Arboricultural
Impact Assessment

43 Intake Road
Barnsley
S75 2HX

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SUMMARY

Seven individual trees and one hedge were recorded, in accordance with *BS5837:2012* four trees were recorded as retention category 'B', and three trees and one hedge were recorded as retention category 'C'.

The trees were generally found to be in good to fair condition, and no trees have been classed as retention category 'U' (unsuitable for retention).

One low quality tree has been recommended for removal to facilitate the proposed development.

Should development take place, any trees that are retained should be protected to *British Standard BS5837:2012 Trees in relation to design, demolition and construction* to ensure that they remain in a healthy condition during and post development. The *Tree Protection Plan* to the rear of this report highlights the recommended tree protection measures.

Any arboricultural work undertaken should be done so by a competent arborist in line with *British Standard BS3998:2010 Tree Work*.

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1. Introduction

1.1. Terms of reference

1.1.1. This report has been commissioned to provide independent, detailed advice from a qualified arboriculturist, to conform to *British Standard 5837: 2012 Trees in relation to design, demolition and construction* in the context of potential development.

1.1.2. For this purpose I have been supplied with topographical drawing that is the basis for which the *Tree Constraints Plan* has been prepared.

1.2. Scope of this report

1.2.1. The scope of this report is to identify arboricultural constraints by producing a detailed plan showing tree location, root protection areas and retention category of each tree.

1.2.2. In addition, this report provides an arboricultural impact assessment that evaluates the direct and indirect effects of the proposed development, and where necessary makes recommendations for mitigation measures.

1.3. Survey details

1.3.1. A ground level inspection was undertaken by Robert Godwin on 19th March 2014, recording trees both within and immediately adjacent to the site with a stem diameter above 75mm.

1.3.2. Measurements were made using a compass, diameter tape, clinometer and laser distometer. Dimensions are estimated where trees are inaccessible or located off-site.

1.4. Site description

1.4.1. The site is comprised of a detached private residential property located on Intake Lane, Barnsley. The property has a lawn front garden area and driveway along right hand side that leads to a detached garage and rear garden. The rear garden is covered by artificial grass. There are several semi-mature to early-mature trees along the front garden boundary.

2. Arboricultural Constraints

2.1. Tree condition

2.1.1 Seven individual trees and one hedge were recorded, in accordance with *BS5837:2012* four trees were recorded as retention category 'B', and three trees and one hedge were recorded as retention category 'C'.

2.1.2 The trees were generally found to be in good to fair condition, and no trees have been classed as retention category 'U' (unsuitable for retention). Some minor pruning works have been recommended for arboricultural reasons.

2.1.3 Please see *Appendix 1* for details on each individual tree, and *Appendix 2* for an explanation of retention category criteria. Tree locations can be seen on the *Tree Constraints Plan* at the rear of this report.

2.2 Root Protection Areas

2.2.1 During any development phase, in order to ensure that retained trees are properly protected, the tree rooting zones must be considered. For the purpose of development the rooting zone of the tree is known as the Root Protection Area or RPA. The RPA of each tree or group is marked on the *Tree Constraints Plan* and represents the theoretical tree rooting zone.

2.3 Tree protection status

2.3.1 Due to the large potential penalties for illegally carrying out work to protected trees, it is recommend that a check is carried out with the local planning authority prior to any works being undertaken. The check should establish whether the trees are covered by any statutory protection such as a Tree Preservation Order or Conservation Area.

2.3.2 **No work should be done to any trees until their protective status has been confirmed and work granted**.

3. Arboricultural Impact Assessment

3.1. Proposed development

3.1.1 The proposed development will consist of extending the existing building to the right and rear, and constructing a treatment room with car parking to the front of the existing property.

3.1.2 A proposed layout drawing has been supplied by the client, and is the basis for which this impact assessment has been prepared. Please see the *Tree Protection Plan* to the rear of this report for the proposed layout details.

3.2. Impact on existing trees

3.2.1 One low quality tree (**T7**) would require removal to facilitate the proposed development. The remaining trees would be unaffected by the development. They would be protected from construction activity by protective fencing barriers (see *Section 4.1*), put in place prior to any construction activity. These barriers would ensure that the trees remain in a healthy condition during and after development.

3.2.2 It is proposed to construct a driveway the front of the property within the RPA of **T5**. The entire RPA of tree **T5** cannot fully be protected by the protective barrier; however the majority of RPA should be afforded protection by the existing concrete driveway. It is recommended that the proposed driveway is constructed using a no-dig method, building up on existing levels, and employing techniques sympathetic to tree roots. The finished surface should be porous to will allow the diffusion of air, water and minerals to the RPAs below.

3.2.3 A percentage of RPA from **T6** lies within the foundation area of the proposed development. The total area of RPA for **T6** has been calculated at 96m^2. A section of this RPA would potentially need to be disturbed to accommodate the proposed building foundations; this area has been calculated at 20m^2, which equates to an area of approximately 21% of the total RPA of **T6**.

3.2.4 It is therefore recommended that, if possible, the proposed building is either repositioned further away from the RPA of **T6**, which would result in less RPA disturbance; or that the building foundations are constructed using a suitable piled foundation in order to reduce RPA disturbance.

3.2.5 The foundations of the proposed front boundary wall pass across the RPA of retained trees **T1** to **T4**, which is aligned with the existing dilapidated boundary wall. It is understood that the proposed wall would follow the lie of the existing wall. The foundations of the proposed wall must be devised sympathetically to leave the tree in a healthy sustainable condition. Techniques should be considered with specifically designed footings that would span the stem of the tree, and disturb minimal RPA.

3.2.6 The pruning and crown lifting of tree **T1** is recommended to prevent any conflicts with future usage; the recommended work is detailed at *Appendix 1*. This work has been devised to minimise any negative impacts the proposed development may have on the trees, whilst still maintaining all the positive aspects the trees bring to the area. The designated work has been devised sympathetically to leave the tree in a healthy sustainable condition.

3.2.7 No soil samples were taken during the site visit. It is recommended that soil assessment it undertaken by a competent person to determine whether the soil is shrinkable, and that foundation design is undertaken in line with detailed guidance given in National House Building Council (NHBC) publication *Building near trees, Chapter 4.2*.

4. Tree Protection Scheme

4.1. Protection of retained trees

4.1.1. The first operation will be the necessary arboricultural works as described in *Appendix 1* of this report. All tree works should be carried out in accordance with *BS 3998: 2010 Recommendations for tree work*, and after permission has been granted to do so by the local planning authority.

4.1.2. The erection of a protective barrier, in accordance with *BS 5837: 2012*, will be required prior to the start of construction activity. The barrier should be positioned as detailed on the *Tree Protection Plan* to create a Construction Exclusion Zone. Please see *Appendix 3* for barrier construction detail.

4.1.3. Once the fencing is erected, waterproof signs with the sentence '**Protected tree zone, no storage or operations within this area**' should be placed at 3m intervals to ensure that all construction personnel are aware of the restrictions that apply to the fenced-off area. Routes for pedestrian and site traffic will be located outside, and diverted away from the RPA of any retained tree.

4.1.4. The removal of the existing driveway and front boundary wall must be carried out in a cautious fashion avoiding, where possible, the use of heavy machinery. Any tree roots exposed within the RPA must be left as intact as careful digging will allow.

4.1.5. A suitably qualified person should be consulted regarding the design and feasibility of the proposed foundations within the RPA of **T6**; and also regarding the design and feasibility of the proposed boundary wall within the RPA of **T1** to **T4**.

4.1.6. For the proposed driveway it is recommended that a permeable surface is built upon existing ground levels, and that the finished surface is porous. It is also recommended that this area is constructed using a no-dig method of construction. The suggested method for this can be found at *Appendix 4*.

4.1.7. Where utilities need to be brought onto the site, these should ideally be routed away from the RPA of retained trees. Where this is not possible, methodologies on the installation of underground services without damage to tree roots should be considered. All service providers should be consulted prior to commencement of works with the aim of minimising the number of service runs on the site.

4.1.8. Any site compound, which typically includes the storage of materials, should be located away from trees and outside any RPA. This area is remote from the retained trees. Care should also be taken to prevent soil contamination with chemical spillages, including oils.

4.2. Post construction phase

4.2.1. When the development phase is complete and the site machinery has been removed, the local planning authority should be invited to inspect the site to give approval for the removal of the tree protection measures. When this approval has been given the protective barriers may be removed from site.

4.2.2. No heavy machinery should be brought into the vicinity of retained trees. During soft landscaping, herbicides should be appropriate for the purpose and should not be used in such a way as to damage any retained trees or vegetation.

Client: Mr Steve Rose
Project No: AIA.12176
Revision: 01

Date Issued: 16th April 2014
Status: FINAL

Signed on behalf of Godwin's Arboricultural:

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Appendix 1. Tree Schedule

Ref	Age / Common Name / Botanical Name	Height (m) / Crown Hgt (m) / FSB (D)	Stems at 1.5m / Stem (cmø)	Branch Spread N / W / E / S	Observations	Vitality / Life Exp	Preliminary Recommendations	RPA Radius (m) / RPA Area (m^2)	Retention Category
T 1	Early-mature Common Lime *Tilia x europaea*	15.0 3.5 2.0 W	1 56	8.0 6.0 7.0 4.0	Asymmetrical crown. Occasional pruning wounds. Crown - deadwood ≤100mm, and epicormic growth at base.	Good 40+	Remove deadwood and crown lift to provide 2m clearance from the proposed building. Remove epicormic growth.	6.7 141.9	B
T 2	Semi-mature Sycamore *Acer pseudoplatanus*	15.0 4.0 4.5 W	1 34	6.0 2.5 3.0 4.5	Asymmetrical crown. Occasional pruning wounds. Crown - deadwood ≤100mm, and epicormic growth at base.	Good 40+	Remove individual dead, defective or diseased branch(es). Remove epicormic growth.	4.1 52.3	B
T 3	Early-mature Sycamore *Acer pseudoplatanus*	14.0 5.0 5.0 S	1 40	2.5 4.0 2.0 6.0	Asymmetrical crown. Multiple pruning wounds.	Fair 20-40	No action required.	4.8 72.4	C
T 4	Early-mature Sycamore *Acer pseudoplatanus*	14.5 6.0 6.0 S	1 40	5.0 2.5 5.5 6.0	Asymmetrical crown. Occasional pruning wounds.	Good 40+	No action required.	4.8 72.4	B
T 5	Early-mature Sycamore *Acer pseudoplatanus*	13.5 5.0 4.0 S	1 39	3.0 5.0 5.0 4.5	Asymmetrical crown. Multiple pruning wounds.	Good 40+	No action required.	4.7 68.8	B
T 6	Early-mature Sycamore *Acer pseudoplatanus*	12.0 5.5 6.0 N	1 46	6.0 6.0 5.0 4.5	Asymmetrical crown. Occasional pruning wounds. Located on site boundary.	Good 40+	No action required.	5.5 95.7	C
T 7	Early-mature Apple *Malus sp.*	4.5 2.0 2.0 W	1 31	4.0 3.5 2.0 2.0	Unbalanced crown. Acceptable condition a present.	Fair 10-20	Remove to facilitate the proposed development.	3.7 43.5	C
H 8	Semi-mature Cypress *Cupressus sp.*	3.0 0.0 0.0 N	1 9	See Plan	Linear boundary hedge. Limited inspection - situated on adjacent land.	Good 40+	No action required.	1.1 3.7	C

Appendix 2. Explanatory Notes

A2.1. Tree statistics and measurements

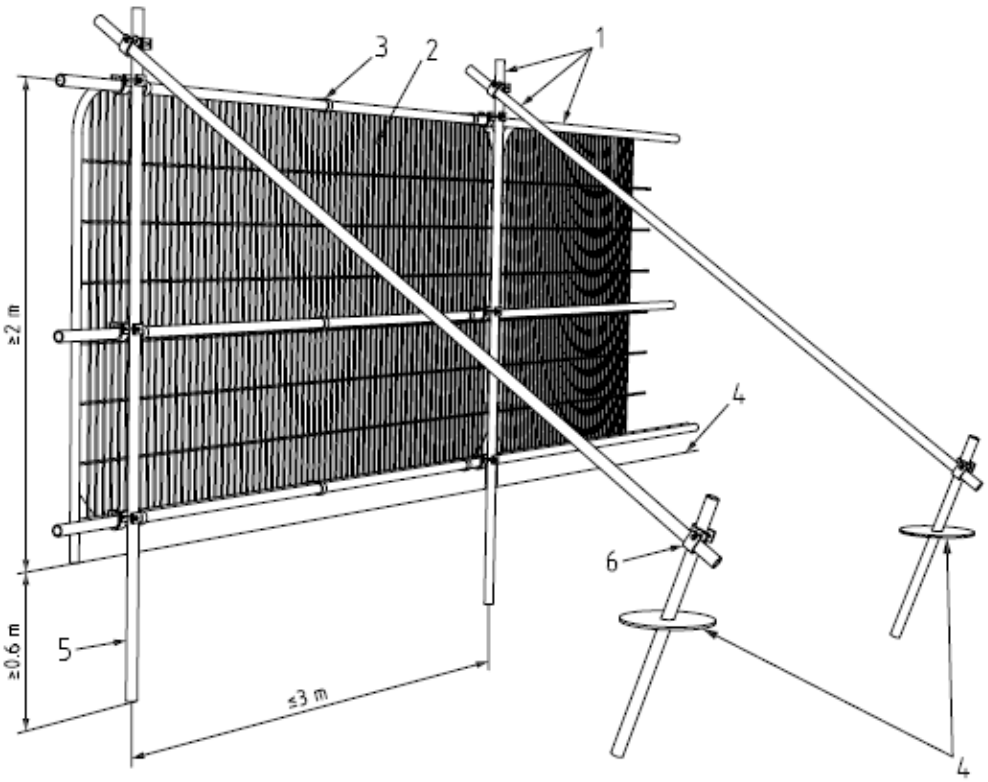
Survey record	Description
Height	Height of the tree in meters.
Canopy Height	Height of average canopy clearance in meters.
Stem Dia	Stem diameter recorded in centimetres at 1.5 meters above ground. Where the tree is multiple stemmed, each stem has been recorded.
Branch Spread	Measurement of canopy spread in meters – North, East, South and West.
Observations	Where limited inspection noted, dimensions are estimated.
Vitality	Condition of the tree, recorded as Good, Fair, Poor or Dead.
Life Exp	Life Expectancy - classed as; less than 10 years, 10 plus years, 20 plus years, or more than 40 years.
RPA Radius	Radius of the Root Protection Area, when plotted as a circle centred on the base of the stem.

A2.2. Tree retention categories

Retention category and definition	Criteria
U (marked in red on the plan) = trees for removal.	Trees 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.
A (marked green on the plan) = Trees of high quality	Trees of high quality with an estimated remaining life expectancy of at least 40 years.
B (marked in blue on the plan) = Trees of moderate quality	Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.
C (marked in grey on the plan) = Trees of low quality	Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm.

Appendix 3. Protective Barrier Construction

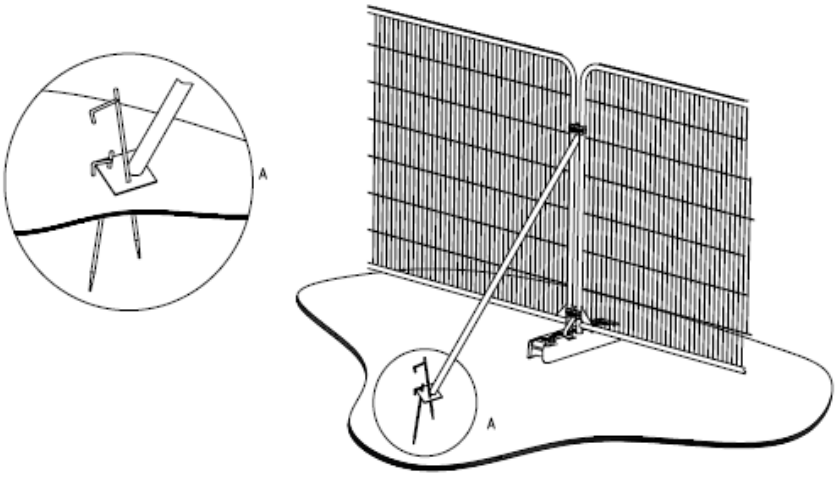
A3.1 *British Standard BS 5837: 2012* recommends a vertical and horizontal, scaffold framework, well braced to resist impacts, with vertical tubes at no more than 3m intervals. These should be driven into the ground. Weld mesh panels should be affixed to this framework with scaffold clamps (see below).



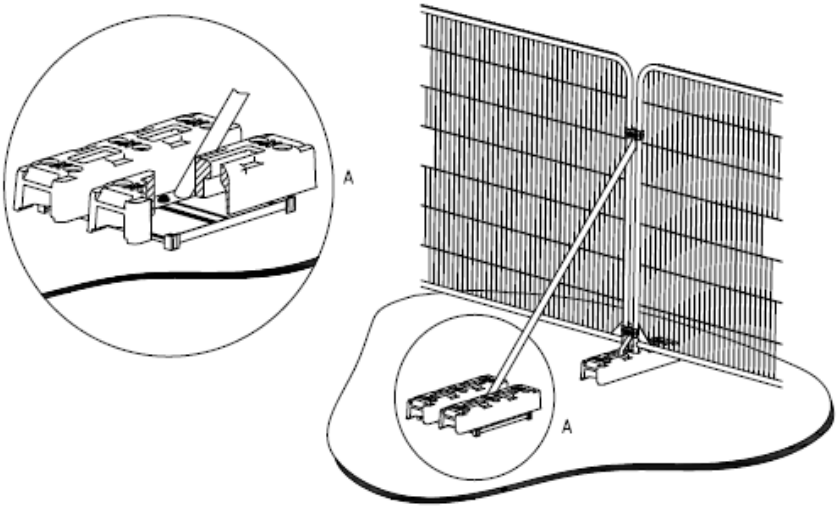
Key

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

Default protective fencing barrier to BS 5837: 2012.



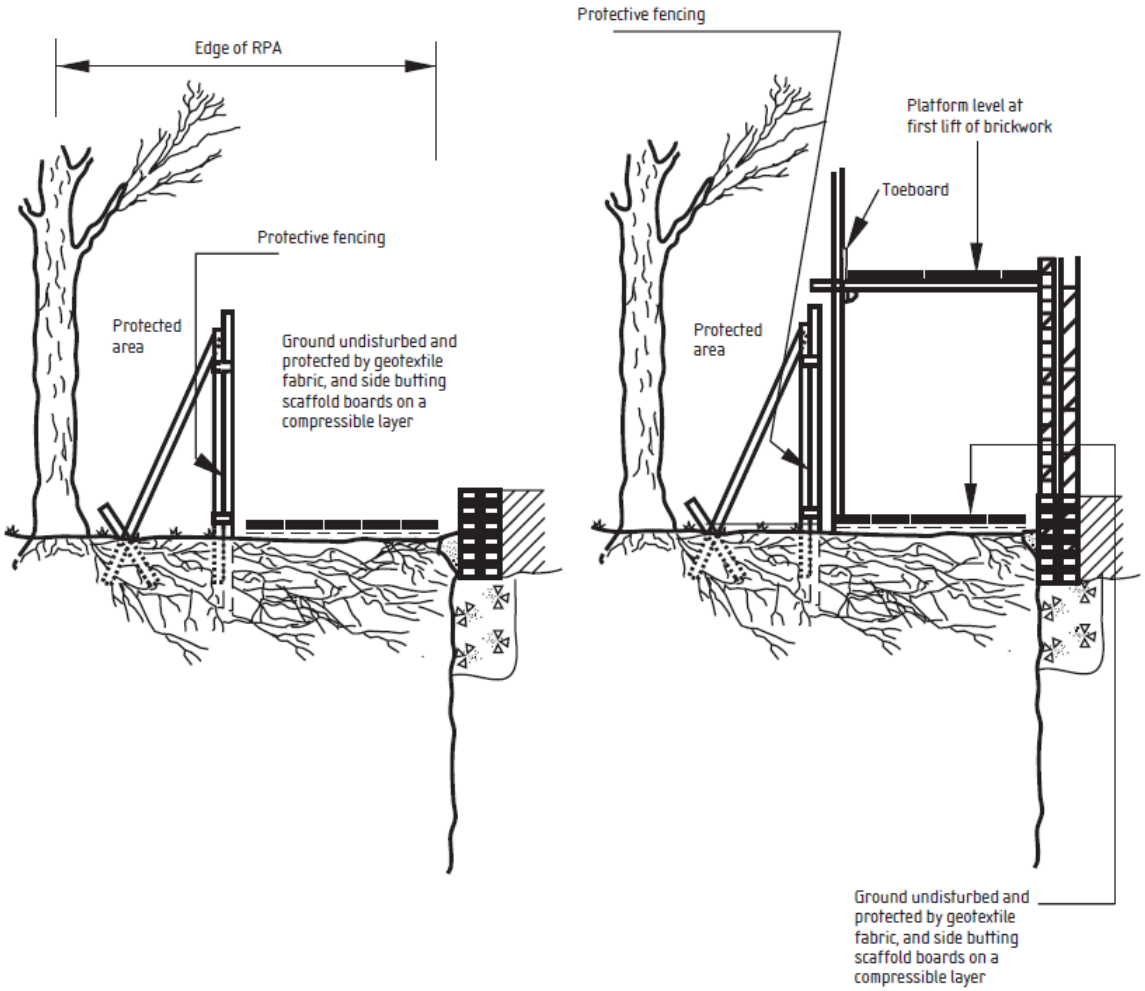
a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

Examples of above-ground stabilizing systems

A3.2 Ground protection recommended for RPAs outside of the protective fencing barrier.



Ground protection and scaffold construction within an RPA.

A3.3 A protective plywood build box should be constructed by creating a ridged, enclosed box with sides of 1200mm x 1200mm, at a height of 2400mm. The plywood should be 25mm thick and fixed to upright timber beams of 50mm x 50mm. The box should be constructed around the tree stem, but not attached to it, avoiding any stem damage. The box should be positioned to prevent movement, ideally fixed to the ground or an adjacent structure.

Appendix 4. No - Dig Method Statement

A4.1 This method statement outlines the technique for constructing a no-dig surface within the RPA of a retained tree. The design of such a construction needs to be sensitive to the requirements of tree roots, substantial enough to withstand the expected levels of traffic and practicable in terms of ease of fabrication.

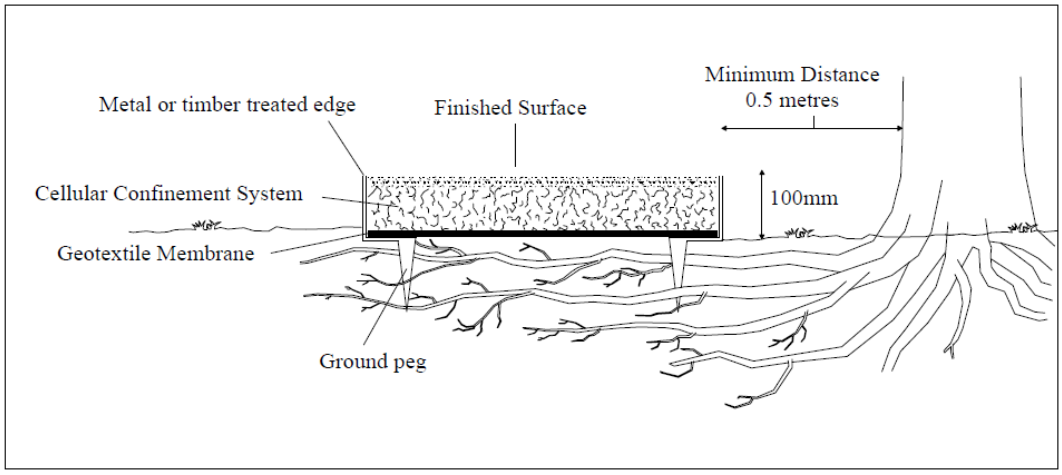
A4.2 We are not qualified to recommend any particular construction method in terms of durability or structural integrity and any proposed construction should be approved by a qualified structural engineer prior to implementation, however, with regards to trees, we make to following comments:

- Severance of roots and soil compaction should be avoided. However, if it is necessary to sever roots or if they are severed accidentally an arboriculturist must be informed so that an assessment and recommendations can be made accordingly.

- Air and water must be able to diffuse into the soil beneath the engineered surface. Toxic substances which could leach into the ground must be avoided, as should substances which affect the pH value of the soil, for example limestone.

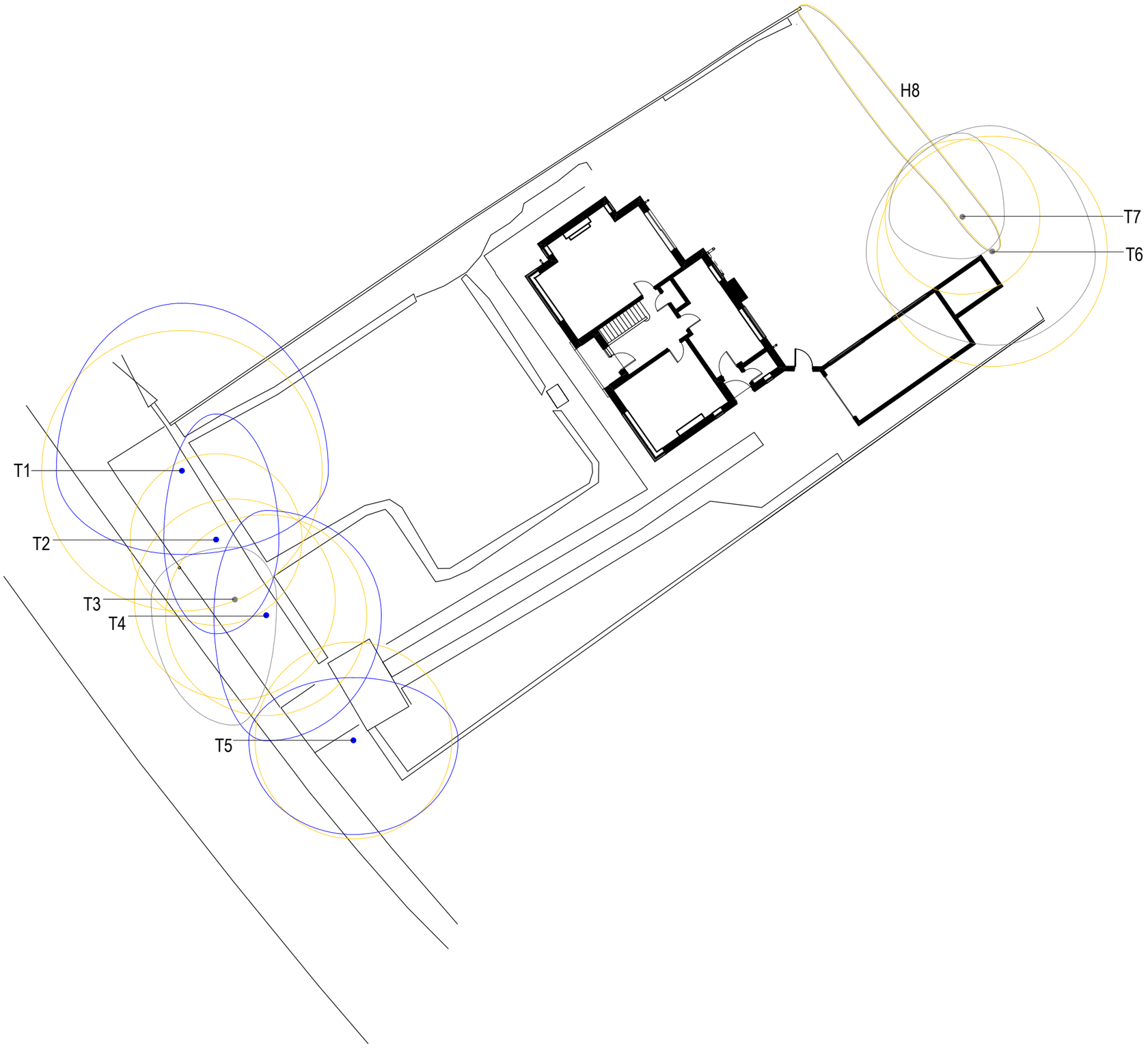
A4.3 The no-dig method involves construction of a surface with no excavation, soil stripping or site grading. All construction takes place above ground level.

A4.4 Existing ground vegetation may be killed using a suitable herbicide. Care must be taken to select a herbicide which does not damage the tree roots within the treated area. Once the vegetation has died, the dead organic matter should be removed. This helps prevent the future build up of anaerobic conditions or settlement due to decomposition.



Example of a no-dig surface.

Drawing 1. Tree Constraints Plan



KEY

N

T = Individual tree
G = Group of trees
H = Hedge

RETENTION CATEGORIES:
British Standard BS5837:2012
Please refer to Appendix 3 of the report for definition of these categories.

- CATEGORY A: Tree of HIGH quality
- CATEGORY B: Tree of MODERATE quality
- CATEGORY C: Tree of LOW quality
- CATEGORY U: Tree UNSUITABLE for retention
- Root Protection Area (RPA)

Project:

43 Intake Lane
Barnsley
S75 2HX

Title:

Tree Constraints Plan

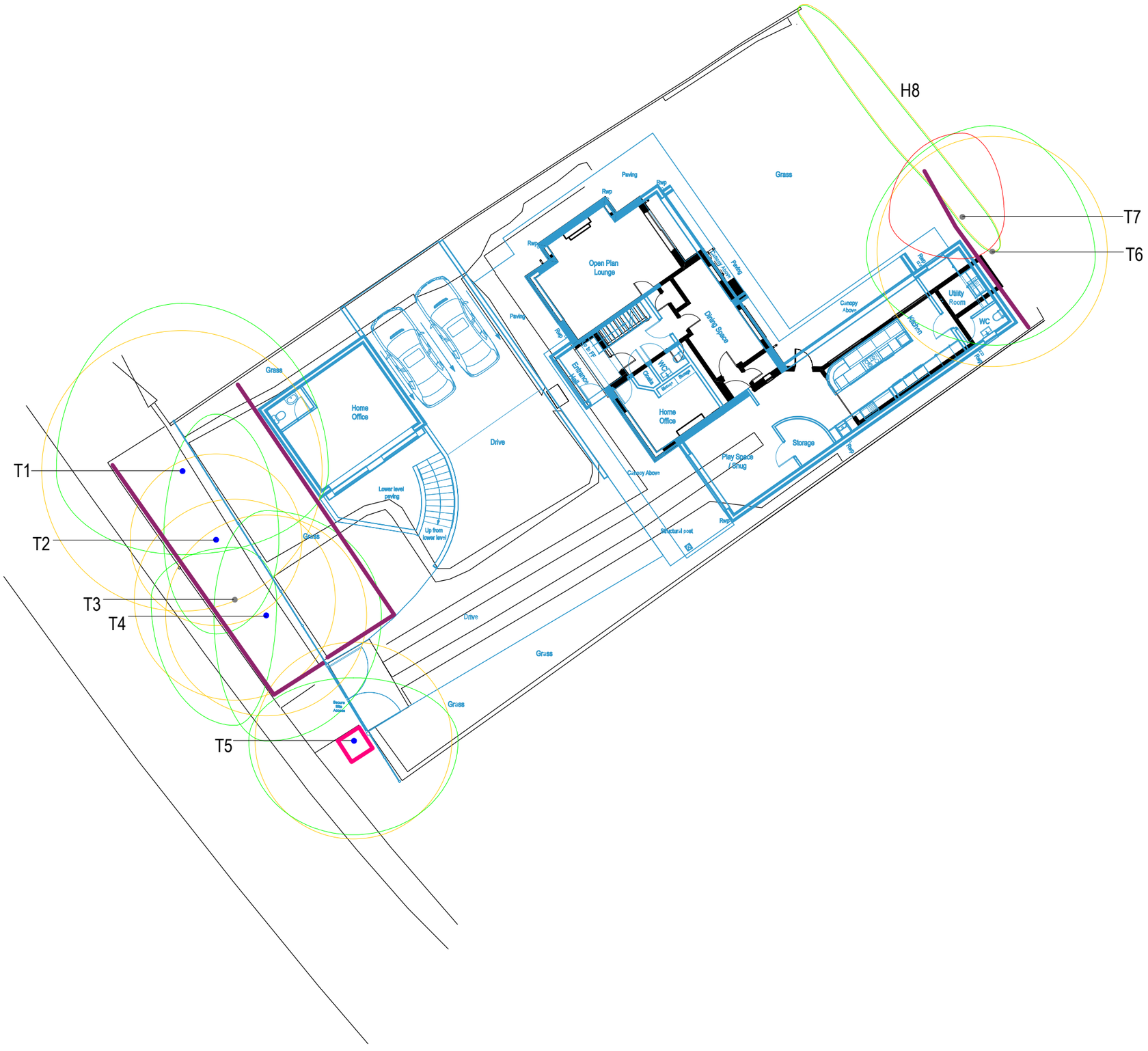
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TCP.12176.01

Scale:	1:200 @ A3
Drawn by:	RG
Approved by:	KG

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Drawing 2. Tree Protection Plan



KEY

N

T = Individual tree
G = Group of trees
H = Hedge

Proposed development layout

Tree to be RETAINED
Stem colour is retention category

Root Protection Area (RPA)

Tree proposed for REMOVAL
Stem colour is retention category

Protective barrier position

Stem protective barrier position

Project:

43 Intake Lane
Barnsley
S75 2HX

Title:

Tree Protection Plan

Drawing No:

TPP.12176.01

Scale:	1:200 @ A3
Drawn by:	RG
Approved by:	KG

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