to the prevailing site conditions and agreed as satisfactory by the appropriate supervising officer before any demolition or construction work starts.

What references is this guidance based on?

This guidance is based on the assumption that the minimum general standards for development issues are those set out in BS5837; (2012) Trees in relation to design, demolition and construction - Recommendations and the National Joint Utilities Group (2007) Volume 4, Issue 1: Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees. It is interpreted in the context of our experience of managing trees on development sites.

Preventing adverse impact to the RPA beyond the immediate work area:

Any part of the RPA beyond the agreed work area must be isolated from the work operations by protective barriers or ground protection to at least the minimum standard described in BS 5837 for the duration of the work. Appendix 'J': Site guidance for working in root protection areas (RPAs)

Excavation and dealing with roots:

All excavation must be carried out carefully using spades, forks and trowels, taking care not to damage the bark and wood of any roots. Specialist tools for removing soil around roots using compressed air may be an appropriate alternative to hand digging, if available. All soil removal must be undertaken with care to minimize the disturbance of roots beyond the immediate area of excavation. Where possible, flexible clumps of smaller roots, including fibrous roots, should be retained if they can be displaced temporarily or permanently beyond the excavation without damage.

If digging by hand, a fork should be used to loosen the soil and help locate any substantial roots. Once roots have been located, the trowel should be used to clear the soil away from them without damaging the bark. Exposed roots to be removed should be cut cleanly with sharp saw or secateurs 10—20cm behind the final face of the excavation. Roots temporarily exposed must be protected from direct sunlight, drying out and extremes of temperature by appropriate covering. Roots greater than 2.5cm in diameter should be retained where possible. Roots 2.5—10cm in diameter should only be cut in exceptional circumstances. Roots greater than 10cm in diameter should only be cut after consultation with the appropriate supervisory officer.

Arboricultural supervision:

Any work within RPAs requires a high care. Qualified arboricultural supervision is essential to minimize the risk of misunderstanding and misinterpretation. Site personnel must be properly briefed before any work starts. On-going work must be inspected regularly, and on completion, the work must be signed off by the arboriculturist to confirm compliance by the contractor. In the context of this guidance, an appropriate supervising officer would normally be an arboriculturist.

2. REMOVING SURFACING / STRUCTURES IN RPAs:

Definitions of surfacing and structures: For the purposes of this guidance, the following broad definitions apply:

- Surfacing:

Any hard surfacing used as a vehicular road, parking or pedestrian path including tarmac, solid stone, crushed stone, compacted aggregate, concrete and timber decking. This does not include compacted soil with no hard covering.

- Structures:

Any man-made structure above or below ground including service pipes, walls, gate piers, buildings and foundations: Typically, this would include drainage structures, carports, bin stores and concrete slabs that support buildings.

Access:

Roots frequently grow adjacent to and beneath existing surfacing/structures so great care is needed during access and demolition. Damage can occur through physical disturbance of roots and / or the compaction of soil around them from the weight of machinery or repeated pedestrian passage. This is not generally a problem whilst surfacing / structures are in place because they spread the load on the soil beneath and further protective measures are not normally necessary. However, once they are removed and the soil below is newly exposed, damage to roots becomes an issue and the following guidance must be observed:

No vehicular or repeated pedestrian access into RPAs unless on existing hard surfacing or custom designed ground protection.

Regular vehicular and pedestrian access routes must be protected from compaction with temporary ground protection as set out in BS 5837.

RPAs exposed by the work must be protected as set out in BS 5837 until there is no risk of damage from the development activity.

Removal: Removing existing surfacing/structures is a high-risk activity for any adjacent roots and the following guidance must be observed: Appendix 'J': Site guidance for working in root protection areas (RPAs)

Appropriate tools for manually removing debris may include a pneumatic breaker, crowbar, sledgehammer, pick, mattock, shovel, spade, trowel, fork dud wheelbarrow. Secateurs and a handsaw must also be available to deal with any exposed roots that have to be cut.

Machines with a long reach may be used if they can work from outside RPAs or from protected areas within RPAs. They must not encroach onto unprotected soil in RPAs.

Debris to be removed from RPAs manually must be moved across existing hard surfacing or temporary ground protection in a way that prevents compaction of soil. Alternatively, it can be lifted out by machines provided this does not disturb RPAs.

Great care must be taken throughout these operations not to damage roots as set out in 1.7 above.

If appropriate, leaving below ground structures in place should be considered ~ their removal may cause excessive root disturbance.

3. INSTALLATION OF NEW SURFACING IN RPAs:

Basic principles:

New surfacing is potentially damaging to trees because it may require changes to existing ground levels, result in localized soil structure degradation and / or disrupt the efficient exchange of water and gases in and out of the soil. Mature and over mature trees are much more prone to suffer because of these changes than younger and maturing trees.

Adverse impact on trees can be reduced by minimizing the extent of these changes in RPAs. Generally, the most suitable surfacing will be relatively permeable to allow water and gas movement, load spreading to avoid localized compaction and require little or no excavation to limit direct damage.

The actual specification of the surfacing is an engineering issue that needs to be considered in the context of the bearing capacity of the soil, the intended loading and the frequency of loading. The detail of product and specification are beyond the scope of this guidance and must be provided separately by the appropriate specialist.

Establishing the depth of excavation and surfacing gradient:

The precise location and depth of roots within the soil is unpredictable and will only be known when careful digging starts on site. Ideally, all new surfacing in RPAs should be no-dig, i.e., requiring no excavation whatsoever, but this is rarely possible on undulating surfaces. New surfacing normally requires an evenly graded sub-base layer, which can be made up to any high points with granular, permeable fills such as crushed stone or sharp sand. This sub-base must not be compacted as would happen in conventional surface installation. Some limited excavation is usually necessary to achieve this and need not be damaging to trees if carried out carefully and large roots are not cut.

Tree roots and grass roots rarely occupy the same soil volume at the top of the soil profile, so the removal of a turf layer up to 5cm is unlikely to be damaging to trees. It may be possible to dig to a greater depth depending on local conditions, but this would need to be assessed by an arboriculturist if excavation beyond 5cm is anticipated.

On undulating surfaces, finished gradients/levels must be planned with enough flexibility to allow on-site adjustment if excavation of any high points reveals large, unexpected roots near the surface. If the roots are less than 2.5cm in diameter, it would normally be acceptable to cut them, and the gradient formed with the preferred minimal excavation of up to 5cm. However, if roots over 2.5cm in diameter are exposed, cutting them may be too damaging and further excavation may not be possible. If that is the case, the surrounding levels must be adjusted to take account of these high points by filling with suitable material. If this is not practical and large roots have to be cut, the situation should be discussed with the supervising officer before a final decision is made.

Base and finishing layers:

Once the sub-base has been formed, the load spreading construction is installed on top without compaction. In principle, the load spreading formation will normally be cellular and filled with crushed stone although the detail may vary with different products. Suitable surface finishes include washed gravel, permeable tarmac or block paviours set on a sand base. However, for lightly loaded surfacing of limited widths (<3m) such as pedestrian paths, pre-formed concrete slabs may be appropriate if the sub-base preparation is as set out above. In some situations, limited width floating concrete rafts constructed directly on to the soil surface may be acceptable, but the design must not include any strip-dug supports.

Edge retention:

Conventional kerb edge retention set in concrete filled excavated trenches is likely to result in damage to roots and should be avoided. Effective edge retention in RPAs must be custom designed to avoid any significant excavation into existing soil levels. For most surfaces, the use of pre-formed edging secured by meta' pins or wooden pegs is normally an effective way of minimizing any adverse impact on trees from the retention structure.

Installing new surfacing on top of existing surfacing:

In some instances, surfacing can be retained and used as a base for new surfacing. Normally, this will not result in significant excavation that could expose roots so special precautions are not necessary. However, if large roots already protrude above the proposed sub-base level, then the precautions and procedures set out above must be observed.

4. INSTALLATION OF NEW STRUCTURES IN RPAs:

Basic principles:

New structures in RPAs are potentially damaging to trees because they may disturb the soil and disrupt the existing exchange of water and gases in and out of it. Mature and over-mature trees are much more prone to suffer because of these changes than young and maturing trees. Adverse impact on trees can be reduced by minimizing the extent of these changes in RPAs. This can be done by constructing the main structures above ground level on piled supports and redirecting water to where it is needed. The detailed design and specification of such structures is an engineering issue that should be informed and guided by tree expertise.

Small sheds and bin stores:

These light structures do not normally require substantial foundations and can have permeable bases. Ideally, their bases should be of a no-dig, load-spreading construction set directly on to the soil surface. They require a flat base and so an undulating site will need levelling to provide a suitable surface. Excavation of any high points by up to 5cm and filling depressions with permeable fill to provide a flat base will normally be acceptable provided no roots greater than 2.5cm in diameter need to be cut. If large roots are found, the preferred course of action would be to raise the base level of the structure by filling rather than cutting roots.

However, if this is not practical and large roots have to be cut, the situation should be discussed with the supervising officer before a final decision is made. Above the base, there will often be a protective

covering fixed onto a frame that can rise directly from the base or be fixed to supports either banged into the ground or set in carefully dug holes. Provided the supports are well spaced, i.e. greater than 1 .5m apart, and of a relatively narrow diameter, i.e. not in excess of 15cm, it is unlikely they will cause any significant disturbance to RPAs.

Walls, gate piers, buildings, and bridges on new foundations:
Conventional strip foundations in RPAs for any significant structure may cause excessive root loss and are unlikely to be acceptable. However, disturbance can be significantly reduced by supporting the above ground part of the structures on small diameter piles and beams or cast floor slabs set above ground level.

The design should be sufficiently flexible to allow the piles to be moved if significant roots are encountered in the preferred locations. Before the actual installation of the new structure starts, all RPAs that may be affected should be covered with temporary ground protection as set out in BS 5837. Gaps in the ground protection should be left where it is expected to install the piles or dig the holes for gate piers. Pile locations should be initially hand dug to a depth of 75cm to establish if there are any significant roots over 2.5cm in diameter that could be damaged. If significant roots are found, then the pile location must be moved slightly, and a new exploratory hole dug. Once the piles have been installed, the lowest points of the supporting beams for the structure must be above the ground level between the piles and there should not be any further excavation.

The beams between the piles can be pre-cast and imported to the site ready to fix or can be cast in position using shuttering for the sides and a biodegradable void-former for the base. Gate piers generally require larger holes and have less flexibility for relocation if large roots are found. Localized loss of roots may be unavoidable so each situation should be assessed on its own merits by an appropriate supervising officer once the careful excavations have been completed. Any roots found should be dealt with as set out in 1.7 above. When installing any of these structures, the ground protection must remain in place until the construction is completed and there is no risk of damage to RPAs.

5. Walls on existing foundations:

Free-standing wall:
A free-standing wall on an existing foundation is unlikely to require any additional excavation and so its construction should have no adverse impact on RPAs if the appropriate protection is in place. However, replacing walls that retain the soil of RPAs normally requires some limited excavation back into the exposed soil face to provide a working space of at least 10—20cm behind the inside wall face. This should be done carefully and limited to no more than required to construct the new wall. Any roots found should be dealt with as set out in 1.7 above. Once the wall is completed, any voids behind it should be filled with good quality topsoil and firmed into place but not over compacted. Specific difficulties with large roots that emerge during the construction should be referred to the supervising officer.

Services:

For the purposes of this guidance, services are considered as structures. Excavation to upgrade existing services or install new services in RPAs may damage retained trees and should only be chosen as a last resort. If excavation emerges as the preferred option, the decision should be reviewed by the supervising officer before any work is carried out. If excavation is agreed, all digging should be done carefully and follow the guidance set out in 1.7 above.

6. SOFT LANDSCAPING IN RPAs:

Upgrading existing soft landscaping or replacing existing surfacing/structures with new soft landscaping:

For the purposes of this guidance, soft landscaping includes the re- profiling of existing soil levels and covering the soil surface with new plants or an organic covering (mulch). It does not include the installation of solid structures or compacted surfacing.

Soft landscaping activity after construction can be extremely damaging to trees. No significant excavation or cultivation, especially by rotovators, should occur within RPAs. Where new designs require levels to be increased to tie in with new structures or the removal of an existing structure has left a void below the surrounding ground level, good quality and relatively permeable topsoil should be used for the fill. It should be firmed into place but not over compacted in preparation for turfing or careful shrub planting. Ideally, all areas close to tree trunks should be kept at the original ground level and have a mulched finish rather than grass to reduce the risk of mowing damage.

APPENDIX 'J'

Guidance for tree planting:

The following guidance notes are taken from Civic Trees - https://www.civictrees.co.uk/

Supply, Plant, Relocate
www.civictrees.co.uk

Glendale Civic Trees

50 ANNIVERSARY

Tel: 0208 950 4491
Email. info@civictrees.co.uk
Web. www.civictrees.co.uk

Specification for semi-mature tree planting for both rootball and container grown stock

INTRODUCTION
Semi-mature trees are defined by the British Standards Institution and HTA as:-

"Trees with an overall height in excess of 4 metres and / or a stem girth measurement (circumference) of 20 centimetres or larger".

They will have been transplanted several times and are likely to be more than 10 – 15 years old.

SPECIFICATION
1. Planting locations are agreed and inspected and a site assessment made with consideration given to species, access, overhead and underground services and general safety to operatives and members of the public.

2. The planting site shall be naturally or physically drained or raised to prevent the trees from being waterlogged at any time. The soil texture and structure will retain and release moisture and nutrients to the trees and have a structure that will promote root growth. The planting site can be improved with the addition of peat-free compost, water retaining polymer, fertiliser and topsoil where necessary.

3. The excavated hole shall be of sufficient size to accommodate the root-ball or container, allowing approximately 500mm clearance.

Before planting the sides of the pit shall be broken up and the base dug over to a depth of 150mm to improve drainage. It is not necessary to put loose soil below the rootball but in ground with poor natural drainage a drainage layer (200mm of gravel covered with terram) should be considered below the base of the pit.

The tree will be planted to establish at the same depth as it was grown in the nursery. Backfill will be firmed in around the rootball to prevent any air pockets.

4. An irrigation / aeration system will be installed, comprising 60mm diameter perforated pipe around the rootball 100mm below the to the surface. This can be fitted with a cap to stop debris entering the pipe.

5. Installation of a supporting system for the tree will be necessary. This will either be overhead or underground guying.

Overhead guying comprises 4mm steel cable attached to the main stem of the tree and to 1m metal stakes driven into the ground.

Underground guying may use the 'Civic Plinth' system or metal stakes to secure the rootball in the ground.

6. Any necessary formative pruning will be carried out and where appropriate woodchip/bark mulch should be applied to a depth of 50mm, and to at least the edge of the planting pit.

7. A properly planned maintenance programme should be kept up until successful establishment of the trees. This may include watering when necessary, checking of the support systems, weed control and further mulching. Support guys or stakes should be removed once the trees have established usually after 2 – 3 years.

SUMMARY
Successful establishment of trees will depend on:-

1. The planting site being properly prepared, drained and that it will be compatible with the chosen tree species.
2. The trees being specially grown to produce semi mature stock, being healthy and having been correctly lifted, stored and transported as relatively fragile living organisms.
3. The planting being done correctly, in the right season relative to the growing medium (i.e. only container grown stock in summer) and followed by proper aftercare

Supply, Plant, Relocate
www.civictrees.co.uk
Tel: 0208 950 4491
Email. info@civictrees.co.uk
Web. www.civictrees.co.uk

Glendale Civic Trees

50th ANNIVERSARY

GUIDANCE FOR THE MAINTENANCE & CARE OF TRANSPLANTED TREES AND SHRUBS

Your newly planted trees will require care and attention for the first couple of years after planting. Most of the work takes place during the 'Growing Season' (typically the start of April to the end of September) but it's worth keeping an eye on your trees all year round.

Watering
For the first couple of years after planting your newly planted tree will be dependant on supplementary watering as its root system develops into its new surroundings.

How much water
How much water to give depends on the specific site conditions, for instance whether the tree is in free-draining soil or one that easily retains moisture, or whether the tree is at the top or the bottom of a bank that these notes are only intended as a guide. Our staff can give you more site specific information once the trees are planted. As a general guide, use this table for the amount of water to be delivered at each watering:

	Soil Type	Light / Sandy	Average / Loam	Heavy / Clay
Stem Girth (cm)	Height (m)	Litres	Litres	Litres
14/16	2.5 - 3.0	30	20	10
16/18	3.0 - 3.5	35	25	12
18/20	3.5 - 4.0	40	30	15
20/25	4.0 - 4.5	50	35	17
25/30	4.5 - 5.0	60	40	20
30/35	5.0 - 5.5	70	45	25
35/40	5.5 - 6.0	80	55	30
40/50	6.0 - 7.0	100	70	35
50/60	7.0 - 8.0	120	80	40
60 +	8.0m +	140	95	50

When to start and stop
Watering should commence in late spring, when the ground first dries out to a depth of 5cm, and the tree will most likely stop taking up water in late September.

Frequency of watering
If you water too frequently the trees will not be encouraged to develop their root system in search of water. The ideal routine is to give a thorough soaking to each tree to drench the rootball and the surrounding soil and let this nearly dry out before repeating. Typically this means watering once a fortnight.

Where to water
Apply half the water via the irrigation pipe (if fitted) and half over the surface of the pit area, so that it soaks into the area of the rootball. Take care to ensure that water does not run off the surface, taking it away from the tree. If necessary build baffles at the edge of the pit area, to retain the water as it is applied.

What to do in periods of drought or exceptionally wet weather
The above watering rates take into account a typical English summer. Often, summer showers that seem heavy do not penetrate more than 5cm of soil and do little to help the tree establish. Therefore watering should be a regular routine regardless of summer rainfall. However, if the weather men start reporting that we are experiencing an abnormal summer, either wetter or drier than normal, apply the following rules.

- Wet Weather
Do NOT water if the ground around the rootball is sodden, delay watering for one week and re-assess. If water is puddled on top of the rootball or pit area then gently use a fork to create holes around the edge of the tree pit, not too close to the rootball, to increase drainage and to stop the soil becoming anaerobic. Remove any water that does not drain away significantly from the surface of the rootball with a bucket. When poor drainage is evident or even suspected, customers are advised to install simple agricultural land-drains leading to an adequate soak away.

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- Dry Weather
Before watering use a fork to create holes around the edge of the tree pit, not too close to the rootball, to increase permeation of water. Increase the frequency of watering to once-a-week and deliver 1.5 times the amount of water stated in the above table. Keep the entire pit area topped up with bark mulch to a depth of 50mm.

Feeding
Our trees are planted with sufficient fertiliser to feed them for one year under normal conditions. Additional fertiliser, if added, may be detrimental except in freely leaching soils (which are rare). Foliar feeding should be carried out only in the appropriate weather conditions and according to the manufacturer's instructions. After the first full growing season in-situ then you can add a top dressing of fertiliser formulated for trees and shrubs. These are readily available from garden centres. Again, please apply according to the manufacturers instructions. Avoid using lawn fertilisers as these often are a 'Weed & Feed' formula that ca have a negative effect on your tree.

Weeding
Weeds and grass growing in the pit area will compete with the tree for water and nutrients and thrive in the fresh soil left by the tree planting and it is important that they are removed regularly. Similarly additional planting of bulbs, turf, ground cover etc in the area of the tree roots should be avoided as these will also compete with the tree roots for both moisture and nourishment. Avoid using mowers or strimmers around the base of the tree as they can damage the stem.

Mulch
Mulches are beneficial and suppress weed growth and aid moisture retention. Ideally the whole pit are will be covered with a mulch to a depth of 75mm. Chipped Bark is the most common material used as mulch but other products are available. Compost and manure can be used if it is well-rotted. Avoid plastic as it stops the flow of air to the soil. When placing the mulch leave a mulch free ring around the stem of the tree where it goes into the ground. Covering the stem, with mulch or soil, above the natural 'collar' will cause a moist environment leading to trunk decay.

General Site Maintenance
Customers should ensure the site is kept free of all pollution that may be caused, for example by such additives as concrete mixing, spillage of fuels and solvents, residues of weed and brushwood killers, etc. Bonfires near plants can scorch and destroy trunk tissue, buds and leaf.

Guying
If your tree has been 'Overhead Guyed' with wires and ties, these may need to be re-tightened after a period of a few weeks as the ground disturbed by the tree planting settles down. If a tree develops a lean to one side by settling unevenly, it may be corrected by tightening guys on one side only. The normal way to do this is to drive the steel anchor stakes deeper to take-up any slack in the wires, or adjust the tensioners, where fitted.

Where wooden stakes and ties are used, the latter should be inspected at regular intervals to ensure no rubbing of the trunk occurs through displacement of the rubber pad and, if displaced, this should be re-fixed. After two or three years the tie will become too tight due to tree growth and this is a sign that the whole support system must be removed to avoid bark damage.

Underground systems of support may need expert maintenance, and we will undertake this on our inspection visits during the warranty period if one has been taken out.

What to look out for
Your tree will tell you if it's not happy with the maintenance it's receiving and if any apparent issues are acted upon quickly there's no reason for a tree not to recover.

Signs of under & over watering
If anything under-watering is easier to remedy, and the signs are easier to spot, than over-watering so if in doubt err on the side of caution. Leaf wilting is the most obvious sign that your tree needs more water. Yellow leaves, spots on the leaves, sudden leaf drop and die back in the twigs are a obvious sign of the tree having too much water. Frequent monitoring is important to catch any issues at the earliest stage.

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Trees come in all shapes and sizes, depending on the species and form, but some averages and assumptions can be made to act as a guide.

Description	Stem Circumference (cm)	Height Range (m)	Crown Spread (m)	Rootball Diameter (m)	Rootball Height (m)	Rootball Weight (kg)
Heavy Standard	12/14	3.0 - 3.5	< 0.5	0.4	0.55	50
Heavy Standard	14/16	3.5 - 4.0	0.5	0.5	0.55	100
Extra Heavy Standard	16/18	4.0 - 4.5	0.5	0.5	0.6	135
Extra Heavy Standard	18/20	4.5 - 5.0	0.5 - 0.75	0.6	0.6	150
Semi-Mature	20/25	4.5 - 5.0	0.75 - 1.2	0.7	0.6	250
Semi-Mature	25/30	5.0 - 6.0	1.0 - 1.5	0.8	0.7	360
Semi-Mature	30/35	5.5 - 6.0	1.25 - 1.75	0.9	0.7	550
Semi-Mature	35/40	6.0 - 7.0	1.5 - 2.0	1.1	0.7	750
Semi-Mature	40/45	6.5 - 7.5	1.75 - 2.25	1.2	0.8	800
Semi-Mature	45/50	7.0 - 8.0	2.0 - 2.5	1.2	0.8	1000
Semi-Mature	50/55	7.5 - 8.0	2.0 - 2.5	1.2 - 1.4	0.8	1200 - 1500
Semi-Mature	55/60	8.0 - 9.0	2.5 - 3.0	1.3 - 1.5	0.8	1500 - 1800
Semi-Mature	60/70	8.5 - 9.5	2.5 - 3.0	1.5 - 1.7	0.8	1800 - 2500
Semi-Mature	70/80	9.0 - 10.0	2.5 - 3.0	1.7 - 1.9	0.8 - 1.0	3000 - 3500
Semi-Mature	80/90	9.5 - 10.5	3.0 - 3.5	1.8 - 2.0	0.8 - 1.0	3500 - 4500
Semi-Mature	90/100	10.0 - 12.0	3.0 - 3.5	2.0 - 2.2	0.8 - 1.0	4500 - 5500
Semi-Mature	100/120	11.0 +	3.5 +	2.2 - 2.4	0.8 - 1.0	5500 - 8000

Tree Size

A tree with a clear stem (i.e. no branches below one meter above ground level) is referred to by its stem circumference, or girth, measured, in centimetres, at one metre from ground level.

There is a rough correlation between girth and height, though some species will get taller at a younger age and some will stay smaller.

Try and avoid trees that are way outside the general correlation. You may think that a tree with a circumference of 16cm girth and a height of 7m is good value but this tree has probably been grown tall too quickly, is out of proportion and may become weak in later life.

Trees that are feathered (i.e. have branches below one meter above ground level) are categorised by their height.

The width, or crown spread, depends once again on the species of tree and the method of production in the nursery. Even the largest trees are limited to approximately 4.0m wide so that they can be easily tied in and transported on our lorries.

Rootball dimensions

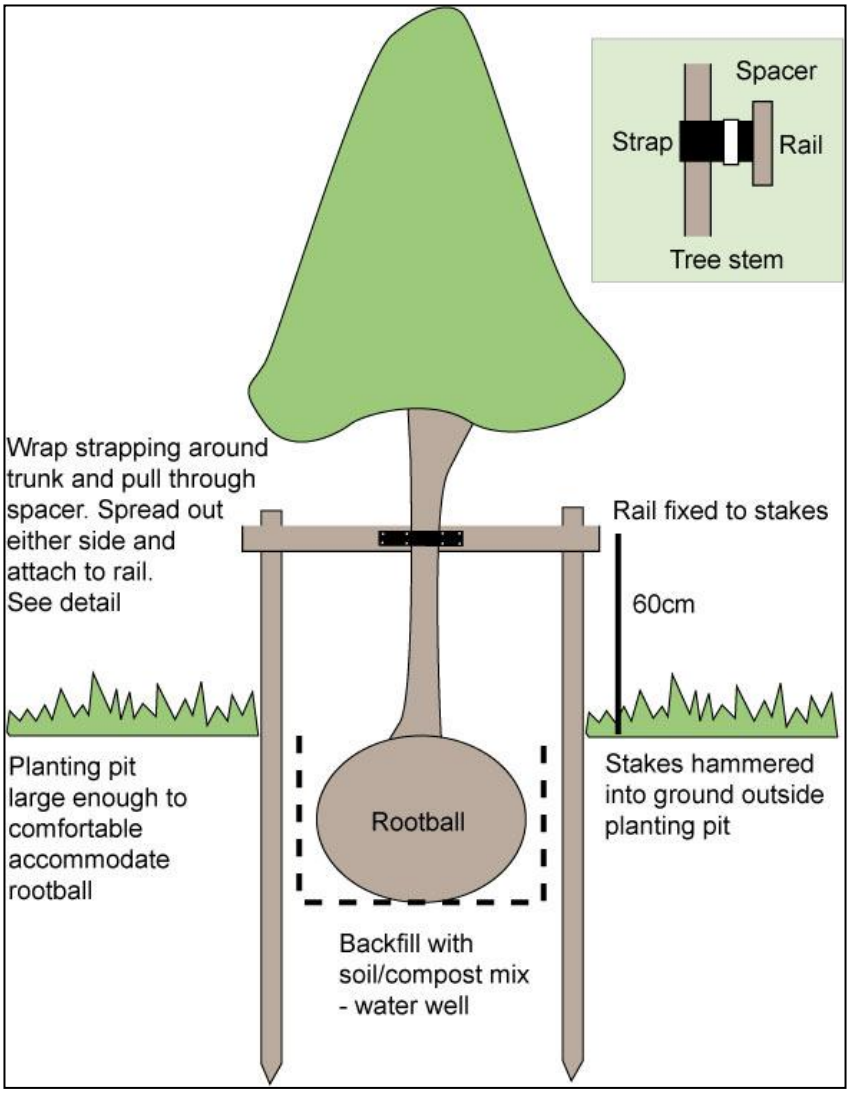
Our trees are grown by nurseries that specialise in growing large trees. During their development the trees regularly have their roots pruned, either by undercutting or physically moving them around the nursery. This means they develop a dense network of young roots close to the tree and enables trees to be supplied with a rootball smaller than one would need if the tree were just lifted from the ground with no prior preparation.

Weight

Very few of the trees we supply can be planted "by hand" and we use mechanical lifting tools wherever necessary. Weight is determined by the rootball size, soil type, moisture content and the species of tree.

Illustrative specification for the planting of tree stock – (Heavy Standard and Standard):

Dig a hole twice as wide as the size of the root system and just deep enough so that when the root-system rests on the bottom of the hole the levels of the surrounding ground and top of the root-system are the same.
NB. In wet, heavy or clay soils, it is desirable that the root-system is planted up to 15cms above the surrounding soil level and the excavated soil is mounded up to the newly created level to encourage rooting into an area less likely to suffer water-logging.



Remove the container from pot grown plants, but in the case of root-balled plants leave the hessian and wire packaging intact below the ground to maintain the integrity of the root-ball, and to give the plant a better start with less disturbance – the fabric and wire will rot away in due course. You should pull back any fabric and wire at the surface after planting to give the plant unobstructed access to surface water.

In the case of tree planting use stakes and tree-ties to give the new tree support until it becomes established. The stake should be driven into firm ground to the outside of the planting pit. Do not drive the stake into the root-system as this will damage the roots. Check and adjust tree-ties regularly to accommodate growth.
Back fill the hole with a mixture of one-part compost and two parts soil, making sure that the plant is firmly held in by the soil. Watering immediately after planting will remove air pockets; this will reduce the risk of disease, as well as giving the plant a drink.

The roots of your plant need air and water so check soil conditions regularly. During the first growing season ensure that the plant does not dry out. However, do not over water as this will also damage the plant. Do not over feed in the first year as this will result in too much canopy growth for the new roots to support.
Keep the area around the plant free from weeds by mulching with bark or compost to a depth of 5cms.

BS 5837 Surveys

Arboricultural Impact Assessments

Arboricultural Method Statements

Site Supervision

Visual Tree Assessments

QTRA Assessments

Expert Witness Reports

L.O.L.E.R Thorough Equipment Inspections

Mortgage Reports

TPO applications and advice