



# Rotherhithe Primary School

## Arboricultural Impact Assessment and Method Statement

### Report for Fabrik

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# Executive Summary

The Ecology Consultancy was commissioned by Fabrik to undertake a ground level survey of trees that could be affected by future works associated with the development of land at Rotherhithe Primary School. A qualitative assessment of each tree was carried out according to British Standard BS 5837:2012, Trees in Relation to Design, Demolition and Construction—Recommendations, focusing on arboricultural values (categories A1, B1, C1)<sup>1</sup> and landscape values (categories A2, B2, C3)<sup>2</sup>.

The main findings of the survey are as follows:

- There were 47 individual trees and one group<sup>3</sup> in and adjacent to the proposed development site each described in Appendix 1 of this report.
- Of the trees surveyed, one individual was attributed Category A status, 25 individuals were attributed Category B status and 21 individuals, and one group were attributed Category C status.
- A tree constraints check was carried out with the London Borough of Southwark and it was confirmed that no trees located adjacent to or in the proposed development site were the subject to Tree Preservation Order or Conservation Area restrictions.
- Root protection areas were calculated in accordance with BS 5837:2012 for each of the surveyed trees and ranged from 2.2m<sup>2</sup> to 706.9m<sup>2</sup> for T34 and T8 respectively.
- Of the trees surveyed, a total of 23 individuals and one group will require removal to facilitate development.
- Any work to trees should consider the potential presence of protected species, including breeding birds and roosting bats. The Preliminary Ecological Appraisal (The Ecology Consultancy, 2018) and any subsequent ecological reports should be consulted prior to the commencement of works.

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<sup>1</sup> Categorisation grading in accordance with BS 5837 2012. Trees suitable for retention: - Category A. Trees of high quality with an estimated remaining life expectancy of at least 40 years.

Category B. Trees of moderate quality with an estimated life expectancy of at least 20 years.

Category C. Trees of low quality with an estimated remaining life expectancy of at least 10 years or young trees with a stem diameter below 150mm.

Category U. Trees of very low quality normally with a life expectancy of less than 10 years or requiring immediate removal due to health and safety concerns.

<sup>2</sup> British Standard BS 5837 2012 recommends that these categories may be further broken down into sub categories A1 A2 A3 pertaining to Arboricultural, Landscape or Cultural values respectively.

<sup>3</sup> The term “group” is intended to identify trees that form cohesive arboricultural features either aerodynamically (e.g. trees that provide companion shelter), visually (e.g. avenues or screens) or culturally, including for biodiversity (e.g. parkland or wood pasture).

# 1 Introduction

## BACKGROUND

- 1.1 The Ecology Consultancy was commissioned on 10 April 2018 by Fabrik to carry out an arboricultural survey of trees at Rotherhithe Primary School and provide a report to inform future design proposals and tree protection. The survey is required to assess the condition of trees that could be affected by future development of the site and provide sufficient information for the development of site layouts and construction exclusion zones to enable the protection of existing trees.

## SCOPE OF REPORT

- 1.2 This report has been produced in accordance with British Standard BS 5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations (hereafter referred to as BS 5837:2012). It provides information on the current condition of trees at the site, their suitability for retention, and the above and below ground constraints to development.
- 1.3 Any clear flaws or hazards have been identified in the Schedule of Trees provided in Appendix 1. Preliminary recommendations for the management of retained trees are provided, but a full hazard risk assessment comprising a more comprehensive analysis of tree condition and potential risk to target areas is beyond the scope of this report. Any recommendations relating to the management of potentially hazardous trees should be carried out as soon as possible<sup>4</sup>.

## SITE CONTEXT AND STATUS

- 1.4 The site is situated in the London Borough of Southwark, directly adjacent to the south-eastern boundary of Southwark Park and 200 metres (m) south-west of Surrey Quays Rail Station. The site comprises the grounds of Rotherhithe Primary School and measures 1.3 hectares (ha), its north-western boundary is formed by Hawkstone Road, with Rotherhithe New Road to the South, and residential tower blocks to the west and

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<sup>4</sup> All tree works should be undertaken by a suitably qualified Arboricultural Contractor. No arboricultural works to trees subject to planning constraints shall be carried out without the written consent of the relevant Local Planning Authority (LPA). Any proposed tree works should be undertaken in accordance with British Standard BS 3998:2010 Treework - Recommendations. Works to trees that are the subject of a Tree Preservation Order or within a Conservation Area which are deemed to be dangerous under Regulation 14 of the Town and Country Planning (England) (Regulations) 2012 may under certain circumstances be undertaken without needing to seek the prior written consent of the LPA.

east. The Ordnance Survey National Grid reference for the centre of the site is TQ 3521 78780.

### **DESCRIPTION OF THE PROPOSALS**

- 1.5 The proposal comprises the demolition of the existing school building, followed by the construction of a new school complex to the north of the site. A new outdoor playground will be constructed on the site of the existing carpark which will include a MUGA, adventure play area and hard and soft landscaping. The southern section of the site will be allocated for residential development.

## 2 Methodology

### TREE SURVEY

- 2.1 The tree survey was conducted in accordance with BS 5837:2012 the results of which are presented in the Schedule of Trees (Appendix 1) and include a sequential numbering of each tree, species listed by common name; tree dimensions including overall height, canopy spreads measured against the cardinal compass points; crown height; age class; physiological condition; structural condition, life expectancy; root protection areas and preliminary management advice.
- 2.2 Each tree has been assigned a category grade in accordance with BS 5837:2012 categories A, B, C and U ranging from high to low quality. Definitions of tree quality are provided in Table 2 Appendix 1.
- 2.3 For the purposes of this report, arboricultural as well as landscape sub-categories have been used in the Schedule of Trees. BS 5837:2012 points out that each sub-category should be given equal weighting when grading trees against these criteria.
- 2.4 A tree constraints plan is presented in Appendix 2 showing the recommended root protection areas (RPA) for all surveyed trees, and highlighting each grading category using the colour key system as described in BS 5837:2012.
- 2.5 The site was visited on 26 April 2018, weather conditions were dry and sunny. All trees likely to be affected by works inside the red line boundary of the site were visually assessed using the Visual Tree Assessment Method (VTA) (Mattheck and Beloer, 1994).
- 2.6 Stem diameters were measured using diameter tape. Canopy spreads were estimated by pacing and where possible, verified using a laser range finder. Height measurements were taken using a laser clinometer.
- 2.7 No soil samples or soil analysis were undertaken.

### DESK STUDY

- 2.8 A tree constraints check to establish the presence of Tree Preservation Order or Conservation Area restrictions on land in and adjacent to the site was undertaken using the London Borough of Southwark online mapping system.

### SUPPORTING DOCUMENTS

- 2.9 Drawing Reference: *1801078 - Rotherhithe Primary School Topographical Final* (CD Surveys Ltd, 2018) and *d2574\_working 180917* (Fabrik, 2018) were provided for the

purposes of compiling this report. They include the layout of existing site features, along with a footprint overlay of the proposed development.

### **PERSONNEL**

- 2.10 The tree survey was carried out by James Potts BSC (Hons), MArborA, who is an Arboriculturalist at The Ecology Consultancy with over 5 years' experience within the arboricultural sector working as both a contractor and private consultant.

### **LIMITATIONS**

- 2.11 Only preliminary recommendations for tree management are provided. A full hazard risk assessment comprising a more comprehensive analysis of the condition and potential risk to target areas is beyond the scope of this report.
- 2.12 The trees were inspected at ground level and no decay detection equipment was used. There is therefore a risk that any internal decay that may be present has gone undetected.
- 2.13 Two trees were situated in areas where access to the main stem was not possible. As such, assumptions have been made relating to dimensions of the main stem, and the overall condition is based upon the visible parts of the tree only.



## 3 Results

### TREE SURVEY

- 3.1 The results of the tree survey are provided in the Schedule of Trees in Appendix 1. A Tree Constraints Plan illustrating the BS 5837:2012 categories of each tree, their crown spread and RPA is presented in Appendix 2 and photographs of the site are provided in Appendix 4.
- 3.2 The survey recorded 47 individual trees and one group which could potentially be affected by future development. These comprised: Bird cherry *Prunus padus*, blue gum *Eucalyptus globulus*, box elder *Acer negundo*, common ash *Fraxinus excelsior*, common hawthorn *Crataegus monogyna*, common hazel *Corylus avellana*, common lime *Tilia x europaea*, common whitebeam *Sorbus aria*, European hornbeam *Carpinus betulus*, Himalayan tree cotoneaster *Cotoneaster frigidus*, Lawson cypress *Chamaecyparis lawsoniana*, London plane *Platanus x acerifolia*, Norway maple *Acer platanoides*, purple Norway maple *Acer platanoides* 'Crimson King', purple sycamore 'Purpureum', silver maple *Acer saccharinum*, sycamore *Acer pseudoplatanus*, tree of heaven *Ailanthus altissima* and wild cherry *Prunus avium*.
- 3.3 The numbers of each species are provided in Table 1 below.

**Table 1: Species key and site frequency for trees potentially affected by development**

Species	Frequency	
	Tree	Group
Bird cherry	1	-
Blue gum	1	-
Box elder	2	-
Common ash	3	-
Common hawthorn	3	-
Common hazel	1	-
Common lime	8	-
Common whitebeam	1	-

**Table 1: Species key and site frequency for trees potentially affected by development**

Species	Frequency	
	Tree	Group
European hornbeam	1	-
Himalayan tree cotoneaster	1	-
Lawson cypress	3	1
London plane	2	-
Norway maple	5	-
Purple Norway maple	1	-
Purple sycamore	1	-
Silver maple	4	-
Sycamore	6	-
Tree of heaven	1	-
Wild cherry	2	-

3.4 Physiological and structural condition<sup>5</sup> of the majority of surveyed trees was consistent with Category B status (25 individuals), with one individual assigned Category A status and 21 individuals and one group assigned Category C status.

3.5 Of the trees surveyed, 13 individuals were classified to be at a mature life stage<sup>6</sup>, one individual was classified as young, five individuals and one group were classified as semi mature and 28 individuals were classified as early mature. No trees were found to be in the over mature classification.

<sup>5</sup> Physiological and structural condition are terms used to differentiate between a trees physiological condition i.e. annual growth, vigour, presence of disease etc. as opposed to structural condition relating to branch formation, mechanical strength and integrity.

<sup>6</sup> Young. Establishing; usually with good vigour, but as of limited significance within the landscape.  
 Semi-Mature. Established; normally vigorous and increasing in height. Of increasing landscape significance.  
 Early Mature. Fully established trees around the middle half of their life span retaining good vigour. Not yet achieved full height and retaining apical dominance.  
 Mature. Fully established trees retaining moderate vigour. Apical dominance lost but crown still spreading.  
 Over Mature. Fully mature trees in the last quarter of their usual life expectancy; vigour declining.

3.6 A summary of the number of trees surveyed corresponding to BS 5837:2012 tree quality assessment definitions is provided below in Table 2 below.

**Table 2: Grade Classifications**

BS 5837:2012 Grades A to U	Trees attributed to each grade	Frequency	
		T	G
A	T8	1	-
B	T2, T4, T5, T7, T9, T11, T13, T14, T16, T20, T22, T23, T27, T28, T30, T35, T36, T37, T38, T39, T40, T41, T42, T45, T47	25	-
C	T1, T3, T6, T10, G12, T15, T17, T18, T19, T21, T24, T25, T26, T29, T31, T32, T33, T34, T43, T44, T46, T48	21	1

3.7 All Category A and B trees as described in Table 2 should be given priority consideration for retention during any future development which should take full account of above and below ground constraints, as shown on the Tree Constraints Plan (Appendix 2).

3.8 A summary of the condition and value of the most noteworthy trees is provided below, based on information presented in Appendix 1.

- Norway maple T2, was situated near to the south-west corner of the site, 14m north of the main carpark entrance. The tree was mature, was 11.5m in height, had a single stem and a maximum canopy radius extending 4m to the north and east. The tree appeared to be in fair structural and physiological condition requiring no immediate remedial works.
- Sycamore T7, was situated adjacent to the sites southern boundary with Rotherhithe New Road, 64m east of T2. The tree was mature, was 14m in height, had a single stem and a maximum canopy radius extending 5m to the north and west. The tree appeared to be in fair structural and physiological condition requiring no immediate remedial works.
- London plane T8, was situated off site, adjacent to the southern boundary with Rotherhithe New Road, 4.5m south of T7. The tree was mature, was 17m in height, had a single stem and a canopy radius extending 7.5m in all directions. The tree appeared to be in good structural and physiological condition requiring no immediate remedial works.

- Silver maple T22, was situated adjacent to the sites north-west corner, 10m south-east of Hawkstone Road. The tree was mature pollard, was 15m in height, had a single stem and a maximum canopy radius extending 2.5m to the south, east and west. The tree appeared to be in fair structural and physiological condition requiring no immediate remedial works.
- Silver maple T23 was situated 4m north of T22 and 8m south-east of Hawkstone Road. The tree was a mature pollard, was 15m in height, had a single stem and a maximum canopy radius extending 5m to the west. The tree appeared to be in fair structural and physiological condition requiring no immediate remedial works.
- Sycamore T39, was situated adjacent to the eastern boundary of the site, 95m north of Rotherhithe New Road and 85m east of Hawkstone Road. The tree was mature, was 14m in height, had a single stem and a canopy radius extending 5m in all directions. The tree appeared to be in fair structural and physiological condition requiring no immediate remedial works.
- Norway maple T40, was situated adjacent to the eastern boundary of the site, 7m south of T39. The tree was mature, was 15m in height, had a single stem and a canopy radius extending 4m in all directions. The tree appeared to be in fair structural and physiological condition requiring no immediate remedial works.
- Common lime T45, was situated near the south-east corner of the site, 40m north of Rotherhithe New Road. The tree was a mature pollard, was 16m in height, had a single stem and a maximum canopy radius extending 5m to the north, east and south. The tree appeared to be in fair structural and good physiological condition requiring no immediate remedial works.
- Common lime T47, was situated 9m east of T45. The tree was mature, was 16m in height, had a single stem and a maximum canopy radius extending 5m to the north, east and south. The tree appeared to be in fair structural and good physiological condition requiring no immediate remedial works.

## DESK STUDY

- 3.9 It was confirmed that no trees situated in or adjacent to the site were subject to Tree Preservation Order or Conservation Area restrictions.

## ARBORICULTURAL IMPACT ASSESSMENT

- 3.10 Based upon Drawing Reference: d2574\_working 180917 (Fabrik, 2018) received from the client on the 18 September 2018, the impact of the proposal on the existing trees

has been assessed and all trees that will potentially be affected by the development are listed below in Table 3. Tree numbers in the table correspond to the Schedule of Trees in Appendix 1 and Tree Constraints Plan described in Appendix 2.

**Table 3: Summary of trees possibly affected by the development**

Impact	Reason	BS Cat B	BS Cat C
<b>Trees to be removed</b>	Located within development footprint.	T13, T22, T23, T27, T28, T30, T36, T37, T40	T1, G12, T18, T21, T24, T25, T26, T29, T31, T32, T33, T34, T43, T44, T46
<b>Trees which could sustain damage to RPA</b>	Installation of hardstanding.	T14, T20, T38, T39, T45, T47	T17, T19
	Installation of foundations	T20, T38, T45	-
	Soil compaction through construction traffic access	T14, T16, T20, T35, T38, T39, T45, T47	T15, T17, T19
<b>Trees which could sustain damage to stem or canopy</b>	Impact by construction traffic.	T14, T16, T20, T35, T38, T39, T42, T45, T47	T15, T17, T19
<b>Trees to be pruned</b>	Access facilitation	T20, T38, T45	-

### Tree removal and pruning

- 3.11 Based on the design proposal, a total of 23 individual trees and one group will require removal to facilitate development works.
- 3.12 Of the trees to be removed, nine were attributed Category B status and 14 individuals and one group were attributed Category C status.
- 3.13 The proposed building line will encroach into the southern canopy extents of T38 and the northern canopy extents of T45, both of which will require minor pruning of lateral branches in order to facilitate access.
- 3.14 The proposed new boundary will to be installed around the stem of T20 which will require minor crown lifting of its northern canopy extents in order to facilitate access.

Trees which could potentially sustain damage to stem, canopy or RPA.

- 3.15 Development proposals have the potential to indirectly impact the stem, canopy or RPAs of 12 trees scheduled for retention as displayed in Table 3. In order to ensure that these features are successfully retained during the proposed works, the drafting of specialist tree protection measures as part of an Arboricultural Method Statement and Tree Protection Plan have been provided in Section 5 and Appendix 4 of this report.
- 3.16 Due to the mitigation of flood risk, it has been proposed that the levels around the RPA of T35 be raised by 560mm. In order to protect the root system of T35 from soil compaction and reduced permeability, it is proposed that the build-up around the tree comprises a raised timber decking within the extents of its RPA. The decking will extend from the outer edge of the trees RPA, up to the stem of the tree and will be supported by a no dig system of pillars to minimise the footprint of the structure and protect the soil from overloading. The decking will require careful installation under arboricultural supervision and should be designed in such a way as to allow for the annual, incremental growth of the tree stem.
- 3.17 T42 is situated inside a central courtyard of the existing building which is proposed to be demolished. Demolition works around T42 have the potential to cause significant structural damage to the tree. All works should be undertaken under direct arboricultural supervision and in full compliance with the Arboricultural Method Statement.

Incursions into RPA of trees effected by the development proposal.

- 3.18 The proposed development will encroach into the RPAs of nine trees to be retained. As displayed in Table 4 below.

**Table 4:** Proposed incursions in RPAs of trees to be retained.

Tree ID	Stem Diameter	Total RPA (m <sup>2</sup> )	Area of incursion (m <sup>2</sup> )	Area of Incursion (%)
T14	460	95.7	27.6	28.8
T17	320	46.3	1.1	2.4
T19	285	36.7	3.1	8.4
T20	360	58.6	30.8	52.6
T38	400	72.4	28.6	39.5

**Table 4:** Proposed incursions in RPAs of trees to be retained.

Tree ID	Stem Diameter	Total RPA (m <sup>2</sup> )	Area of incursion (m <sup>2</sup> )	Area of Incursion (%)
T39	500	113.1	56.8	50.2
T42	650	191.1	79.4	41.5
T45	545	134.4	43.5	32.4
T47	545	134.4	11.3	8.4

- 3.19 The incursion by the proposed new hardstanding inside the RPA of T14 was calculated to be 28.8% of the total RPA. The existing surface comprises paving covering the majority of the RPA of the tree. While it is likely that ground conditions beneath the existing paving are unlikely to change as a result of the new surface, any excavations inside the RPA of T14 have the potential to cause significant damage to the structural and physiological condition of the tree.
- 3.20 The level of incursions by the proposed resurfacing of artificial grass with block paving inside the RPAs of trees T17 and T19 was calculated to be 2.4% and 8.4% respectively. These RPA incursions are unlikely impact the health of the trees and as such, specialist root protection measures for the RPAs of these trees will not be required.
- 3.21 The proposals include a build-up of block paving over 52.5% of the RPA of T20 with a new boundary wall 2.4m in height and approximately 215mm wide, extending around the edge of the paving, adjacent to the north and west sides of the trees main stem. It is proposed that the boundary wall is constructed on a mini pile foundation with supporting beams extending between piles in order avoid existing tree roots, minimise the footprint of the foundation and maintain the soil structure beneath. During the installation of the block paving, it has been proposed that in order to protect the RPA of T20 from overloading, the existing topsoil will be broken up using an air spade and then mixed with Amsterdam tree sand to increase its resistance to soil compaction. Above this will be a layer of pure Amsterdam sand, onto which the proposed block paving will be installed.
- 3.22 The proposed new building foundations will incur into approximately 8% of the total RPA of T38. Directly adjacent to the proposed building will be a new raised walkway approximately 360mm in height which will incur into 31.5% of the RPA of T38. It has been proposed that the build-up for the walkway comprises layered Cellweb TRP,

topped with a permeable hardstanding in order to protect the existing soil strata from overloading while maintaining gaseous and aqueous exchange capacity. If installed correctly, under direct arboricultural supervision and in accordance with the Arboricultural Method Statement, this build-up is unlikely to significantly impact the structural or physiological condition of the tree.

3.23 The proposed hardstanding, directly adjacent to the new building will incur into 50.2% of the RPA of T39. Due to flood risk, the levels of the proposed hardstanding will be built up to 400mm above the existing ground level. It has been proposed that the build-up for the proposed walkway comprises layered Cellweb TRP, topped with a permeable hardstanding in order to protect the existing soil strata from overloading while maintaining gaseous and aqueous exchange capacity. If installed correctly under direct arboricultural supervision and in accordance with the Arboricultural Method Statement, this level change and new surface is unlikely to significantly impact the structural or physiological condition of the tree.

3.24 The proposed hard landscaping and raised planters directly to the north of T42 will incur into 41.5% of the trees total RPA. A new boundary wall will also be constructed directly to the south of the stem of the tree. It is proposed that the boundary wall is constructed on a mini pile foundation with supporting beams extending between piles in order avoid existing tree roots, minimise the footprint of the foundation and maintain the soil structure beneath. It is proposed that the new hardstanding inside the RPA of the tree will be constructed using a permeable, no dig cellular confinement system to protect the existing soil from overloading and allow gaseous and aqueous exchange. If installed correctly under direct arboricultural supervision and in accordance with the Arboricultural Method Statement, this level change and new surface is unlikely to significantly impact the structural or physiological condition of the tree.

3.25 The proposed incursions inside the RPAs of T45 and T47 comprises building foundations covering approximately 7% of the RPA of T45. Directly adjacent to this will be a raised walkway with a build-up of 600mm above ground level. This feature encroaches into approximately 25.4% of the RPA of T45 and 8.4% of the RPA of T47. The proposed build-up for the raised walkway comprises a 500mm layer of Cellweb TRP permeable, load bearing cellular confinement system, followed by a layer of permeable hardstanding as displayed in Appendix 5, Figure 4. If installed correctly, this build-up detail should maintain existing soil structure while remaining permeable to gas and water and as such, will not result in a significant impact to the RPAs of T45 and



T47. Installation of this system will require careful planning and supervision by an Arboricultural Consultant to ensure no accidental damage occurs to the stem, canopy or RPA of the two trees.

#### Impact on visual amenity and local character

3.26 Trees T13, T22, T23, T27, T28, T30, T36, T37 and T40 were all attributed Category B status. Without appropriate mitigation as recommended in section 4 of this report, their removal would represent a significant impact on local visual amenity.

3.27 While trees T1, G12, T18, T21, T24, T25, T26, T29, T31, T32, T33, T34, T43, T44 and T46 were all attributed Category C status and therefore considered to be of low visual amenity value, it is understood that the proposed landscaping scheme will address the minor loss to local visual amenity as a result of their removal.

## 4 Recommendations

### TREE WORKS

4.1 The following tree pruning, and removal operations should be undertaken prior to the commencement of demolition works in order to facilitate access for development.

- Trees T1, G12, T13, T18, T21, T22, T23, T24, T25, T26, T27, T28, T30, T29, T31, T32, T33, T34, T36, T37, T40, T43, T44 and T46 require removal.
- T20 should have lower lateral branches in its northern canopy quadrant crown lifted to a height of 3m above ground level.
- T38 should have lateral branches in its southern canopy quadrant shortened in length by 1m.
- T45 should have lateral branches in its northern canopy quadrant shortened in length by 1m.

4.2 Although not specifically required for the purposes of evaluating design proposals and layouts, preliminary recommendations for tree management are provided below. These recommendations should be undertaken independently of recommendations for demolition and construction works, in order to ensure the ongoing safety of students and staff utilising the site.

- Further evaluation and a full hazard risk assessment of T21 and T33 should be undertaken, to establish the extent of decay, weakness or defects present, if it is progressive, and whether immediate intervention such as canopy reduction or removal are necessary.
- All major dead wood and broken branches should be removed from T32 where they may pose a health and safety risk.
- Consideration should be given to the relocation of the grit hopper inside the rootzone of T1.
- The tyres encircling the base of T18 should be cut away to avoid girdling the tree.
- The green waste stacked around and on top of the stems of T29 should be removed and disposed of appropriately.

4.3 All tree works should give due consideration to the potential presence of protected species, including breeding birds and roosting bats. The Preliminary Ecological

Appraisal (The Ecology Consultancy, 2018) and any subsequent ecological reports should be consulted prior to the commencement of works.

- 4.4 Arisings from tree works (e.g. wood piles and standing dead trunks) can provide valuable habitats for wildlife. As such, consideration should be given to their retention on site in areas unlikely to cause issues to public health and safety.
- 4.5 All tree pruning should be carefully planned and undertaken in accordance with *BS 3998: 2010 Recommendation for Tree Works*.
- 4.6 Any recommendations highlighting the management of potentially hazardous trees should be reviewed as soon as is practically possible<sup>3</sup>.

### MITIGATION

- 4.7 It is recommended that a scheme of soft landscaping is submitted, including tree planting details which address the potential loss of visual public amenity where tree removal is unavoidable. The tree selection should be appropriate to the site and chosen from a species palette in accordance with local tree planting policies and in accordance with any recommendations provided in the PEA and any subsequent ecology reports.
- 4.8 The planting detail should be considered and planned at an early stage of the design process and feed into the wider landscape design proposal. Ideally, species selected should be native and/or of proven ecological value.
- 4.9 Often the need for future remedial pruning or tree removal can be avoided through careful species selection and planning during the design of the mitigation planting scheme.
- 4.10 The positioning of mitigation planting in relation to new or existing buildings should take full account of the final canopy height and spread of all trees included in the planting scheme. Buildings should ideally be located a sufficient distance from the predicted canopy line and RPA to avoid future pressure to undertake remedial pruning or tree removal.

### SITE SPECIFIC ISSUES

- 4.11 At the time of this report, finalised layouts for electricity, water and gas services had not been confirmed. It is recommended that the locations of the proposed services be

carefully planned in consultation with the Arboricultural Consultant and wherever possible, existing service pipes and trenches are re-used to avoid the need for excavations inside the RPAs of trees to be retained.

- 4.12 It is recommended that upon completion of construction works, all trees to be retained are subject to soil amelioration works inside the soft landscaped areas of their RPAs, as displayed in the Tree Protection Plan (Appendix 3). Soil amelioration works should include the decompaction of the soil, combined with the inoculation of a mix of beneficial mycorrhizal fungi and plant nutrients to stimulate future fibrous root growth.
- 4.13 It is understood that the proposed raised decking and hardstanding inside and adjacent to the RPA of T35 will incorporate an integrated drainage solution to protect the enclosed RPA of the tree from waterlogging during heavy periods of rainfall. Proposed solutions include sloping of the decking to shed rainfall, slot drains surrounding the retaining edge of the hardstanding and land drains incorporated beneath the structure. These proposals, along with decompaction and vertical mulching of the trees RPA should mitigate the risk of ponding inside the RPA of the tree. Final drainage solutions should be agreed upon by the site engineer and Local Planning Authority Tree Officer prior to the commencement of works.

#### **ISSUES FOR THE ARBORICULTURAL METHOD STATEMENT**

- 4.14 The positioning of new buildings should take into consideration the maximum canopy height and width of all trees to be retained. Buildings should ideally be located beyond the RPAs of the trees to be retained and allow sufficient distance from the existing canopy line to avoid future pressure to undertake remedial pruning or tree removal. Where the location of buildings inside the RPA is unavoidable, special engineering of foundations will be required and presented in a future method statement.
- 4.15 In order to minimise disturbance in the RPAs of retained trees, excavation into the soil or soil regrading should not be a requirement of finalised construction layouts, existing levels should remain intact and should be protected from overloading to prevent soil compaction.
- 4.16 Protective fencing should be installed in accordance with figure 2 of BS 5837:2012 to enable the safe retention of trees to be retained. The positioning of tree protection and the establishment of construction exclusion zones (CEZ) should initially be based upon

the root protection areas as described in Appendix 1, and should be in place prior to the commencement of works.

4.17 All works should be undertaken from outside the RPA wherever possible. Where working in an RPA is unavoidable, ground protective measures fully compliant with section 6.2 of BS 5837: 2012 and agreed by the consulting arboriculturalist should be used.

4.18 Where construction of new buildings or hardstanding inside RPAs is likely to significantly impact a trees physiological or structural condition, specialist methods of construction should be developed and specified as part of the Arboricultural Method Statement.

## 5 Arboricultural Method Statement

- 5.1 This Arboricultural Method Statement details how existing trees to be retained should be protected during the demolition and construction phase of site development. The advice is specific to this site and should be read in conjunction with the Tree Protection Plan in Appendix 3.

### SITE MONITORING AND SUPERVISION

- 5.2 An arboricultural consultant or competent person should be appointed to advise on tree protection for the site.

### SUGGESTED SEQUENCING OF SITE MANAGEMENT

- 5.3 It is recommended that the following arboricultural input regarding on site management of trees provided in Table 3 is required, which should form the basis of the auditable schedule of inspection.

**Table 4:** Sequencing of site management and input.

Activity	Level of arboricultural input
Pre-commencement site meeting with site manager and the Local Planning Authority Tree Officer.	Initial site meeting. Review of tree protection measures. Agree frequency of site supervision and reporting. Agree any amendments to tree protection measures.
Preliminary tree works.	Discuss and review works schedule with contractor.
Erection of protective barriers and ground protection measures.	Preparation of amended plans and specifications for formal agreement with the Local Planning Authority Tree Officer. On-going discussion and advice during installation until completion of works.
Removal of existing buildings and hardstanding.	Pre-works on site briefing with contractor and direct on site supervision by arboricultural consultant. Periodic inspection during demolition works. Supervision during demolition works around T42
Commencement of ground works including excavations for foundations installation of services and new hardstanding.	Pre-works on site briefing with contractor and direct on site supervision by arboricultural consultant. Periodic supervision during foundation/Hardstanding construction inside the RPAs of trees T20, T35, T38, T39, T42, T45 and T47
Removal of protective fencing and ground protection measures after	Pre-commencement on site briefing with contractor and ongoing site supervision at agreed intervals until completion.

**Table 4:** Sequencing of site management and input.

Activity	Level of arboricultural input
completion of construction works.	
Carrying out of mitigation tree planting and soft and hard landscaping.	<p>Pre-commencement on site briefing with landscape contractor check and agree planting specification.</p> <p>Site meeting with contractor following completion of works to check compliance with agreed specifications, maintenance and aftercare.</p>

### GENERAL PRECAUTIONS TO BE TAKEN ON SITE

5.4 The following precautions should be maintained at all times:

- All retained trees should be protected by the erection of protective barriers and or ground protection prior to the commencement of any works and should remain in place during the entire course of the development.
- No fires should be lit within 10m of the canopies of trees to be retained.
- Designated Construction Exclusion Zones (CEZ) should be suitably identified and maintained to ensure that trees remain protected. Storage or stockpiling areas, temporary road access, accommodation and other facilities are to be located outside of RPAs, inside designated sites away from retained trees and all care must be taken to prevent the leakage or spilling of harmful materials into the soil.
- No excavations or soil stripping or general disturbance and compaction of the existing soil strata should be carried out within the RPA of any tree to be retained.
- All scheduled tree works should be carried out prior to the commencement of any site works and before the erection of tree protection measures.
- A copy of the Method Statement and accompanying Tree Protection Plan should be made available and retained on site at all times and should be included in the site induction for all contractors and visiting personnel so that they are familiar with its content and requirements.

### PRE- COMMENCEMENT SITE MEETING

5.5 Prior to any site works being undertaken, a pre-commencement meeting on site between the Site Manager, Arboricultural Consultant and Local Planning Authority Tree Officer should be carried out in order to understand and agree key stages for the

implementation of tree protection measures and operations and to allow any aspect of the process to be discussed.

### **PRELIMINARY TREE WORKS**

- 5.6 All tree works as described in Section 4 of this report should be carried out in accordance with BS 3998:2010 and should be undertaken prior to the commencement of any works. It should be the responsibility of the site owners and tree contractor to ensure that no tree works are carried out without the necessary prior written consents from the Local Planning Authority.
- 5.7 Prior to the removal or pruning of any trees on site, an on-site briefing between the Site Manager, the Arboricultural Consultant and the Local Planning Authority Tree Officer should be undertaken in order to understand the scope of the tree removal and the requirements of tree pruning for access facilitation.
- 5.8 All trees to be removed should be clearly marked with an X on their main stem. Marking of trees should be supervised by the Local Planning Authority Tree Office and the Arboricultural Consultant.
- 5.9 All tree pruning for access facilitation should be supervised by the Arboricultural Consultant, to ensure that specifications laid out in the Arboricultural Method Statement are followed and that trees are left in an acceptable state, with minimal loss in amenity value.

### **ERECTION OF PROTECTIVE BARRIERS AND GROUND PROTECTION MEASURES**

- 5.10 The Tree Protection Plans shows the approximate boundary of CEZs in Appendix 3. A protective barrier should be erected along the line of the CEZs prior to the commencement of works and should remain in place through the entire course of the development and only moved with the prior written consent of the Local Planning Authority Tree Officer, in consultation with the appointed arboricultural consultant. The barrier should be a 2m high fence robust enough to withstand impact from plant machinery supported by a system of vertical and horizontal scaffold tubes and supporting back stays as specified in Figure 2 of BS 5837:2012.
- 5.11 Weather proof signage should be attached to the barrier in locations clearly seen by contractors and site operatives indicating that the CEZ area is protected and should not be accessed. Examples of warning notices are provided in Appendix 5.



- 5.12 Once the barriers have been placed into position, they are not to be removed or altered in any way until the conclusion of all site construction works.
- 5.13 In areas where CEZs will experience heavy traffic or activity, the protective fencing employed should be as specified in Figure 1 of Appendix 4. In areas experiencing light traffic with little or no works activity, it may be appropriate to employ fencing as specified in Figure 2 of Appendix 4. This must be agreed upon by a consulting arboriculturalist and/or the Local Planning Authority Tree Officer.

### **REMOVAL OF EXISTING BUILDINGS AND HARDSTANDING**

- 5.14 Prior to the removal of any existing buildings and/or hardstanding, an on-site briefing between the Site Manager, the Arboricultural Consultant and the Local Planning Authority Tree Officer should be carried out in order to understand appropriate methods of demolition of hardstanding and buildings in the vicinity of RPAs.
- 5.15 During the demolition process, all works carried out in the vicinity of RPA should be supervised by an arboricultural consultant.
- 5.16 All works should be undertaken from outside the RPA wherever possible. Where working within an RPA is unavoidable, ground protection measures fully compliant with section 6.2 of BS 5837:2012 and agreed by a consulting arboriculturalist should be used.
- 5.17 All excavation work should be carried out so as to draw the removed materials away from the tree and out of the RPA where they can be moved and loaded so as not to present a risk to any part of the trees to be retained.
- 5.18 Where possible, any hard surface close to trees should be left and re-used as a base for any new surfacing which may be located in the same position. Where the removal of hard surfacing in the RPA is a necessity, works should be carried out using only hand held machinery, in such a way as to minimise any disturbance on the underlying soil or roots.
- 5.19 Any roots exposed through excavation activities should immediately be covered with good quality topsoil, and/or prevented from drying by rapping in hessian sheeting or similar. Any damaged roots should be cut cleanly by secateurs or handsaw.

5.20 Operational arcs of excavators should be kept clear of crowns or stems of retained trees to help prevent accidental damage.

### **COMMENCEMENT OF GROUND WORKS INCLUDING EXCAVATIONS FOR FOUNDATIONS, INSTALLATION OF SERVICES AND NEW HARDSTANDING**

5.21 Prior to the commencement of any ground works, an onsite briefing between the Site Manager, Arboricultural Consultant and Local Planning Authority Tree Officer should be carried out in order to understand appropriate methods of excavation within the vicinity of RPAs and to explain best practice procedures should any roots be disturbed by excavation activities. During the excavation process, all works likely to impact trees should be supervised by the consulting arboriculturalist.

5.22 Prior to the commencement of works, the locations of and excavation methods for the installation of any proposed services should be fully agreed upon by the site manager, Local Planning Authority Tree Officer and Arboricultural Consultant. Excavations for the installation of new services inside the RPAs of any trees to be retained should not be a requirement of finalised construction layouts.

5.23 Any trenching required for the installation of foundations or retaining walls inside or directly adjacent to the RPAs of trees to be retained should be carefully lined with a non-permeable membrane and supervised by an Arboricultural consultant in order to prevent chemical leaching into adjacent soils.

5.24 The first 750mm of excavation within RPAs of retained trees should be carried out using hand tools or compressed air spades and is to be undertaken under the supervision of the consulting arboriculturalist.

5.25 Exposed roots (woody and fibrous) should be initially covered over using hessian sheeting pegged in and kept damp and prevented from drying out. A geotextile permeable terram may be used on the tree side of any trenching to protect soil/root environment from desiccation or contamination.

5.26 Any damaged roots of a diameter of 25mm or less should be cleanly severed using secateurs or hand saw. Cut ends should be treated as above.

5.27 Prior to back filling, retained roots should be surrounded with topsoil, uncompacted sharp sand or other loose, inert granular fill. Builders' sand should not be used due to

its high salt content. The backfill material should be free from contaminants or foreign objects potentially damaging to the roots.

### **REMOVAL OF PROTECTIVE FENCING AND GROUND PROTECTION MEASURES AFTER COMPLETION OF CONSTRUCTION WORKS**

- 5.28 Prior to the removal of any protective fencing or ground protection, an onsite briefing between the Site Manager, Arboricultural Consultant and Local Planning Authority Tree Officer should be carried out in order to understand appropriate methods of removal. During the removal process, the site should be subjected to ongoing visits at regular intervals by a consulting arboriculturalist until the conclusion of the works.

### **CARRYING OUT OF MITIGATION TREE PLANTING AND SOFT AND HARD LANDSCAPING**

- 5.29 Prior to the commencement of any mitigation planting or landscaping, an onsite briefing between the Landscaping Contractor, Arboricultural Consultant and Local Planning Authority Tree Officer should be carried out in order to understand and agree on planting specifications. Upon the completion of planting and landscaping works, a meeting should be held between the Landscaping Contractor, Arboricultural Consultant and Local Planning Authority Tree Officer in order to ensure works were carried out in compliance with agreed specifications and to agree appropriate aftercare and maintenance levels.
- 5.30 All landscaping should avoid soil re-grading and disturbance within the RPAs of all retained trees. Raising levels should be achieved through the use of gas and water permeable granular material.
- 5.31 Any new surface constructed within tree RPAs should be permeable and should not impede gaseous and aqueous exchange between the soil and atmosphere.
- 5.32 All tree planting undertaken should be in accordance with BS 8545:2014 Trees: from nursery to independence in the landscape – Recommendations.
- 5.33 Upon completion of the development, all trees to be retained on site should be subject to soil amelioration works as displayed in the Tree Protection Plan: Construction (Appendix 3).

## SITE SPECIFIC RECOMMENDATIONS

5.34 Protection measures specified site should be phased between demolition and construction works in order to ensure minimal impacts on trees to be retained. Specific protective measures for both demolition and construction phases are detailed below.

### Demolition

5.35 Prior to the commencement of demolition works, protective fencing in accordance with Figure 2 of BS 5837:2012 should be erected to form CEZs around all trees to be retained as displayed in the Tree Protection Plan: Demolition (Appendix 4a).

5.36 The removal of all existing hardstanding, artificial grass and other surfaces inside the RPAs of trees to be retained should be conducted using hand tools only. CEZs should only be accessed under full arboricultural supervision. Numbers of personnel accessing CEZs should be kept to a minimum and should be at the discretion of the consulting arboriculturalist.

5.37 Once all surfaces within the RPAs of trees to be retained have been removed. No further access into CEZs should be permitted until the completion of the demolition works unless confirmed in writing by the Local Planning Authority Tree Officer.

5.38 It is necessary for demolition works to be undertake within the RPA of and in close proximity to the stem and canopy of T42. All demolition and excavation work in the vicinity of T42 should follow methodologies laid out in section 5.14 to 5.20 of this report.

5.39 During demolition works, access inside the RPA of T42 should be kept to a minimum. Where access for plant or personnel is unavoidable ground protection measures in full compliance with section 6.2 of BS 5837:2012 should be utilised to protect the existing ground from damage or overloading.

5.40 As soon as the necessary demolition works surrounding T42 have been completed, protective fencing around the stem of the tree should be adjusted as shown in the Tree Protection Plan: Demolition and should remain in place until all further demolition works are completed.

### Construction

5.41 Prior to the commencement of construction works, the condition of retained trees and their protection measures should be reviewed by the consulting Arboriculturalist and

Local Planning Authority Tree Officer. Any remedial tree works or alterations to existing protection measures should be agreed on and carried out prior to the commencement of construction operations.

- 5.42 Installation of the proposed block paving and boundary wall inside the RPA of T20 should follow specifications in section 3.21 of this report to minimise final impacts on the RPA of the tree and should be done under direct Arboricultural supervision. During construction of the wall foundation and ground preparations for the block paving, protective fencing surrounding the tree should be adjusted to the location specified in the Tree Protection Plan: Construction (Appendix 4b).
- 5.43 During construction of the proposed hardstanding surrounding the RPA of T35, its protective fencing should be adjusted to the location specified in the Tree Protection Plan: Construction (Appendix 4b). Once the surrounding hardstanding has been constructed, protective fencing should be removed and the existing ground inside the RPA of the tree should be subject to soil decompaction and vertical mulching. Following soil decompaction works, the proposed timber decking covering the RPA of the tree should be installed. The removal of the protective fencing, along with subsequent soil decompaction and construction works inside the RPA of T35 should be done under direct Arboricultural supervision.
- 5.44 During the construction of the proposed raised walkway inside the RPAs of trees T38 and T39, existing tree protection fencing should be adjusted to finalised layouts as displayed in the Tree Protection Plan: Construction (Appendix 4b). The proposed raised hardstanding walkway should comprise a build-up of a porous, load bearing cellular confinement system (Cellweb or equivalent) as displayed in Appendix 5 Figure 3. The system should be to an engineered specification and should be installed under direct Arboricultural supervision.
- 5.45 During the construction of the proposed boundary wall directly adjacent to the southern side of T42, the existing tree protection fencing should be adjusted to allow access to the south of the tree while still protecting the northern half of its RPA. Mini pile foundations for the proposed wall should be installed under direct Arboricultural supervision. No plant should access the trees RPA without the installation of appropriate ground protection as specified in section 6.2.3 of BS 5837:2012. Once foundations have been installed, final construction of the boundary wall should be completed by using pedestrian access inside the RPA only.

5.46 Following the installation of the boundary wall adjacent to T42, the proposed hardstanding inside the northern half of its RPA should be installed. Foundations for the hardstanding should comprise a load bearing cellular confinement system to an engineered specification, which should be installed under direct arboricultural supervision. Existing tree protection fencing should be adjusted in phases to final layouts as displayed in the Tree Protection Plan: Construction (Appendix 4b) during this process to minimise access to the trees RPA. All fencing adjustment should be done under direct arboricultural supervision.

5.47 During the construction of the proposed raised walkway inside the RPAs of trees T45 and T47, existing tree protection fencing should be adjusted to finalised layouts as displayed in the Tree Protection Plan: Construction (Appendix 4b). The proposed raised hardstanding walkway should comprise a build-up of a porous, load bearing cellular confinement system (Cellweb or equivalent) as displayed in Appendix 5 Figure 3. The system should be to an engineered specification and should be installed done under direct Arboricultural supervision.

5.48 It is recommended that soil amelioration works specified in section 5.33 of this report be undertaken by a trained and experienced arboricultural contractor and should follow the below methodology:

- Soils inside tree RPAs should initially be de-compacted using an air lance or Teravent system to break up compacted top or subsoil layers.
- Once soil has been de-compacted, a beneficial mixture of mycorrhizal fungi inoculum and nutrients to stimulate healthy root growth should be injected into the soil using a Teravent or Geoinjector.
- Finally, a 100mm layer of well-rotted bark mulch should be applied to soft landscaped areas within the RPAs of all trees retained. The mulch layer will regulate soil temperature, moisture content and pH as well as mitigate against potential future soil compaction.

## CONTACT DETAILS

5.49 This method statement is accompanied by a list of known contact details for all relevant parties and is included in Table 5.

**Table 5:** List of contact details for all relevant parties

Contact	Name	Company or Local Authority name	Contact Number	Report Issued Yes/No
<b>Client</b>	Patrick Conn	Fabrik	-	Yes
<b>LPA Tree Officer</b>	Planning	London Borough of Southwark	020 7525 5000	No
<b>Arboricultural Consultant</b>	James Potts	The Ecology Consultancy	-	Yes

# References

British Standard Institute (BSI) (2012). *BS 5837:2012 Trees in Relation to Design Demolition and Construction-Recommendations*. BSI, London.

British Standard Institute (BSI) (2010). *BS 3998:2010 Recommendation for Tree Works*. BSI, London.

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Mattheck and Beloer (1994). HMSO London. Research for Amenity Trees No 4; *The Body Language of Trees*.

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Town and Country Planning Act 1990 (as amended).

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



## Appendix 1: Schedule of Trees

**Table 1: Schedule of Trees and Tree Quality Assessment\***

\* See Table 3 for key to terms  
 \*\* See Table 2 for definitions of categories

No	Species	Ht.	S	St. 1.5 m	Canopy Spread				Cr. CI	Ls	SC	PC	Comments /Observation	Preliminary Management Advice	LE	Cat **	RPAm 2	RPA r
					N	S	E	W										
T1	Common hazel	8	6	110x 6	3	3	2.5	2.5	2	EM	Fair	Fair	Grit hopper stored in rootzone.	Consider relocating hopper.	20-40	C1	32.8	3.2
T2	Norway maple	11.5	1	570	4	2	4	2	3	M	Fair	Fair	Epicormic growth around stem and lower canopy.	No immediate works required.	40+	B2	147.0	6.8
T3	Common ash	11	1	375	4	4	4	4	2.5	EM	Fair	Fair	Minor deadwood and semi occluded pruning wounds throughout canopy.	No immediate works required.	20-40	C1	63.6	4.5
T4	Common ash	15	1	550	3.5	3.5	3	3	3	EM	Fair	Fair	Minor lean to east, co dominant canopy with neighbour.	No immediate works required.	40+	B2	136.8	6.6
T5	Common ash	15	1	550	3.5	3.5	3	3	3	EM	Fair	Fair	Minor lean to west.	No immediate works required.	40+	B2	136.8	6.6
T6	London plane	12	1	350	3	3	3	3	3	SM	Fair	Good	Minor semi occluded wound to north-east at 3.5m.	No immediate works required.	40+	C1	55.4	4.2
T7	Sycamore	14	1	535	5	3.5	2	5	3	M	Fair	Fair	East canopy suppressed by neighbour, minor semi occluded wounds on stem.	No immediate works required.	40+	B1	129.5	6.4
T8	London plane	17	1	1250	7.5	7.5	7.5	7.5	3.5	M	Good	Good	-	No immediate works required.	40+	A1	706.9	15.0
T9	Sycamore	14	1	450	4.5	0	3	3	3.5	EM	Fair	Good	Moderate lean to north, fully occluded wounds on stem to south.	No immediate works required.	20-40	B2	91.6	5.4

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 \*\* See Table 2 for definitions of categories

No	Species	Ht.	S	St. 1.5 m	Canopy Spread				Cr. CI	Ls	SC	PC	Comments /Observation	Preliminary Management Advice	LE	Cat **	RPAm 2	RPA r
					N	S	E	W										
T10	Sycamore	14	1	450	4.5	0	3	3	3.5	EM	Fair	Good	Moderate lean to north, large open wound on stem to north.	No immediate works required.	20-40	C1	91.6	5.4
T11	Silver maple	13	1	750	7.5	5.5	5	3	2	M	Poor	Fair	Recent pollard, minor deadwood and extensive epicormic growth throughout, sparse canopy.	No immediate works required.	10_20	B2	254.5	9.0
G12	Lawson cypress	8	1	75	2	2	2	2	2	SM	Fair	Fair	Extending along site boundary.	No immediate works required.	20-40	C2	-	0.9
T13	Common lime	14	1	550	3	3	4	2.5	2.5	EM	Fair	Good	Pollard, 2 year old regrowth, minor deadwood content.	No immediate works required.	40+	B2	136.8	6.6
T14	Common lime	15	1	460	3	3	3	3	4	EM	Fair	Fair	Pollard, estimated 3 years regrowth, epicormic growth on stem.	No immediate works required.	40+	B2	95.7	5.5
T15	Common lime	13	1	385	2.5	1	2.5	2.5	3	EM	Fair	Fair	Pollard, 3 years regrowth.	No immediate works required.	20-40	C1	67.1	4.6
T16	Common lime	14	1	320	2.5	2.5	2.5	2.5	2	EM	Fair	Good	Pollard, 3 years regrowth.	No immediate works required.	40+	B2	46.3	3.8
T17	Himalayan tree cotoneaster	4	1	320	3.5	0.5	4	1	2	M	Fair	Fair	Moderate lean to north-west.	No immediate works required.	20-40	C1	46.3	3.8
T18	Lawson cypress	12	1	350	3	3	3	3	1.8	EM	Fair	Fair	Minor bark damage on limbs to south-east, tyres constricting base.	Remove tyres around base.	10_20	C1	55.4	4.2

**Table 1: Schedule of Trees and Tree Quality Assessment\***

\* See Table 3 for key to terms  
 \*\* See Table 2 for definitions of categories

No	Species	Ht.	S	St. 1.5 m	Canopy Spread				Cr. CI	Ls	SC	PC	Comments /Observation	Preliminary Management Advice	LE	Cat **	RPAm 2	RPA r
					N	S	E	W										
T19	Purple Norway maple	10	1	285	2.5	2.5	2	3	2	EM	Fair	Fair	Moderate, snapped out limb stub to north-east at 2m.	No immediate works required.	20-40	C1	36.7	3.4
T20	Common lime	12	1	360	3	3	3	3	2	EM	Fair	Fair	Minor squirrel damage on lower limbs.	No immediate works required.	20-40	B2	58.6	4.3
T21	Silver maple	14	1	420	4	4	4	4	2	EM	Poor	Fair	Bark damage throughout canopy.	Hazard risk assessment	10_20	C1	79.8	5.0
T22	Silver maple	15	1	600	1.5	2.5	2.5	2.5	3	M	Fair	Fair	Regular pollard.	No immediate works required.	40+	B1	162.9	7.2
T23	Silver maple	15	1	600	3	3	3	5	2	M	Fair	Fair	Regular pollard.	No immediate works required.	40+	B1	162.9	7.2
T24	Lawson cypress	14	1	300	3	3	1	3	1.5	EM	Fair	Fair	Inaccessible.	No immediate works required.	40+	C1	40.7	3.6
T25	Bird cherry	7	3	250x 3	2.5	2.5	2.5	2.5	3	EM	Fair	Fair	-	No immediate works required.	10_20	C1	84.8	5.2
T26	Wild cherry	7	2	260x 2	3	2	4	4	2	EM	Fair	Fair	Rubbing stems at 1m.	No immediate works required.	20-40	C1	61.2	4.4
T27	Box elder	12	1	300	3	3	3	3	2.5	EM	Fair	Fair	Epicormic growth on main stem, minor semi occluded pruning wounds throughout canopy.	No immediate works required.	20-40	B2	40.7	3.6

**Table 1: Schedule of Trees and Tree Quality Assessment\***

\* See Table 3 for key to terms  
 \*\* See Table 2 for definitions of categories

No	Species	Ht.	S	St. 1.5 m	Canopy Spread				Cr. CI	Ls	SC	PC	Comments /Observation	Preliminary Management Advice	LE	Cat **	RPAm 2	RPA r
					N	S	E	W										
T28	Box elder	12	1	300	3	3	3	3	2.5	EM	Fair	Fair	Epicormic growth on main stem, minor semi occluded pruning wounds throughout canopy.	No immediate works required.	20-40	B2	40.7	3.6
T29	Sycamore	12	5	300x 5	3	3	3	3	2.5	EM	Fair	Fair	Green waste stacked around and on top of main stems.	Remove green waste from stems.	20-40	C1	203.6	8.0
T30	Common lime	16	1	470	3	3	3	3	2	M	Fair	Fair	Epicormic growth throughout stem and canopy.	No immediate works required.	40+	B2	99.9	5.6
T31	Lawson cypress	4	1	75	1	1	1	1	1.5	SM	Fair	Fair	-	No immediate works required.	40+	C1	2.5	0.9
T32	Wild cherry	10	4	350x 4	3.5	2	3	3	2	EM	Fair	Fair	Semi occluded pruning wounds and moderate deadwood throughout stem and lower canopy.	Remove deadwood	10_20	C1	221.7	8.4
T33	Common whitebeam	9	1	450	2.5	2.5	4	1	3	EM	Poor	Fair	Large bark wound at base to west.	Hazard risk assessment	10_20	C1	91.6	5.4
T34	Norway maple	3	1	70	1	1	1	1	2	Y	Fair	Fair	-	No immediate works required.	40+	C1	2.2	0.8
T35	Purple sycamore	8	1	280	3.5	3.5	3.5	3.5	2	EM	Good	Good	-	No immediate works required.	20-40	B1	35.5	3.4
T36	Blue gum	14	1	460	1	3	2.5	2.5	2	EM	Fair	Fair	Minor lean to south.	No immediate works required.	20-40	B2	95.7	5.5

**Table 1: Schedule of Trees and Tree Quality Assessment\***

\* See Table 3 for key to terms  
 \*\* See Table 2 for definitions of categories

No	Species	Ht.	S	St. 1.5 m	Canopy Spread				Cr. CI	Ls	SC	PC	Comments /Observation	Preliminary Management Advice	LE	Cat **	RPAm 2	RPA r
					N	S	E	W										
T37	Sycamore	14	1	500	5	5	5	5	3	EM	Fair	Fair	Minor semi occluded pruning wounds throughout canopy.	No immediate works required.	20-40	B2	113.1	6.0
T38	Norway maple	13	1	400	4	4	4	4	3	EM	Fair	Fair	Minor semi occluded pruning wounds throughout canopy.	No immediate works required.	20-40	B2	72.4	4.8
T39	Sycamore	14	1	500	5	5	5	5	3	M	Fair	Fair	Minor semi occluded pruning wounds throughout canopy.	No immediate works required.	40+	B1	113.1	6.0
T40	Norway maple	15	1	500	4	4	4	4	3	M	Fair	Fair	Minor semi occluded pruning wounds throughout canopy.	No immediate works required.	40+	B1	113.1	6.0
T41	European hornbeam	9	1	300	3	3	3	3	2	SM	Fair	Fair	-	No immediate works required.	40+	B1	40.7	3.6
T43	Common hawthorn	4	2	80x2	1.5	1.5	1.5	1.5	2	SM	Fair	Fair	-	No immediate works required.	20-40	C1	5.8	1.4
T44	Common hawthorn	4	2	80x2	1.5	1.5	1.5	1.5	2	SM	Fair	Fair	-	No immediate works required.	20-40	C1	5.8	1.4
T42	Tree of heaven	15	1	650	5.5	5.5	5.5	5.5	4	M	Fair	Fair	Inaccessible.	No immediate works required.	20-40	B2	191.1	7.8
T45	Common lime	16	1	545	5	5	3	5	2	M	Fair	Good	Managed pollard.	No immediate works required.	40+	B1	134.4	6.5
T46	Norway maple	13	1	500	4	2	2	2	3	EM	Fair	Fair	Pruning wounds throughout canopy.	No immediate works required.	40+	C1	113.1	6.0

**Table 1: Schedule of Trees and Tree Quality Assessment\***

\* See Table 3 for key to terms  
 \*\* See Table 2 for definitions of categories

No	Species	Ht.	S	St. 1.5 m	Canopy Spread				Cr. CI	Ls	SC	PC	Comments /Observation	Preliminary Management Advice	LE	Cat **	RPAm 2	RPA r
					N	S	E	W										
T47	Common lime	16	1	545	5	5	3	5	2	M	Fair	Good	Managed pollard.	No immediate works required.	40+	B1	134.4	6.5
T48	Common hawthorn	7	2	200x 2	1.5	1.5	1.5	1.5	2	EM	Fair	Good	-	No immediate works required.	40+	C1	36.2	3.4

**Table 2: BS: 5837 2012 Tree Quality Assessment Definitions**

TREES FOR REMOVAL		
Category & Definition	Criteria	Identification on Plan
<p><b>Category U</b> Those in such a condition that they cannot realistically be retained as a living tree in the context of the current land use for longer than 10 years.</p>	<ul style="list-style-type: none"> <li>• Trees that have a serious, irremediable structural defect such that their early loss is expected due to collapse, including those that will become unviable after removal of other U category trees (i.e. Where for whatever reason the loss of companion shelter cannot be mitigated by pruning)</li> <li>• Trees that are dead or are showing signs of significant immediate or irreversible overall decline.</li> <li>• Trees infected with pathogens of significance to the health and or safety of other trees nearby by or very low quality trees suppressing adjacent trees of better quality.</li> </ul>	RED

TREES TO BE CONSIDERED FOR RETENTION				
Category & Identification	1 Mainly arboricultural values	2 Mainly landscape values	3 Mainly cultural values including conservation	Identification on plan
<p><b>Category A</b> Trees of High Quality with an estimated remaining life expectancy of at least 40 years</p>	Trees that are a particularly good example of their species, especially if rare or unusual, or essential components of groups or of formal or semi-formal arboricultural features e.g. the dominant and/or principal trees in an avenue)	Tree groups or woodlands of particular visual importance as arboricultural and/or landscape features.	Tree groups or woodlands of significant conservation historical, commemorative or other value (e.g. veteran trees or wood pasture)	GREEN
<p><b>Category B</b> Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.</p>	Trees that might be included in the high category but are downgraded because of impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage).	Trees present in numbers, usually as groups or woodlands such that they attract a higher collective rating than they might as individuals: or trees occurring as collectives but situated so as to make little visual contribution to the wider locality.	Trees with material conservation or other cultural benefits.	BLUE



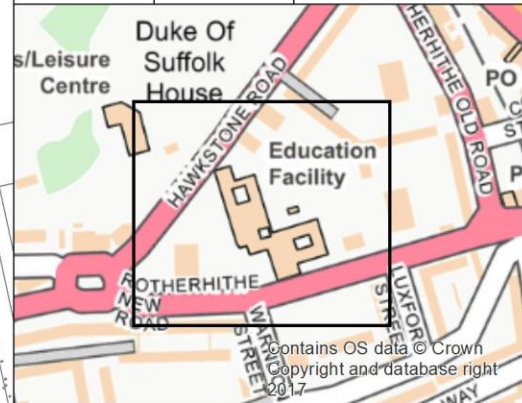
TREES TO BE CONSIDERED FOR RETENTION

Category & Identification	1 Mainly arboricultural values	2 Mainly landscape values	3 Mainly cultural values including conservation	Identification on plan
<p><b>Category C</b> Trees of a low quality with an estimated remaining life expectancy of at least 10 years or young trees with a stem diameter below 150mm</p>	<p>Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories.</p>	<p>Trees present in groups or woodlands but without this conferring on them significantly greater landscape value and/or trees offering low or only temporary/transient landscape benefits.</p>	<p>Trees with no material conservation or other cultural benefits.</p>	<p>GREY</p>

**Table 3: Key Schedule of Trees**

Column Heading	Explanation
<b>Tree No</b>	Sequential number corresponding to number on plan.
<b>Species</b>	English names.
<b>Ht.</b>	Height in metres.
<b>S</b>	Number of main stems.
<b>St. 1.5 (Stem Diameter)</b>	Stem diameter when measured in accordance with Annex C of BS 5837:2012.
<b>NSEW</b>	Crown radius in metres to cardinal points of the compass.
<b>Cr. Cl. (Crown Clearance)</b>	Height in metres between the ground and underside of canopy.
<b>LS.</b>	Life stage definitions. Y= Young. SM = Semi-mature. EM = Early mature. M = Mature. OM = Over mature.
<b>SC</b>	Brief description of structural condition.
<b>PC</b>	Brief description of physiological condition.
<b>Preliminary Advice</b>	Preliminary tree works advice and recommendations.
<b>LE</b>	Estimated remaining useful life contribution in years. <10, 10+, 20+ and 40+ yr.
<b>Cat. (Category)</b>	<p>Categorisation grading in accordance with BS 5837 2012.</p> <p>Trees suitable for retention: - Category A trees of high quality and amenity value. Category B trees of moderate quality and amenity value. Category C trees of low quality or amenity value.</p> <p>British Standards BS 5837:2012 recommends that these categories may be further broken down into sub-categories A1 A2 A3 pertaining to Arboricultural, Landscape or Cultural values respectively.</p>
<b>RPA m<sup>2</sup></b>	Root Protection Area (RPA). Indicative area around a tree measured in m <sup>2</sup> and calculated in accordance with Annex C of BS 5837:2012 deemed to contain sufficient rooting volume to maintain the viability of a tree and where the protection of roots and soil structure is treated as a priority.
<b>RPA r</b>	Root Protection Area (RPA) radius calculation centred on the base of the tree and calculated in accordance with Annex C of BS 5837:2012

## Appendix 2: Tree Constraints Plan



- Legend
- Crown spread of category U - Trees with significant overall decline
  - Crown spread of category A - Trees with high quality and value
  - Crown spread of category B - Trees with moderate quality and value
  - Crown spread of category C - Trees with low quality and value
  - Root Protection Area (RPA)

This plan is provided solely for the purpose of supporting the description of the ecological features of the site as contained in the accompanying report

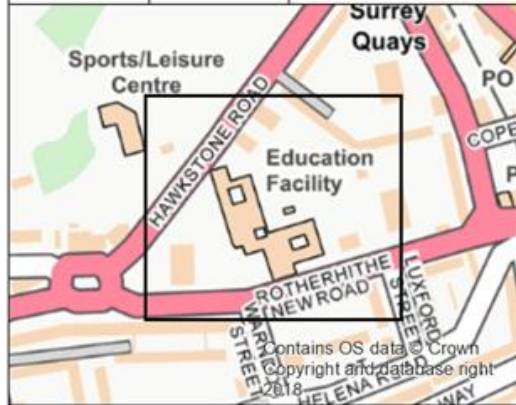


0 10 Metres

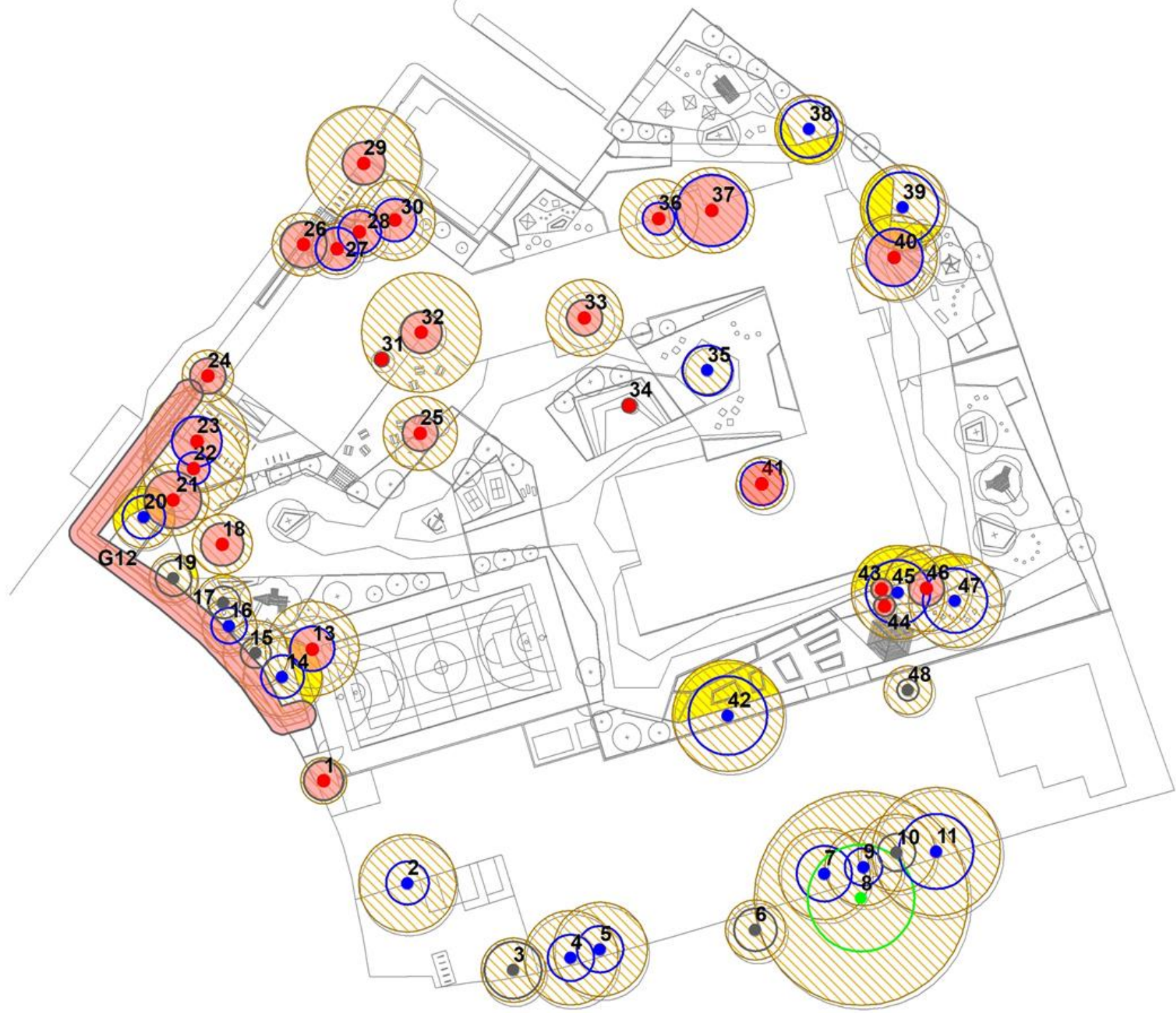
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## Appendix 3: Tree Retention and Removal Plan





- Legend**
- Crown spread of category U - Trees with significant overall decline
  - Crown spread of category A - Trees with high quality and value
  - Crown spread of category B - Trees with moderate quality and value
  - Crown spread of category C - Trees with low quality and value
  - Trees to be removed
  - Root Protection Area (RPA)
  - Incursion



0 10 Metres

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## Appendix 4a: Tree Protection Plan: Demolition





Job title  
**Rotherhithe Primary School**  
 TEC Job no. ET6970

Client  
**Fabrik**

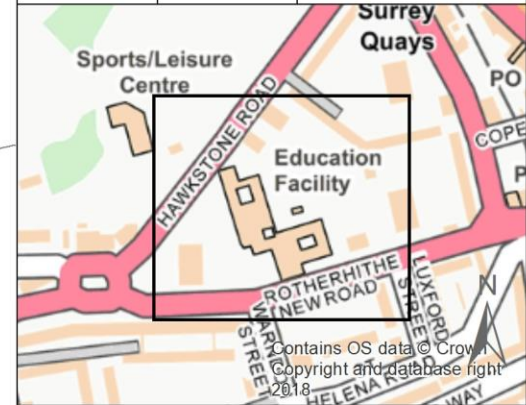
Map title  
**Tree Protection Plan: Demolition**

Section: N/A Scale (at A3) 1:600

Date of survey  
 26/04/2018

Surveyor  
 James Potts

Drawn JD Approved JP Date 12/10/2018



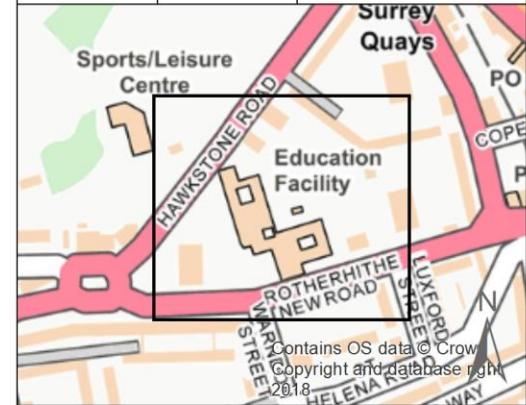
- Legend**
- Crown spread of category U - Trees with significant overall decline
  - Crown spread of category A - Trees with high quality and value
  - Crown spread of category B - Trees with moderate quality and value
  - Crown spread of category C - Trees with low quality and value
  - Trees to be removed
  - Root Protection Area (RPA)
  - Temporary ground protection
  - BS5837: 2012 Specification fencing
  - BS5837: 2012 Specification fencing: Post demolition works

0 10 Metres  
 This plan is provided solely for the purpose of supporting the description of the ecological features of the site as contained in the accompanying report

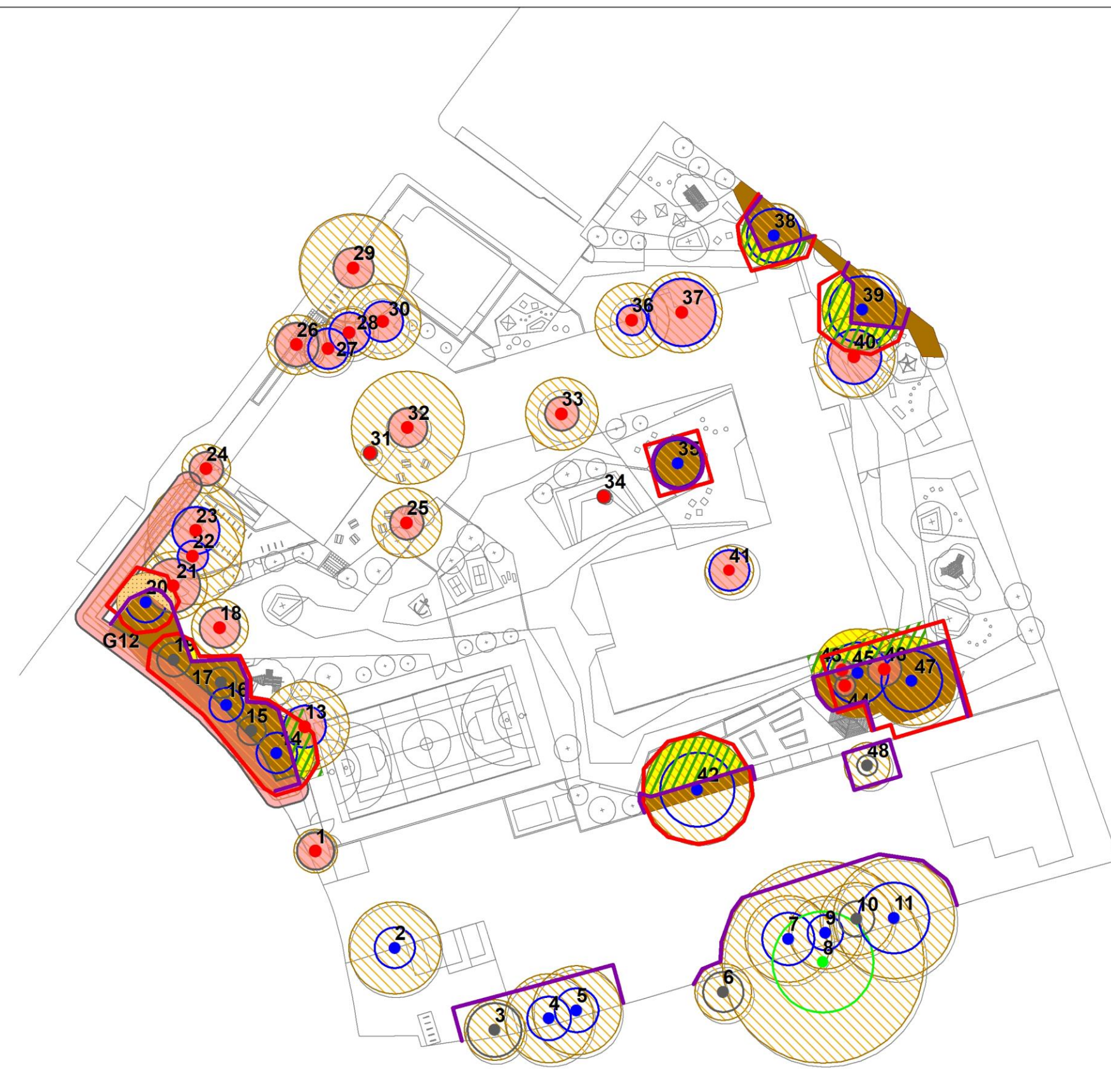
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## Appendix 4b: Tree Protection Plan: Construction



- Legend**
- Crown spread of category U - Trees with significant overall decline
  - Crown spread of category A - Trees with high quality and value
  - Crown spread of category B - Trees with moderate quality and value
  - Crown spread of category C - Trees with low quality and value
  - Trees to be removed
  - Root Protection Area (RPA)
  - Incursion
  - Soil decompaction and vertical mulching in soft landscape areas
  - Amsterdam tree sand to be mixed into and layered over existing soil strata
  - Specialist foundation construction
  - BS5837: 2012 Specification fencing: Phased adjustments during construction works
  - BS5837: 2012 Specification fencing: Post demolition works



0 10 Metres

This plan is provided solely for the purpose of supporting the description of the ecological features of the site as contained in the accompanying report

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## Appendix 5: Tree Protection Fencing and Ground Protection

Figure 1. Default specification barrier (BS 5837:2012 figure 2)

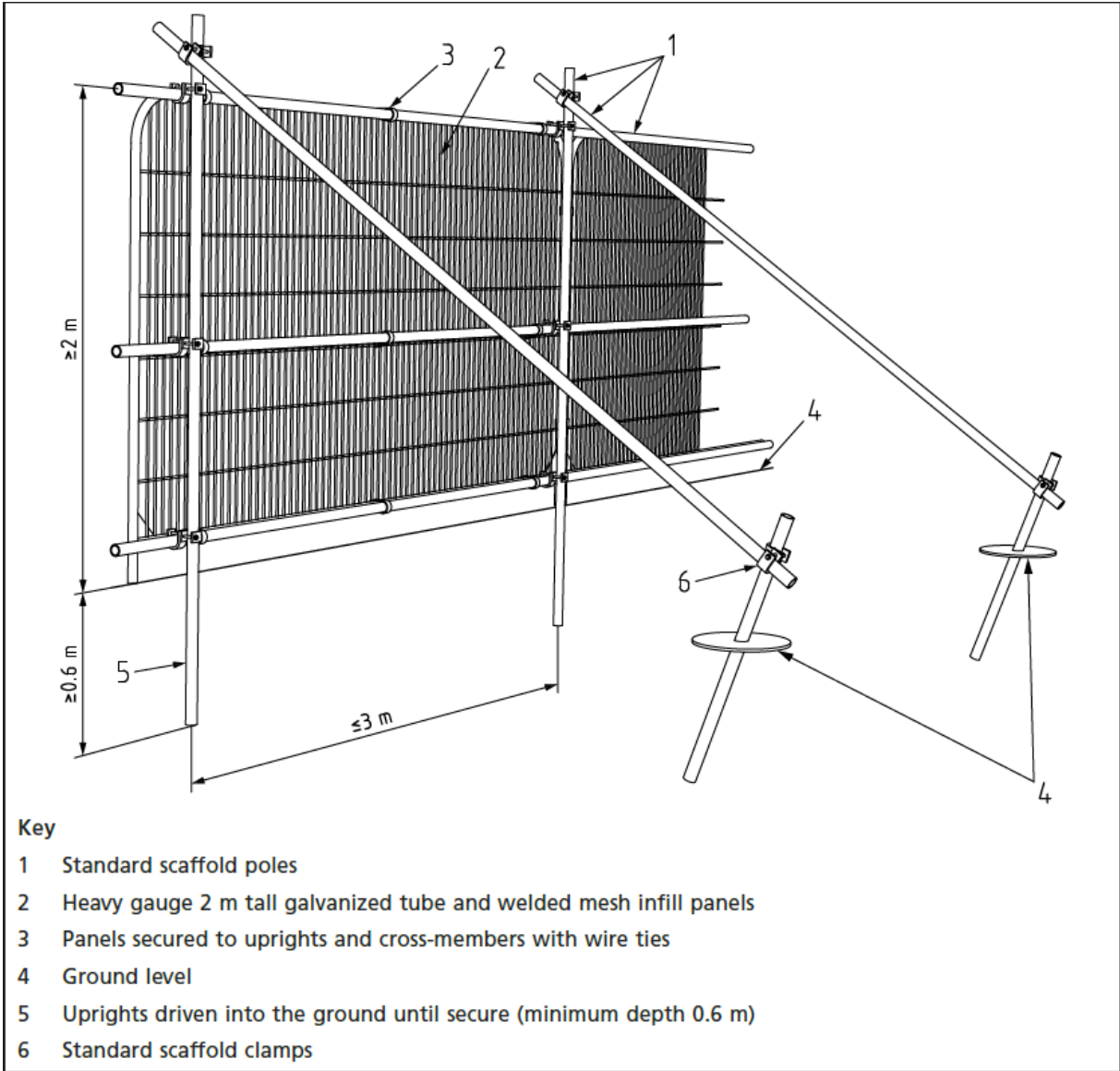


Figure 2. Alternative 'above-ground' barrier system (BS 5837:2012 figure 3)

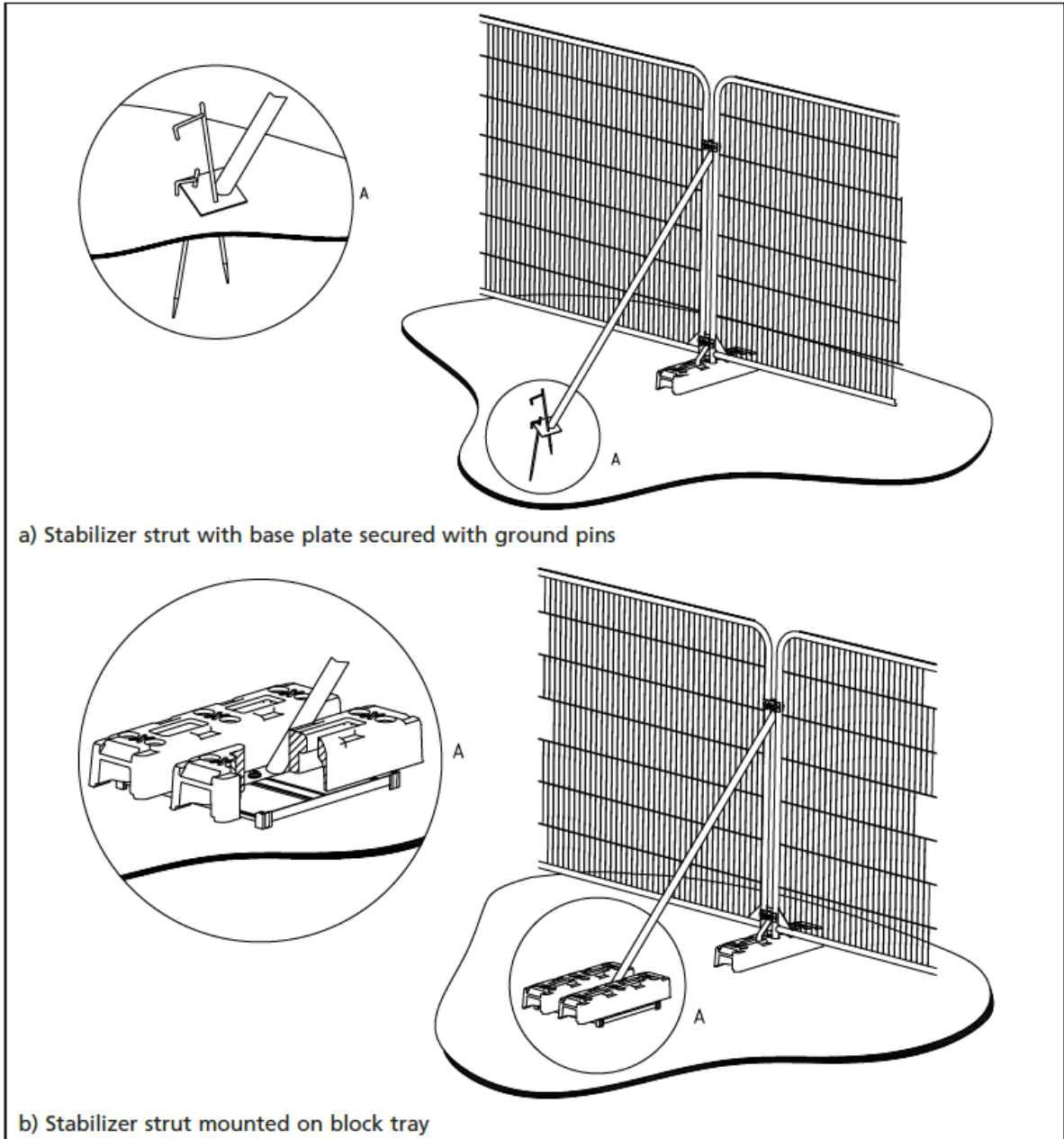
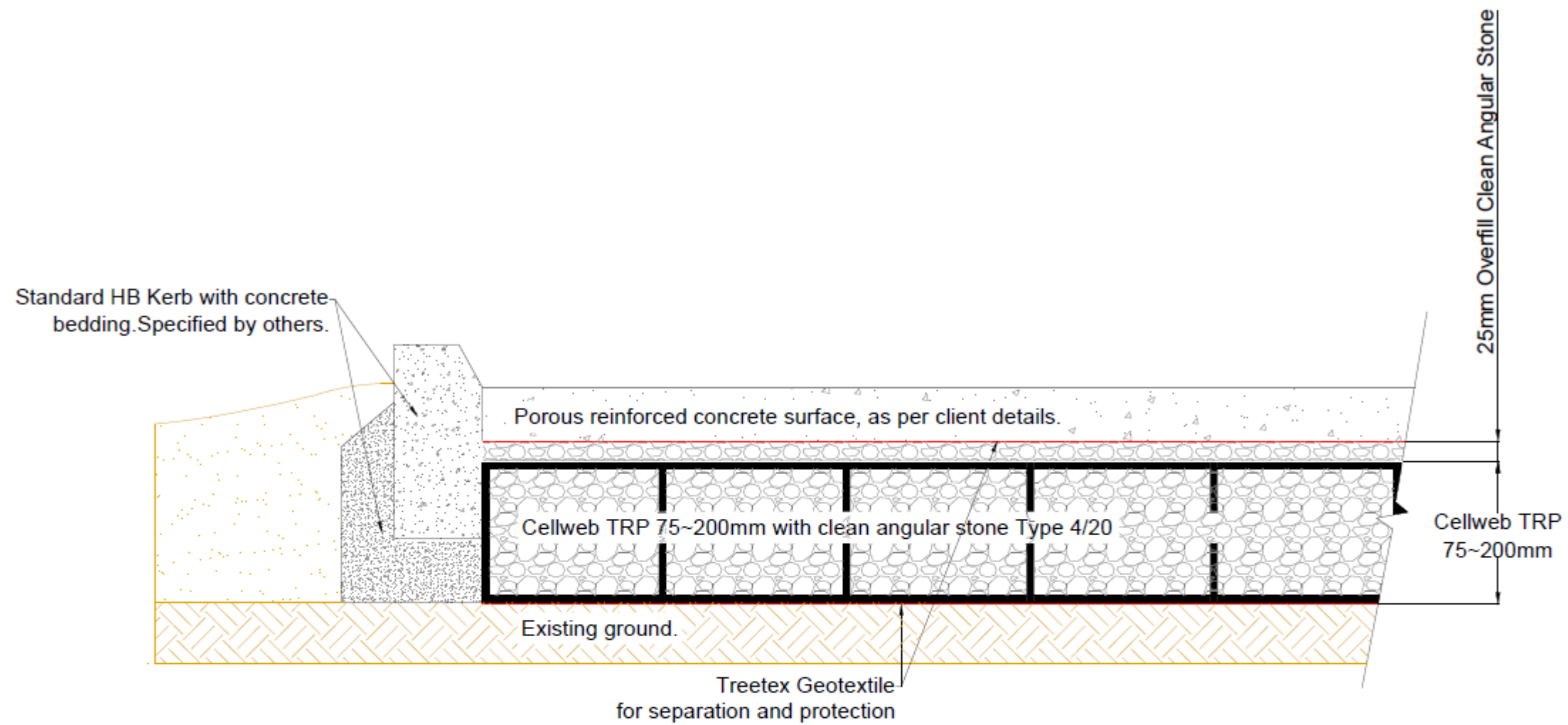




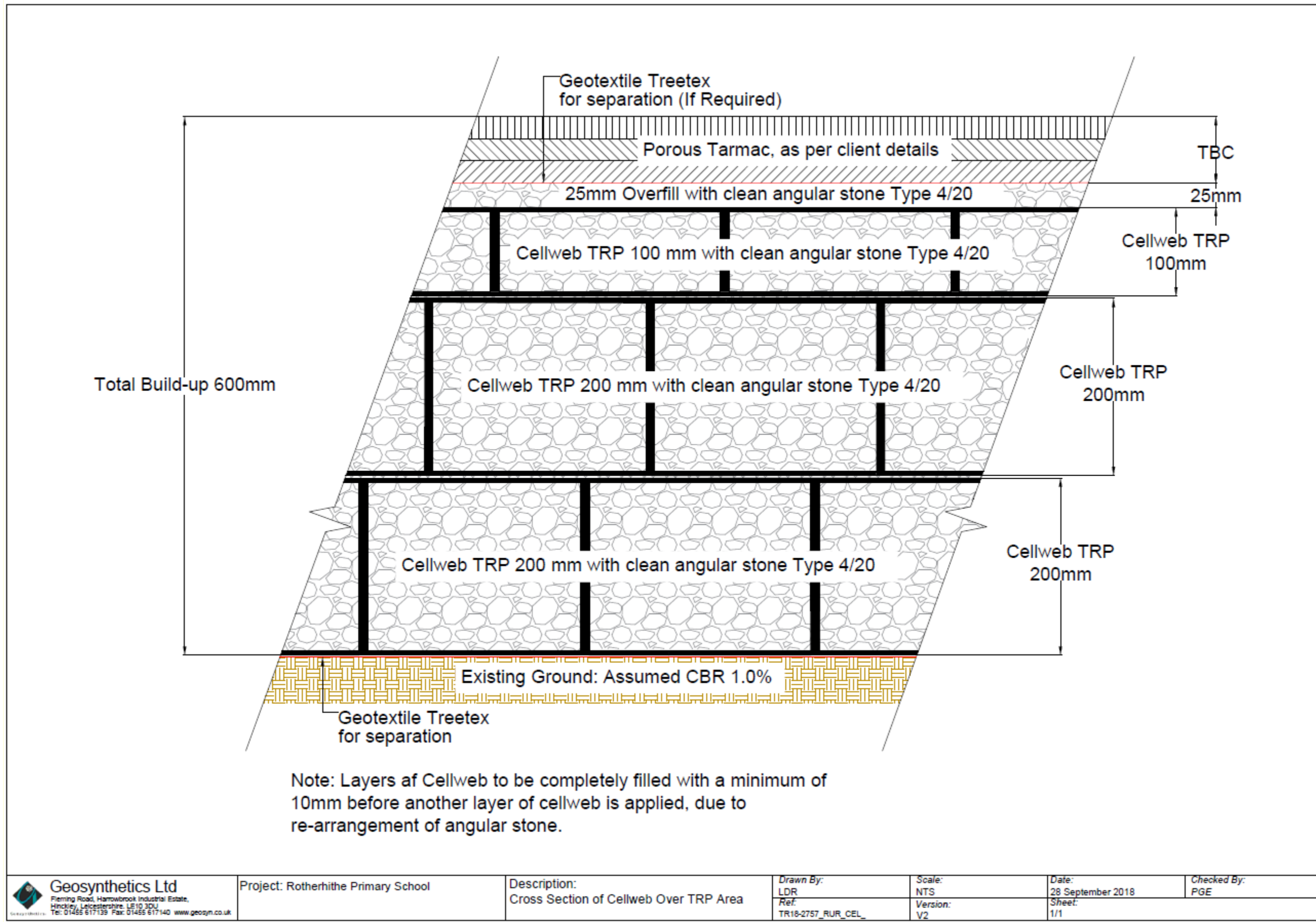
Figure 3. Load bearing cellular confinement system (Cellwebb) with porous concrete surface to be used as the foundation of the 6m buffer during the construction phase (Geosynthetics, 2016)



Note: Subbase could be required depending on the existing ground CBR % and the type of traffic on the surface.

 <b>Geosynthetics Ltd</b> Fleming Road, Harrowbrook Industrial Estate, Hinckley, Leicestershire, LE10 3DU Tel: 01455 617139 Fax: 01455 617140 www.geosyn.co.uk	Project: Cellweb 75~200mm Concrete Surface Standard Detail	Description:	Drawn By: DM	Scale: NTS	Date: 26/07/16	Checked By:
			Ref: ---	Version: V1	Sheet: Cellweb Concrete Surface	

Figure 4. Load bearing cellular confinement system, with porous tarmac surface to be used as the build-up for the raised hardstanding inside the RPAs of trees T38, T39, T45 and T47 (Geosynthetics, 2018)



## Appendix 6: Signage





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



**TREE PROTECTION AREA  
KEEP OUT !**

**(TOWN & COUNTRY PLANNING ACT 1990)**

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

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

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

## Appendix 7: Glossary of Terms

## Glossary of Terms

Term	Explanation
<b>Arboricultural Impact Assessment (AIA)</b>	Evaluation of direct and indirect effects of a proposed design and/or construction.
<b>Arboricultural Method Statement (AMS)</b>	Methodology for the implementation of any aspect of development that is in the root protection area or has the potential to result in the loss of or damage to a tree to be retained.
<b>Branch structure</b>	Qualitative description of formation of main framework of limbs and branches.
<b>Canopy face</b>	Orientation of canopy relative to cardinal points of the compass
<b>Canopy radius</b>	A measurement taken from the centre of a tree to the furthest radial extension of tree canopy relative to the cardinal points of the compass.
<b>Competent Person</b>	Person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached.
<b>Conservation Area</b>	Local Planning Authority special designation generally prohibiting tree works without 6 weeks prior written notification.
<b>Construction Exclusion Zone (CEZ)</b>	Area based upon the calculated root protection area prohibiting access.
<b>Cavity</b>	Open and exposed aperture where wood tissue has internally degraded.
<b>Constraints check</b>	Formal search of local authority records to determine legal and statutory constraints on tree works.
<b>Crown lifting</b>	Removal of lower branches to achieve a stated vertical clearance above ground level or other surface.
<b>Crown reduction</b>	Pruning of a trees canopy in both height and width.
<b>Decay</b>	Deterioration and breakdown of tree wood fibres resulting in structural and/or physiological dysfunction of a tree.
<b>Dieback</b>	Continual decline and death of wood tissue including twigs and branches.
<b>Failure</b>	Description of structural failure or wood fibres including fracture of branches, limbs and main stems.
<b>Fork</b>	Area or point of union between one or more limbs or branches.
<b>Hazard Risk Assessment</b>	Qualitative and quantitative appraisal of the potential for tree failure and the possible risk of harm or damage to persons or property.
<b>Local Planning Authority</b>	Body responsible for the administration of Statutory duties relating to Development Management.
<b>Multi-stem</b>	A single tree formed from 2 or more codominant main stems
<b>Occlusion</b>	Wood development enclosing an extant wound or pruning cut.
<b>Pruning</b>	The targeted removal of branches or limbs using saws or other tools.
<b>Physiological Condition</b>	Observation relating to a trees physiology for example vigour, leaf area, growth rate, the presence of pests or disease.

## Glossary of Terms

Term	Explanation
<b>Root Protection Area</b>	Root Protection Area (RPA). Indicative area around a tree deemed to contain sufficient rooting volume to maintain the viability of a tree.
<b>Shelter belt</b>	A wind break normally made up of one or more trees planted in such a way to provide cover from the wind.
<b>Structural Condition</b>	Observation relating to a trees structural integrity and the presence of any physical defects.
<b>Suppressed</b>	Where a trees development has been influenced or effected by the presence of competing vegetation.
<b>Tree Constraints Plan</b>	A scaled plan indicating above and below ground constraints relating to the protection of trees
<b>Tree Preservation Order</b>	A legal order made by the local planning authority protecting specific trees in the interests of amenity.
<b>Visual Tree Assessment (VTA)</b>	A method of assessment based upon the research developed to recognise dynamic responses of a tree to its surroundings.
<b>'V' Shaped Branch Union</b>	The union point between two branches that have grown at a tight angle, forming the 'V' shape. This structure is inherently weaker than the 'U' shaped union.
<b>'U' Shaped Branch Union</b>	The union point between two branches that have grown at a wider angle, forming the 'U' shape. This structure is considered to be the strongest and most optimised shape that a union can form.

## Appendix 8: Photographs



**Photograph 1**

View looking south-west towards the stems of trees T7 to T10 (right to left).



**Photograph 2**

View looking south-east towards common ash trees T3, T4 and T5 (right to left).



**Photograph 3**

View of tyres circulating the base of lawson cypress T18.



**Photograph 4**

View looking east towards box elder T27.



**Photograph 5**

View looking north towards the green waste stacked around and on top of the stems of sycamore T29.



**Photograph 6**

View looking south towards lawson cypress T31 (right) and wild cherry T32 (left).





**Photograph 7**

View looking west towards Norway maple T34.



**Photograph 8**

View looking north towards common whitebeam T33.



**Photograph 9**

View looking north-east towards purple sycamore T35.







## Ecology Consultancy

The Ecology Consultancy is part of the Temple Group.

### **Making places better for people and wildlife**

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■ **Midlands** - 9 The Mews, Trent Park, Eastern Avenue, Lichfield WS13 6RN T. 01543 728971

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