







QA

Bacton Low Rise, Phase 02 – BS5837 Tree Survey, Arboricultural Impact Assessment & Arboricultural Method Statement

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CONTENTS

1.0	EXECUTIVE SUMMARY	1
3.0	TREE SURVEY METHODOLOGY	3
	SITE VISIT	3
	TREE CATEGORISATION	3
	AGE CLASS & CONDITION	5
	ROOT PROTECTION AREAS	8
4.0	BACKGROUND	9
	SITE DESCRIPTION	9
	DESCRIPTION OF DEVELOPMENT	9
	THE TREES	9
	LEGISLATION AND POLICY	10
	Regional Planning Policy	10
	Local Planning Policy	10
	Tree Preservation Orders	11
	SUMMARY AND RECOMMENDATIONS	11
5.0	ARBORICULTURAL IMPACT ASSESSMENT	12
	INTRODUCTION	12
	DIRECT TREE LOSS	12
	INDIRECT TREE LOSS	13
	TREES TO BE RETAINED	13
	FACILITATION PRUNING	13
	CONSTRUCTION WORK WITHIN RPAS	14
	FUTURE PRESSURE	14
	SUMMARY	14
6.0	ARBORICULTURAL METHOD STATEMENT	15
	INTRODUCTION	15

TREE WORKS	15
Direct Tree Loss	15
Indirect Tree Loss	15
Pruning	15
TREE PROTECTION	16
Barriers	16
SITE ACTIVITIES	17
Working Within RPAs	17
Site Storage	17
NEW TREE PLANTING	18
LANDSCAPE MANAGEMENT PLAN	19
WORKS PHASING	19
7.0 CONCLUSIONS	21
APPENDIX 1.0: TREE SCHEDULE	
APPENDIX 2.0: TREE CONSTRAINTS PLAN – EXISTING LAYOUT	
APPENDIX 3.0: TREE RETENTION AND REMOVAL PLAN	
APPENDIX 4.0: TREE PROTECTION PLAN	
APPENDIX 5.0: LANDSCAPE STRATEGY	
APPENDIX 6.0: EXAMPLE TREE PROTECTION SIGNAGE	
REFERENCES	

1.0 EXECUTIVE SUMMARY

- 1.1 Greengage Environmental Ltd ('Greengage') were commissioned by London Borough of Camden to undertake an appraisal of trees, hedges and vegetation land at Bacton Low Rise in Camden, London, to the *BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations*, and to prepare a report to include the following:
- Arboricultural Impact Assessment and Tree Constraints Plan; and
 - Arboricultural Method Statement and Tree Protection Plan.
- 1.2 A visit was made to the site on the 31st August 2012 to survey trees, hedges and vegetation following guidance in the British Standard. The crowns and stems were inspected from the ground using the 'Visual Tree Assessment' (VTA) method; no invasive techniques were used at this stage. The site was revisited on 4th August 2016 to update the findings of the tree survey with current site information.
- 1.3 The tree survey was undertaken to support a Minor Material Amendment (MMA) application for the redevelopment of Bacton Low Rise (BLR).
- 1.4 The purpose of this report is to provide an assessment of the arboricultural value of the trees based on their current quality and to provide recommendations, to help inform any design and site layout considerations for the scheme.
- 1.5 During the survey, 36 individual trees were recorded within and adjacent to the site. This comprises 20 Category B, 15 Category C and 1 Category U. There were no tree groups or hedges, and no Category A trees present within the scope of this report.
- 1.6 A review of the proposed layout has determined that a number of trees require removal to facilitate the scheme. The trees proposed to be removed include T14-T16, T18-T21, T22 and T23 and T36-T46 which are located within the existing courtyards across the central section of the site, on the junction of Haverstock Road and Wellesley Road, and along the Wellesley Road frontage.
- 1.7 The Arboricultural Method Statement has been produced (section 6.0) detailing any proposed tree works and special construction techniques, to ensure all relevant trees are adequately managed, protected and subsequently retained throughout the development.
- 1.8 The appended Tree Schedule (Appendix 1.0) contains details of all the surveyed vegetation falling within the scope of this report. The Tree Constraints Plan (Appendix 2.0) presents the locations, crown spreads, root protection areas (RPAs) and BS Categories of the surveyed trees. The Tree Removal Plan (Appendix 3.0) gives an overview of those trees to be retained and removed. The Tree Protection Plan (Appendix 4.0) details the tree protection measures to be employed.

2.0 INTRODUCTION

- 2.1 Greengage were commissioned by London Borough of Camden to undertake an appraisal of trees, hedges and vegetation land at Bacton Low Rise in Camden, London, to the *BS 5837:2012* Trees in relation to design, demolition and construction – Recommendations, and to prepare an Arboricultural Impact Statement and Arboricultural Method Statement.
- 2.2 The tree survey was undertaken to support a Minor Material Amendment (MMA) application for the redevelopment of Bacton Low Rise (BLR). The proposed development is for the demolition of the existing buildings on the BLR (Phase 2) site and the development of 247 residential units, two employment units, new open space and ancillary development. The residential development will contain a mix of sizes and will be a mix of market, social rented and intermediate tenures. The proposed development also includes a number of design based alterations to the extant Bacton planning permission.
- 2.3 The survey focused on the trees, hedges and vegetation within and directly adjacent to the site, that may be impacted by any proposed development. The report also indicates any trees requiring removal on the grounds of sound arboricultural management and those that would not be considered a major constraint to any development that may occur.

3.0 TREE SURVEY METHODOLOGY

SITE VISIT

- 3.1 The survey was undertaken on 31st August 2012 and updated on 4th August 2016, with deciduous trees in leaf. A summary table of all the trees included in the Tree Schedule, detailing further information on each tree is shown at Appendix 1.0.

TREE CATEGORISATION

- 3.2 Trees, tree groups and woodlands have been considered following evaluation into one of four categories (U, A, B, C) based on tree quality as outlined in British Standard 5837 (2012)¹ which has been followed. Categorisation of trees, following the British Standard, gives an indication as to the trees' importance in relation to the site and the local landscape and also, the overall value and quality of the existing tree stock on site. This allows for informed decisions to be made concerning which trees should be removed or retained, should development occur. For a tree to qualify under any given category it should fall within the scope of that category's definition. In the categories A, B, C which collectively deal with trees that should be a material consideration in the development process, there are three sub-categories which are intended to reflect arboricultural, landscape and cultural values respectively. Category U trees are those which would be lost in the short-term for reasons connected with their poor physiological or structural condition. They are, for this reason, not usually considered in the planning process.
- 3.3 In assigning trees to the A, B or C categories the presence of any serious disease or tree related hazards are taken into account. If the disease is considered fatal and / or irremediable, or likely to require sanitation for the protection of other trees it may be categorised as U, even if they are otherwise of considerable value.
- 3.4 **Category (A)** – trees whose retention is most desirable and is of high quality and value. These trees are considered to be in such a condition as to be able to make a lasting contribution (a minimum of 40 years) and may comprise:
- Trees which are particularly good examples of their species especially rare or unusual, or essential components of groups or of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue);
 - Trees, groups or woodlands which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of particular visual importance (e.g. avenues or other arboricultural features assessed as groups); and
 - Trees or groups or woodlands of significant conservation, historical, commemorative or other value (e.g. Veteran or wood-pasture trees).

- 3.5 **Category (B)** – are trees whose retention is considered desirable and are of moderate quality and value. These trees are considered to be in such a condition as to make a significant contribution (a minimum of 20 years) and may comprise:
- Trees that might be included in the high category but because of their numbers or slightly impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage), are downgraded in favour of the best individuals;
 - Trees present in numbers such that they form distinct landscape features and attract a higher collective rating than they would as individuals. Individually these trees are not essential components of formal or semi-formal arboricultural features, or trees situated mainly internally to the site and have little visual impact beyond the site; and
 - Trees with clearly identifiable conservation or other cultural benefits.
- 3.6 **Category (C)** – are trees that could be retained and are considered to be of low quality and value. These trees are in an adequate condition to remain until new planting could be established (a minimum of ten years) or are young trees with a stem diameter below 150mm and may comprise:
- Trees not qualifying in higher categories;
 - Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value and or trees offering low or only temporary screening benefit; and
 - Trees with very limited conservation or other cultural benefits.
- 3.7 **Category (U)** – trees for removal are those trees in such a condition that any existing value would be lost within 10 years and which should in the current context be removed for reasons of sound arboricultural management. Trees within this category are:
- Trees that have a serious irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees;
 - Trees that are dead or are showing signs of significant, immediate or irreversible overall decline; and
 - Trees infected with pathogens of significance to the health and or/safety of other trees nearby trees or very low quality trees suppressing adjacent trees of better quality.
- 3.8 Species have been recorded by common name and recorded as such in the Arboricultural Data Tables in Appendix 1.0. Height has been estimated in metres and stem diameters have been measured at 1.5 metres above ground level and recorded in millimetres. Crown spreads have been measured in half meters and taken to the point of greatest spread unless the crown has presented a pronounced asymmetrical form and therefore

measurements have been taken for the four cardinal points. The measurements have always been considered in the following sequence, North, East, South, and West, and therefore appear as such within the Arboricultural Data Tables.

- 3.9 In the assessment particular consideration has been given to the following when deciding the most appropriate British Standard Category and Sub-Category allocation:
- a. the health, vigour and condition of each tree;
 - b. the presence of any structural defects in each tree and its life expectancy;
 - c. the size and form of each tree and its suitability within the context of the proposed scheme; and
 - d. the location of each tree relative to existing site features, e.g. its value as a screen or as a skyline feature.

AGE CLASS & CONDITION

- 3.10 Age class is assessed according to the age class categories referred to in BS 5837.
- **Y:** Young – trees up to five years of age;
 - **SM:** Semi-mature – trees less than 1/3 life expectancy;
 - **EM:** Early mature – trees 1/3 – 2/3 life expectancy;
 - **M:** Mature – trees over 2/3 life expectancy;
 - **OM:** Over mature – declining or moribund trees of low vigour; and
 - **V:** Veteran – characteristics have been noted where a tree exhibits certain distinctive features of veteran trees.
- 3.11 The overall condition of the tree, or group of trees, has been referred to as one of the following. A more detailed description of condition has been noted in the Arboricultural Data Tables and discussed in the Arboricultural Impact Assessment Report.
- **Good:** A sound tree, trees, needing little, if any, attention;
 - **Fair:** A tree, trees, with minor but rectifiable defects or in the early stages of stress, from which it may recover;
 - **Poor:** A tree, trees, with major structural and physiological defects or stressed such that it would be expensive and inappropriate to retain; and
 - **Dead:** A tree, trees, no longer alive. However, this could also apply to those trees that are dying and will be unlikely to recover, or are / have become dangerous.
- 3.12 Major defects or diseases and relevant observations have also been recorded under Structural Condition. The assessment for structural condition has included inspection of the following defects:

- The presence of fungal fruiting bodies around the base of the tree or on the stem, as they could possibly indicate the presence of possible internal decay;
- Soil cracks and any heaving of the soil around the base indicating possible root plate movement;
- Any abrupt bends in branches and limbs resulting from past pruning, as it may be an indication of internal weakness and decay;
- Tight or weak 'V' shaped unions and co-dominant stems;
- Hazard beam formations and other such biomechanical related defects (as described by Claus Mattheck, Body Language of Trees HMSO Research for Amenity Trees No. 4 1994);
- Cavities as a result of limb losses or previous pruning;
- Broken branches;
- Storm damage;
- Canker formations;
- Loose bark;
- Damage to roots;
- Basal, stem or branch / limb cavities;
- Crown die-back;
- Abnormal foliage size and colour;
- Any changes to the timing of normal leaf flush and leaf fall patterns; and
- Other pathological diseases affecting any part of the tree.
- Major defects or diseases and relevant observations have also been recorded. Dead wood has been defined as the following:
 - Twigs and small branch material up to 5cm in diameter;
 - Minor dead wood 5cm to 10cm in diameter; and
 - Major dead wood 10cm in diameter and above.

3.13 The survey was completed from ground level only; aerial inspection of trees was not undertaken. Investigations as to the internal condition of a tree have not been undertaken. Further investigations of this type can be made and have been recommended where it has been considered necessary, within the report although these investigations are beyond the scope of this report.

3.14 Evaluation of the trees condition given within this assessment applies to the date of survey and cannot be assumed to remain unchanged. It may be necessary to review these within 12 months, in accordance with sound arboricultural practice.

- 3.15 The position of the trees recorded in the Tree Schedule has been shown on the Tree Protection Plan, in Appendix 4.0. The positions of the trees are based on a topographical survey supplied by the client for the purpose of plotting trees and from estimations during the site visit.

ROOT PROTECTION AREAS

- 3.16 The Root Protection Area (RPA) for individual and groups of trees are indicated on the Tree Constraints Plan element of the below plans. The Root Protection Areas are formulated as described below.
- 3.17 Below ground constraints to future development is represented by the area surrounding the tree that contains sufficient rooting volume to ensure survival of the tree, which need protecting in order for the tree to be incorporated into any future scheme, without adverse harm to the tree or structural integrity of buildings. This is referred to as the RPA and is shown as a circle of a given radius.
- 3.18 The circle may be modified in shape to maintain a similar total area depending on the presence of surrounding obstacles. Where groups of trees have been assessed, the RPA has been shown based on the maximum sized tree in any one group and so would automatically exceed the RPA's required for many of the individual specimens within the group. A RPA is equivalent to a circle with a radius 12x the stem diameter for single stem trees and 10x the basal diameter for trees with more than one stem arising less than 1.5 meters above ground level. The RPA for the trees in the Tree Schedule are shown on the Tree Protection Plan in Appendix 4.0.

4.0 BACKGROUND

SITE DESCRIPTION

- 4.1 The site is currently occupied by a low rise residential housing facility comprising of several detached buildings, landscaped courtyards and car parking. The site is located in north London, within the London Borough of Camden and within the Gospel Oak ward. The site is bound to the north by the mainline railway line which runs between Kentish Town and West Hampstead, to the east by Vicars Road and Wellesley Road, to the south by Wellesley Road and to the west by Haverstock Road. Tree cover in the locality is extensive and of good quality.

DESCRIPTION OF DEVELOPMENT

"Variation of conditions: 3 (detailed drawings), 6 (overlooking), 7 (refuse & recycling), 9 (cycle storage), 10 (car parking), 11 (electric vehicle charging points), 12 (car club bay), 13 (motorcycle parking), 23 (wheelchair units), 25 (contaminated land measures), 26 (biodiverse roofs), 27 (bird and bat details), 28 (lighting strategy), 29 (landscaping details), 32 (building foundations), 34 (drainage details), 36 (CCTV strategy), 37 (car club parking), 40 (re-appraisal of financial viability), 43 (energy efficiency), 44 (code for sustainable homes), 45 (car free), 47 (construction management plan) and 58 and 59 (approved plans) of planning permission 2012/6338/P dated 25/04/2013 (as amended by planning permissions 2014/3633/P and 2015/1189/P) (for the redevelopment of Bacton Low Rise Estate, Gospel Oak District Housing Office and Vicar's Road workshops following the demolition of all existing buildings, to provide a total of 294 residential units and associated works), namely to; provide 20 additional Class C3 residential units (19 market and 1 intermediate units), alter the housing mix, reconfigure the employment floorspace, deliver the outstanding parts of the development as a single phase, various external alterations and reconfigurations, revise the on-site car parking provision and the amount of cycle storage, and associated works."

THE TREES

- 4.2 During the survey, 36 individual trees comprising 20 Category B, 15 Category C and 1 Category U were recorded at the site. The tree reference numbers are a continuation of the original tree survey undertaken in 2012² for simplicity, and comprise trees T8-T48 (with several trees having been removed since the initial survey). Full details of the surveyed trees can be found in the Tree Schedule at Appendix 1.0.
- 4.1 Trees on the site are of a generally fair to good quality, though there is evidence of pressure from different phases of building works, compaction within the root protection areas, poor pruning and in some cases vandalism. No trees on site are protected by Tree Preservation Orders (TPOs).

- 4.2 The Category mix of the recorded tree population is summarised in table 3.1 below.

Table 4.1 - Number of trees in each BS 5837 Category

	Category A	Category B	Category C	Category U
Number of trees in Category	0	20	15	1
Tree reference numbers	N/A	8, 13, 15-19, 22-26, 32, 34, 35, 39-43	9-12, 14, 20, 21, 27-31, 33, 36-38, 44-48	29

- 4.3 The trees are generally in a good condition and are fairly representative of trees found in green spaces within urban areas.

LEGISLATION AND POLICY

- LDF policy: CS14, CS15, DP22, DP24, DP25 and Camden Planning Guidance 1 (section 6 – Landscape design and trees);
- London Plan policy 7.21 (Trees and woodland) and the Trees and Woodland Framework;
- National Planning Policy Framework (chapter 11 – Conserving and enhancing the natural environment); and
- Section 197 of the Town and Country Planning Act 1990 (as amended) which places a duty on the local authorities to include appropriate provision for the preservation and planting of trees.

Regional Planning Policy

- 4.1 The London Plan 2016 includes Policy 7.21 which relates to trees and woodland. Policy 7.21 specifically states that:

"Existing trees of value should be retained and any loss as the result of development should be replaced following the principle of 'right place, right tree'. Wherever appropriate, the planting of additional trees should be included in new developments, particularly large-canopied species."

Local Planning Policy

- 4.2 LB Camden planning policy includes several policies relating to trees. Policy CS15 in the Core Strategy states that:

"The Council will protect and improve sites of nature conservation and biodiversity, in particular habitats and biodiversity identified in the Camden and London Biodiversity

Plans in the borough by [...] protecting trees and promoting the provision of new trees and vegetation, including additional street trees."

- 4.3 In addition, LB Camden has a specific Tree Strategy which deals with tree management on its land, with the aim of retaining existing trees and providing new trees. The Tree Strategy states that the Council will resist the loss of trees and groups of trees wherever possible and, where this is not possible, require their replacement on development sites or nearby streets and open spaces. With regards to species choice, this should consider historic context, availability of space, soil conditions, potential improvements to air and soil quality and reducing the effects of and adapting to climate change.
- 4.4 Camden advocates tree planting which provides diversity in both species mix and age class to provide a robust tree population that is better able to adapt to changing environmental conditions and to withstand pests and diseases.

Tree Preservation Orders

- 4.5 A Tree Preservation Order (TPO) is an order made by the council, giving legal protection to trees or woodland. They prevent the cutting down, uprooting, topping, lopping, wilful damage or destruction of trees, including cutting roots, without our permission. Trees can also be specially protected if they fall within a local Conservation Area. Conservation Areas are parcels of land that have been designated as being of special architectural or historic interest.
- 4.6 To determine whether any trees on or adjacent to the site are specially protected by TPOs, a desktop review was undertaken of the available mapping data at data.gov.uk³ (accessed on 23rd August 2016). There were no TPOs identified within the scope of this report.
- 4.7 It was also confirmed that the survey areas are not included in any local Conservation Area that would afford additional protection to the trees.

SUMMARY AND RECOMMENDATIONS

- 4.8 There are no TPOs or Conservation Areas relating to the site and therefore the trees are not specially protected through legislation.
- 4.9 However, in line with local and regional planning policy, where possible, trees of value will be retained within the scheme. Any trees that are lost as a result of development will be compensated for through a well thought out replacement strategy, considering location, space, age class and species mix.

5.0 ARBORICULTURAL IMPACT ASSESSMENT

INTRODUCTION

- 5.1 The purpose of this Arboricultural Impact Assessment (AIA) is to assess the potential impact to existing trees from the proposed development, and to highlight the need for the retention or removal of specific trees during construction.
- 5.2 Works associated with development of this scale can damage trees, threatening the survival of those that are sought to be retained. The following actions can have negative impacts upon tree health:
- Soil compaction;
 - Root damage (e.g. severance);
 - Soil coverage with impermeable material;
 - Alterations in ground levels;
 - Leaks and spillages from stored materials; and
 - Vehicle and heavy plant collision.
- 5.3 As such, the RPAs and crown spreads that are defined in the Tree Constraints Plan (Appendix 2) should be considered throughout works to prevent risks to the health of existing trees.

DIRECT TREE LOSS

- 5.4 Several trees have been highlighted for removal to facilitate the development. This comprises the following trees, as shown at Appendix 3.0:
- Category B – T15, T16, T18, T19, T22, T23, T39-T43 (11 trees).
 - Category C – T14, T20, T21, T36-T38, T44-T46 (9 trees).
- 5.5 A number of trees proposed to be removed are located within the existing central courtyards; these specimens do not currently provide significant amenity value due to lack of visibility for the public realm. These trees cannot feasibly be retained in the current scheme as the existing layout is not compatible with the proposals seeking to maximise the available space for housing opportunities. New soft landscaped areas within the BLR development will provide replacement tree planting for residents in private amenity spaces to compensate for this loss.
- 5.6 In addition, trees T14-16 and T18-20 along the southern boundary on Wellesley Road are proposed to be removed to allow provision of semi-private terrace areas for the residential units and to address issues associated with the dropped level from the highway in this location. These trees cannot be practicably retained due to conflict with

the layout of the proposals and allowance for construction working space. Seven new trees are proposed to be planted along this frontage to re-provide the tree line.

- 5.7 Two mature London plane trees (T22 and T23) are proposed to be removed from the southern corner of Haverstock Road. Whilst this would be considered a significant loss in arboriculture terms, removal of these trees is proposed for a number of reasons. First, there is a small impingement into the RPA of T22 which may be difficult for a tree of this age class to endure. Second, removal of these trees will improve daylight and sunlight conditions for residents in neighbouring units, as described in the assessment submitted with the MMA. And third, removal of these trees will minimise the future maintenance responsibilities of Camden which may arise from retaining trees in this location very close to the new buildings. The remaining trees along Haverstock Road will be protected and replacement trees will be provided to preserve and enhance the character of this tree-lined road.
- 5.8 The trees proposed to be removed are a mix of low quality Category C trees and moderate quality Category B trees across the site; there are opportunities to replace these trees through a sustainable planting strategy associated with the development as illustrated in the landscape strategy found at Appendix 5.0.

INDIRECT TREE LOSS

- 5.9 One tree (T29) is recommended for removal for sound arboricultural practice. This common ash tree is located on Haverstock Road and is in a dead/dying state with an estimated remaining contribution of less than 10 years.

TREES TO BE RETAINED

- 5.10 All remaining trees are proposed to be retained. Their retention will be guaranteed through tree protection, management and special construction techniques. Details of which are specified in the Arboricultural Method Statement, in the following chapter.

FACILITATION PRUNING

- 5.11 The crowns of T12, T13, T17, and T24, will require some minor crown reduction to allow the construction works to go ahead whilst avoiding damage to branches. This shall be undertaken before any other operation onsite alongside the proposed felling. These works are not predicted to have residual negative impacts upon the trees, assuming best practice recommendations are adhered to.
- 5.12 Assuming Camden continues its regular maintenance of the trees along Haverstock Road, it is not predicted that any further crown-lifting works are required to these trees to allow construction site access as there is large vehicle access to this road as existing (e.g. for recycling/rubbish collection).

CONSTRUCTION WORK WITHIN RPAs

- 5.13 Using BS 5837:2012 methodology to display an indicative root network, the RPAs of trees to be retained have been reviewed in the context of the design proposals (see Appendix 3).
- 5.14 Whilst the footprint of the development results in small impingements into the calculated RPAs of T12, T13 and T17 common lime, these trees are sought to be retained and special construction techniques will be employed to minimise any potential impacts. This will include minimal construction working space, hand excavation and removal of materials in this area, and special foundations where necessary.

FUTURE PRESSURE

- 5.15 Pressure from residents to remove/prune trees can potentially stem from light obstruction, direct crown interference and leaf litter.
- 5.16 Whilst the London plane tree T24 on Haverstock Road is growing very close to the proposed building, the proposed footprint has stepped back from the existing layout, and provides more space for future growth. Notwithstanding, this tree has a growth form which leans away from the building and future crown interference is not predicted.

SUMMARY

- 5.17 The proposals will result in the temporary loss of 20 low to moderate quality trees to facilitate the scheme. The majority of the trees proposed to be removed are planted within the central courtyard spaces with little visibility from the public realm and therefore have limited amenity value. Trees proposed to be removed within the private garden areas along Wellesley Road generally provide screening and amenity value. However, new tree planting will be provided along this frontage and across the site to compensate for the proposed loss of trees.
- 5.18 The BLR site will deliver soft landscaped semi-private amenity space, with new tree planting proposed in these areas and on surrounding highways. Assuming new tree planting is implemented following best practice, the proposals have the potential to provide a more sustainable tree population at the site by re-providing a diverse mix of native and robust species more suited to the proposed layout.
- 5.19 The trees highlighted for removal will be compensated for through the landscape proposals associated with the development scheme, resulting in no residual net loss in tree stock for the public realm. Overall, the 20 trees proposed to be removed will be replaced by 40 trees across the site and adjacent pavements leading to a net increase in numbers, as shown at Appendix 5.

6.0 ARBORICULTURAL METHOD STATEMENT

INTRODUCTION

- 6.1 The AIA in the previous section provides an outline of the potential impacts of the development upon all trees within the scope of this report.
- 6.2 This section provides an Arboricultural Method Statement (AMS) to summarise the management and protection of trees throughout the development, and the details of the implementation of any site activities that have the potential to be detrimental to the trees on site – this will ensure successful tree retention if adhered to.
- 6.3 Advice and guidance in the *BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations* has been followed, along with professional expertise, experience and judgement.
- 6.4 The Tree Protection Plan (TPP) at Appendix 5.0 provides an illustrative document of the protection measures to be implemented at the Site. The location of protection measures etc. should be confirmed at the pre-commencement meeting and the agreed TPP should be visible (in A1 colour) at the site throughout the duration of the construction works.

TREE WORKS

Direct Tree Loss

- 6.1 As a direct consequence of the proposed development, 20 trees are proposed to be removed. These trees will be felled in accordance with best practice recommendations.

Indirect Tree Loss

- 6.2 Category U common ash T29 on Haverstock Road is recommended for removal.

Pruning

- 6.3 Light facilitation pruning is proposed for T12, T13, T17, and T24. All pruning works will be carried out by tree contractors approved by the Arboricultural Association to the *BS 3998: 2010* and will not negatively impact the trees.
- 6.4 It is likely that any new tree planting will require remedial works consisting of formative pruning whilst the trees establish. This is recommended as part of the three - five year management programme for the planting, maintenance and aftercare of the new trees.

TREE PROTECTION

Barriers

- 6.1 Tree protection fencing shall be set out as per the detail on the tree protection plan; it shall be identified as such using signage.
- 6.2 Trees to be retained on the highway are planted in tree pits. It would not be possible or necessary to install tree protection fencing following the extent of the calculated RPAs, as the hardstanding will prevent soil compaction and root damage. It is therefore proposed that the fencing is sited according to site conditions, following kerb edges etc., which will protect the roots within tree pits that are not covered by hardstanding in addition to the stems of these trees.
- 6.3 The tree protection fence/barrier once erected will not be moved or relocated without written approval from the Council. The tree protection area behind the fence/barrier (the Development Exclusion Zone) will be sacrosanct throughout development and no access will be allowed to this area including for example the storage of or moving of materials or machinery.
- 6.4 In the Development Exclusion Zone, there will be no excavations or increases in soil level (beyond those described) without prior written approval from the Council. The location of protective fencing is illustrated on the Tree Protection Plan and this will also be placed within the site offices.
- 6.5 The barriers will be made from scaffold in a vertical and horizontal framework, as shown at Figure 2 in *BS5837: 2012* with vertical tubes up to 3 meters apart.
- 6.6 The framework will be braced to resist impacts. On to the scaffold framework, weldmesh panels will be secured with wire or scaffold clamps and driven into the ground. This method will be implemented where the tree protective fencing is permanent and not to be moved for the entirety of the development.
- 6.7 The RPAs of all trees shall be respected until the ACoW is present on site to supervise any works within RPAs. At this point with the supervision of the ACoW the protective fencing will be moved to allow works to take place.
- 6.8 The rear support for all tree protective fencing will be constructed by attaching a supporting strut scaffold pole to the main fencing with the other end having a pin driven through the hole into the soil for anchorage. This method will significantly reduce the risk of damaging any major roots whilst still giving the structure rigidity.
- 6.9 There will be clear and visible signs attached to the protective fencing with the following "Tree Protection Area – Keep Out" and the area will be regarded as sacrosanct by everyone. This will be checked prior to the commencement of work by the ACoW and throughout the course of development.

- 6.10 The tree protection fencing denotes the Development Exclusion Zone. Therefore, the following must be carefully considered when planning site operations to ensure that wide or tall loads or plant with booms, jibs and counterweights can operate without coming into contact with retained trees. Any transit or traverse of plant in close proximity to trees should be conducted under the supervision of a banks person to ensure that adequate clearance from trees is maintained at all times.
- 6.11 Material that will contaminate the soil such as concrete mixing, diesel oil and vehicle washing should not be discharged within 10m of the tree stems.
- 6.12 Fires should not be lit in a position where their flames can extend to within 5m of foliage, branches or trunk. This will depend on the size of the fire and the wind direction.
- 6.13 At the end of the project the fence will be removed only after confirmation by the ACoW and Council.
- 6.14 A detailed Tree Protection Plan (Appendix 4.0) will be located within the site cabins throughout the course of development. This will include details of the fencing specification and location for which the fence will be erected. This element should be conditioned for implementation. This plan will be printed at no less than A1 in size to ensure easy reading of all the detail contained within.

SITE ACTIVITIES

Working Within RPAs

- 6.1 While the majority of the construction works are outside the BS 5837 calculated RPAs of retained trees, the proposed build falls just within the RPAs of T12, T13 and T17. All excavation works in this area shall be undertaken by hand under supervision from the ACoW. Construction working space will be kept to a minimum to reduce any impacts on these trees.
- 6.2 Hard surfacing covers the RPAs of all other trees sought to be retained. Where this hard surfacing is to be replaced, this will be achieved using hand tools under ACoW supervision. There will be no level changes or excavation in this area.

Site Storage

- 6.1 All site offices, storage areas, cement mixing, access routes and washing points for equipment and vehicles must be outside the RPAs shown on the appended plans. Where there is a risk of polluted water run-off into RPAs, heavy-duty plastic sheeting and sandbags must be used to contain spillages and prevent contamination. If these instructions are compromised at any time throughout the development, the project ACoW should be notified so that any applicable remedial works can be implemented.

NEW TREE PLANTING

- 6.2 The landscaping proposals show extensive new tree planting. All new tree planting and maintenance must be carried out to the *BS 3998: 2010 Tree Work – Recommendations*⁴ and *BS 8545: 2014 Trees: from nursery to independence in the landscape – Recommendations*⁵.
- 6.3 In total, 41 new trees are proposed to be provided. These are located within the new central semi-private courtyard areas, on Haverstock Road to the west, along Wellesley Road to the south and on Wellesley Road to the east (see Appendix 5).
- 6.4 The species mix includes:
- *Betula pendula*;
 - *Betula utilis*;
 - *Gleditsia tricanthos* 'Sunburst';
 - *Koelreuteria paniculata*;
 - *Liriodendron tulipifera*;
 - *Pinus nigra*; and
 - *Platanus acerifolia*.
- 6.5 The new tree planting will contribute towards achieving a diverse tree population with a range of species and age classes that promote resilience across the BLR estate.
- 6.6 Some new trees are proposed to be planted within existing tree pits on Haverstock Road. While it has not been possible to investigate the viability of these empty tree pits prior to the MMA submission, this has been discussed with the Tree Section at Camden (email ref. RA dated 13.09.16). It was confirmed that one empty tree pit on Haverstock Road (located opposite Bacton High Rise) is currently on the list to be replanted by the council. Two further tree pits have recently become unused due to removal of the dead/dying common ash trees (since the original tree survey by Greengage in 2012), and one additional tree pit will become empty following the advised removal of Category U T29.
- 6.7 Prior to the proposed new tree planting in these locations, the unused tree pits will be investigated and any remedial actions undertaken to improve the success of new tree establishment. Landscape details submitted with the MMA will also specify the design of new tree pits across the development.
- 6.8 It is likely that any new tree planting will require remedial works consisting of formative pruning whilst the trees establish. This is recommended as part of the three to five year management programme for the planting, maintenance and aftercare of the new trees, until the successful establishment is confirmed by Camden. Any trees that die or progressively decline within this period will be replaced and maintained until their establishment is confirmed by Camden. These actions will ensure the proposed planting is endured throughout the development.

LANDSCAPE MANAGEMENT PLAN

- 6.9 It is recommended that a landscape management plan to cover the construction phase and a period of 3-5 years' post-construction is developed to ensure the correct installation and maintenance of new and existing soft landscaping. The landscape management plan will include specifications for new tree planting.

WORKS PHASING

- 6.1 This method statement makes a number of recommendations for the site. For convenience, all of the recommendations in this report have been listed in Table 6.1 below (to be signed-off by the Council).
- 6.2 In order to ensure a successful tree retention and development it is imperative that all of these recommendations are carried out in a similar order to the tabulated form below.

Table 6.1 Works Phasing Programme

Recommendation	Phase / Timing	Arboricultural Consultant Input	Completed?
Appoint Arboricultural Clerk of Works (ACoW) to oversee all arboricultural issues on site.	Pre-commencement	NA	
On-site meeting(s) to discuss tree protection measures/ any site issues with construction team, site manager, Tree Officer etc.	Pre-commencement	Site attendance Liaison with team	
Undertake facilitation pruning and felling (contractor).	Before tree protection is installed	NA	
Erect tree protection fencing to BS5837:2012 specifications as appropriate.	Before plant machinery enters the site	Site attendance to ensure installation is as planned	
Initial/ Pre-continuance meeting with contractor on site.	At commencement of site activity	Site attendance	
Implement reporting progress for all unforeseen arboricultural incidents.	During Construction	Prepare reporting document to keep on-site	
Implement use of progress sheet to build up evidence base of good practice on site.	During Construction	Complete/check during site attendance	
Monitoring site visits by ACoW to ensure continued compliance.	During Construction	Regular site attendance, production of file notes and circulation to team	
Works within the RPA of retained trees will be observed.	During Construction	Site attendance to oversee key site activities	
Post development inspection to identify any required remedial actions.	Post Construction	Site attendance and recommendations	
General maintenance/ remedial tree works if necessary.	Post Construction	NA	
Annual tree inspection.	Post Construction	Site attendance	

7.0 CONCLUSIONS

- 7.1 The survey identified a number of trees within the scope of the survey which could potentially be impacted by the redevelopment of BLR.
- 7.2 Twenty low to moderate quality trees, including 11 Category B and 9 Category C, have been indicated for removal to facilitate the development.
- 7.3 All remaining trees are sought to be retained through the implementation of tree protection and special construction techniques as detailed within the AMS.
- 7.4 The method for retention of the trees is described through the above techniques. This method statement provides detail of the measures and steps required to retain the trees through and post development.
- 7.5 If the recommendations within this document are adhere to, the development will mitigate for the loss of trees in the long-term through a sustainable planting strategy. Proposed new tree planting will provide net gains in tree stock for the public realm, with a net increase of 20 trees.

Limitations

- 7.6 This report includes information on only the trees that were inspected and the condition they were observed in at the time of survey. The condition of trees can change, and as such any findings from this report should be held valid to inform for purposes of development for no longer than 12 months from the survey date.
- 7.7 No guarantee can be given for the structural integrity of any trees on site as a full hazard assessment has not been made. Inaccessible trees will have best estimates made about location, physical dimensions and characteristics.

- END -

APPENDIX 1.0: TREE SCHEDULE

a

Tree No	Common name	Height (m)	Combined Stem Diameter (mm)	RPA radius (m)	Crown Spread				Height of 1st significant branch (m)	Age Class	Condition (Physiological)	Condition (Structural)	Estimated years remaining	Grade Category
					North	East	South	West						
T8	Whitebeam	6	330	4	4	4	2	2	2	M	G	Good vigour, low crown, roots lifting car park tarmac, asymmetric crown	40	B
T9	Norway maple	Has been removed since previous tree survey												C
T10	Norway maple	Has been removed since previous tree survey												C
T11	Norway maple	Has been removed since previous tree survey												C
T12	Lime	7	295	3.54	4	4	5	3	4	SM	F	Street tree, restricted rooting area, codominant stems.	>20	C
T13	Lime	9	300	3.6	4	5	5	4	3	SM	F	Street tree, restricted rooting area, low crown.	>20	B
T14	Sycamore	15	405	4.86	4	6	3	3	5	M	F	Multistemmed at ground level, vertical mechanical wound to stem, has been heavily reduced, wrong tree/wrong place, limited long term prospects due to constrained crown environment.	<20	C
T15	Lime	12	290	3.48	2	5	4	5	3	SM	G	Asymmetric crown, good structure form and vigour, located in grass matrix.	>20	B
T16	Lime	13	300	3.6	2	3	5	4	4	SM	G	Codominant stems, good structure and vigour, head lean towards adjacent road.	>20	B
T17	Lime	14	330	3.96	4	5	7	5	2	SM	G	Good structure, form and vigour, located in grass matrix.	>20	B

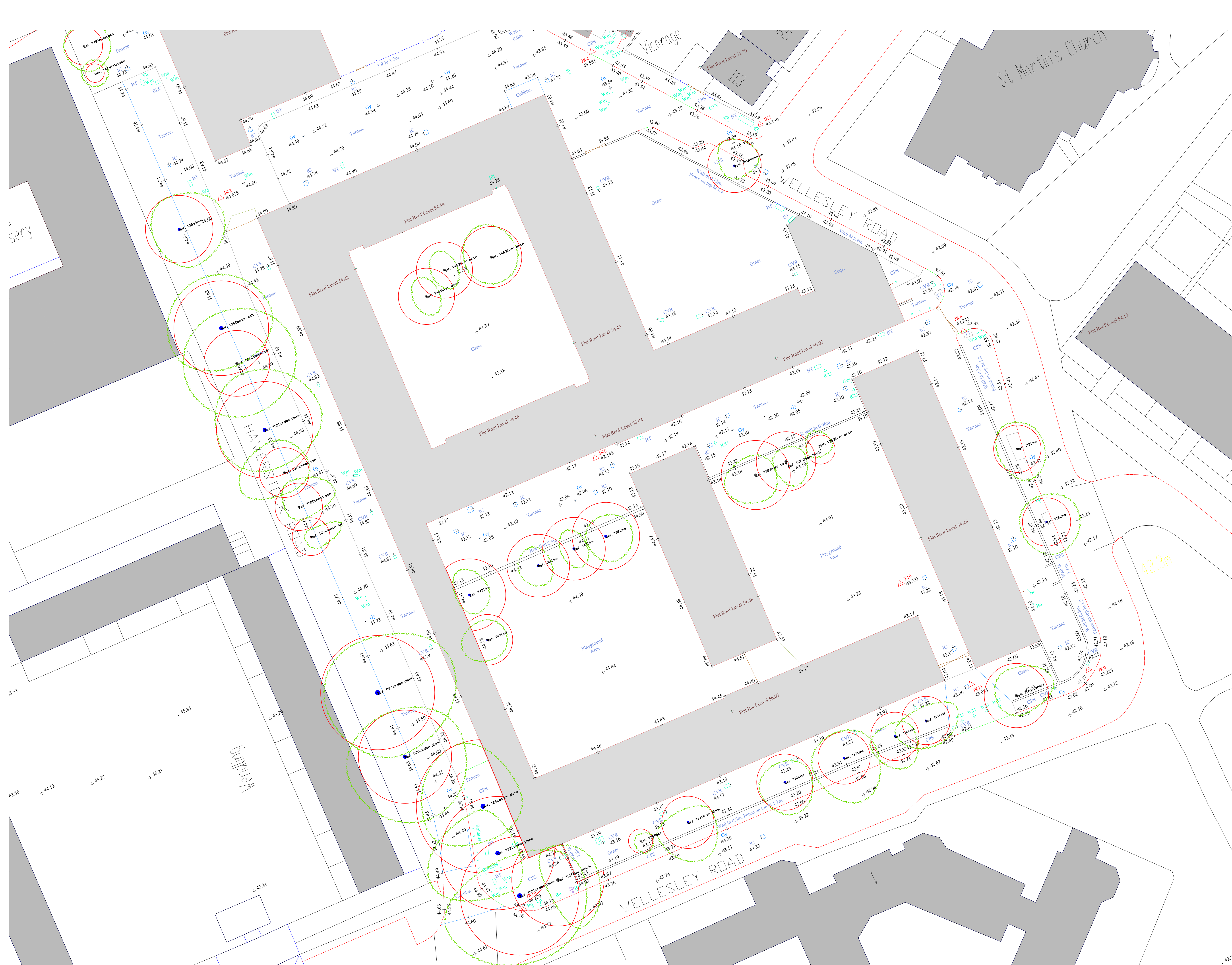
b

T18	Lime	14	350	4.2	3	4	5	4	5	SM	G	Good structure form and vigour, located in grass matrix.	>20	B
T19	Silver birch	13	315	3.78	2	4	6	5	3	M	G	Poor previous pruning, good structure form and vigour, located in grass matrix.	>20	B
T20	Pear	6	145	1.74	1	2	2	1	2	Y	G	Good structure from and vigour, located in grass matrix.	>20	C
T21	False acacia	16	490	5.88	5	6	8	2	5	M	F	Poor form, good vigour, asymmetric crown.	<20	C
T22	London plane	18	720	8.64	6	10	10	12	3	M	G	In a tarmac matrix, roots lifting tarmac, good structure, form and vigour.	>40	B
T23	London plane	18	650	7.8	7	3	6	11	4	M	G	Head lean towards adjacent road, asymmetric crown, good vigour, located in tarmac matrix.	>40	B
T24	London plane	18	700	8.4	10	6	5	9	4	M	G	Head lean towards adjacent road, asymmetric crown, good vigour, located in tarmac matrix.	>40	B
T25	London plane	16	580	6.96	7	9	10	9	5	M	G	Good structure, form and vigour, low crown over adjacent terrace.	>40	B
T26	London plane	18	710	8.52	8	12	10	8	4	M	G	Good structure, form and vigour, low crown over adjacent terrace.	>40	B
T27	Common ash	Has been removed since previous tree survey												U
T28	Common ash	Has been removed since previous tree survey												U
T29	Common ash	12	235	2.82	1	5	2	1	6	SM	P	Dead/dying - fell for safety.	<10	U
T30	Common ash	12	295	3.54	4	6	2	2	5	SM	P	In decline, poor form.	<10	C
T31	Common ash	13	310	3.72	5	4	3	7	3	SM	P	In decline, limited long term prospects.	<10	C

C

T32	London plane	17	600	7.2	9	9	6	7	4	M	g	Good structure, form and vigour.	<40	B
T33	Common ash	16	410	4.92	8	9	8	8	5	SM	P	Mechanical damage to stem.	<10	C
T34	Common ash	18	590	7.08	8	8	6	8	5	M	G	Good structure, form and vigour, low crown.	<40	B
T35	Willow	9	420	5.04	5	7	6	4	2	M	G	Good structure, form and vigour.	<40	B
T36	Silver birch	7	180	2.16	3	2	1	2	2	Y	F	Poor form.	>20	C
T37	Silver birch	9	370	4.44	2	3	4	2	3	SM	F	Poor form.	<20	C
T38	Silver birch	11	430	5.16	3	3	4	5	3	M	G	Low crown.	>20	C
T39	Lime	15	420	5.04	3	4	4	3	3	SM	G	Good structure, form and vigour, located in courtyard.	>20	B
T40	Lime	15	390	4.68	3	2	3	2	3	SM	G	Good structure, form and vigour, located in courtyard.	>20	B
T41	Lime	14	390	4.68	3	2	3	3	3	SM	G	Good structure, form and vigour, located in courtyard.	>20	B
T42	Lime	14	370	4.44	4	3	3	2	4	SM	G	Good structure, form and vigour, located in courtyard.	>20	B
T43	Lime	13	280	3.36	3	3	3	4	5	SM	G	Good structure, form and vigour, located in courtyard.	>20	B
T44	Silver birch	20	350	4.2	3	2	3	2	12	M	G	Good structure, form and vigour, located in courtyard.	>20	C
T45	Silver birch	20	350	4.2	3	2	3	2	8	M	G	Good structure, form and vigour, located in courtyard.	>20	C
T46	Silver birch	24	380	4.56	5	4	4	4	6	M	G	Codominant stems at 6m, good vigour.	>20	C
T47	Whitebeam	6	115	1.38	2	2	2	2	3	Y	P	Large wound near base.	<10	C
T48	Whitebeam	8	235	2.82	3	4	4	3	3	SM	F	Some broken branches, good vigour.	>10	C

APPENDIX 2.0: TREE CONSTRAINTS PLAN – EXISTING LAYOUT



Tree Constraints Plan showing existing layout against BS5837:2012 tree categories & Root Protection Areas

Example

- Canopy extent - patterned line
- Category key - coloured stem
- BS5837:2012 calculated root protection area - red line showing root incursion
- Tree No. - tag

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 remaining expectancy of at least 20 years.

Category C

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

Category U

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.

Hedges and Groups with coloured hatch showing category. Those in red are to be removed to facilitate the development.

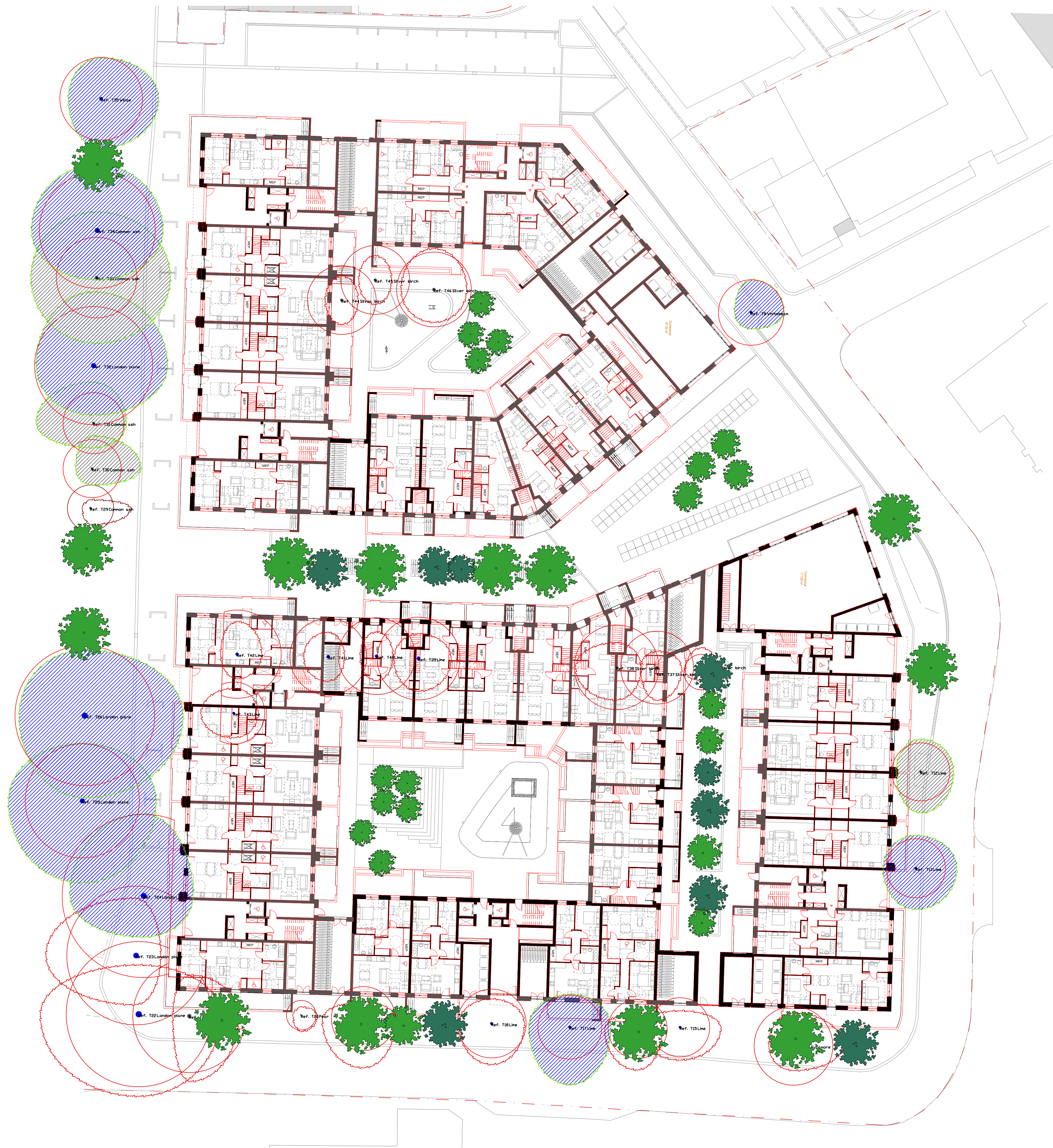
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No.	Revision/Issue	Date

Greengage

64 Great Suffolk Street
SE1 0BL
Tel: 0203 544 4000

Project Name and Address	
Bacton Low Rise Camden	
Project Bacton Low Rise	Sheet 1 of 1
Date 17/08/2016	
Scale	

APPENDIX 3.0: TREE RETENTION AND REMOVAL PLAN



Tree Retention and Removal Plan showing proposed layout with BS5837:2012 tree categories & Root Protection Areas

- Tree to Retain**
 - Canopy extent - patterned line
 - Category key - coloured stem
 - BS5837:2012 calculated root protection area - red line showing root incursion
 - Tree No. - tag
- Tree to Remove**
 - Trees to be removed as part of the scheme.
- Proposed New Tree Location**
 - New tree to be planted as per Tree Planting Schedule (drawing ref. LL543-100-0071)

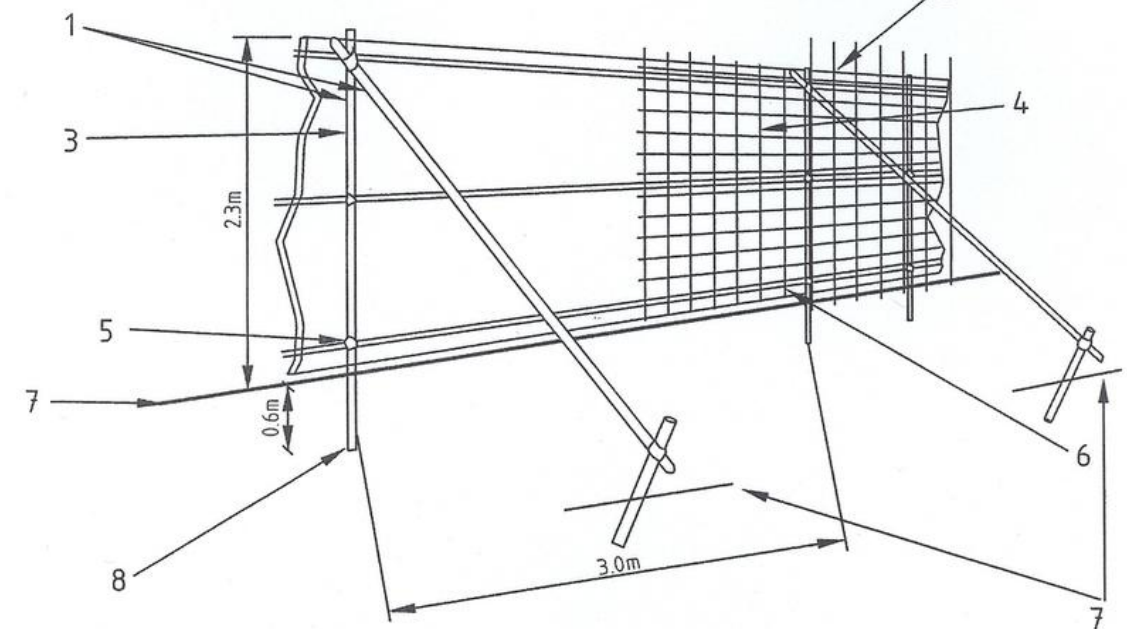
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No.	Revision/Issue

Greengage
64 Great Suffolk Street
SE1 0BL
Tel: 0203 544 4000

Project Name and Address
Bacton Low Rise Phase 02

Project Bacton Low Rise	Sheet 1 of 1
Date 28/09/16	

APPENDIX 4.0: TREE PROTECTION PLAN



- 1 Standard scaffold poles
- 2 Uprights to be driven into the ground
- 3 Panels secured to uprights with wire ties and, where necessary, standard scaffold clamps
- 4 Weldmesh wired to the uprights and horizontals
- 5 Standard clamps
- 6 Wire twisted and secured on inside face of fencing to avoid easy dismantling
- 7 Ground level
- 8 Approx. 0.6m driven into the ground

TREE PROTECTION AREA

TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY PLANNING CONDITIONS AND ARE SUBJECTS OF A TREE PRESERVATION ORDER (TOWN & COUNTRY PLANNING ACT 1990)

CONTRAVENTION OF TREE PRESERVATION ORDERS MAY LEAD TO CRIMINAL PROSECUTION

THE FOLLOWING MUST BE OBSERVED BY ALL PERSONS:-

- THE PROTECTIVE FENCING MUST NOT BE REMOVED
- NO PERSON SHALL ENTER THE PROTECTED AREA
- NO MACHINE OR PLANT SHALL ENTER THE PROTECTED AREA
- NO MATERIALS SHALL BE STORED IN THE PROTECTED AREA
- NO SPOIL SHALL BE DEPOSITED IN THE PROTECTED AREA
- NO EXCAVATION SHALL OCCUR IN THE PROTECTED AREA

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

KEEP OUT!

Arboricultural Method Statement

To enable the development as proposed, the following trees will require removal, as referenced on the plan:

- Category B – T15, T16, T18, T19, T22, T23, T39-T43 (11 trees).
- Category C – T14, T20, T21, T36-T38, T44-T46 (9 trees).
- Category U – T29

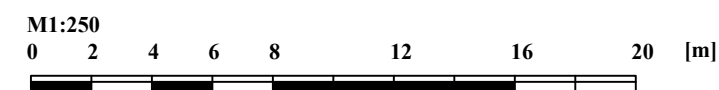
The remaining trees are to be retained by means of appropriate protection through demolition and construction phases. The correct installation of tree protection fencing and site hoarding would enable these trees to be retained.

Tree removals and pruning works to allow construction should take place before any other site operation commences onsite. Tree works should be carried out to the standards set down in BS 3998: 2010 Tree Works - Recommendations.

However, any excavation into the RPAs (e.g. removal of hardstanding) and any proposed landscaping or fencing within the Tree Protection Zones shall be carried out under a watching brief by the project Arboricultural Clerk of Works (ACoW).

- Erection of tree protection fencing should be signed off by the ACoW
- Tree protection fencing should be maintained throughout the construction phase
- Tree removal works and tree safety works should be carried out before any other site operation
- The ACoW should be consulted on appropriate replacement trees. New trees will be installed in accordance with BS 8545: 2014 Trees: from nursery to independence in the landscape - Recommendations
- Where service runs have the potential to breach RPAs, excavation should be carried out using no-dig techniques and air spading and supervised by the ACoW
- There will be no storage of materials within RPAs

Tree Protection Fencing following the existing Haverstock Road pavements will allow continued use of this road for vehicular access, whilst protecting the stems of retained trees. As existing, crowns are maintained to allow vehicular access without damage to branches so no further work is required. Roots will be protected by existing hardstanding.



Tree Protection Plan
showing proposed
layout with
BS5837:2012 tree
categories & Root
Protection Areas

Tree to Retain

-Canopy extent - patterned line
-Category key - coloured stem
-BS5837:2012 calculated root protection area - red line showing root incursion
-Tree No. - tag

Tree to Remove

Trees to be removed as part of the scheme.

Tree Protection

Tree protection fencing to be installed as per AMS.

Minor pruning works to be carried out by tree contractor under project ACoW observation. Exact branches to be determined onsite following guidance in BS3998.

1	550355nf28Sep16V4_TPP_ground.dwg
No.	Revision/Issue

Greengage

64 Great Suffolk Street
SE1 0BL
Tel: 0203 544 4000

Project Name and Address
Bacton Low Rise Phase 02

Project Bacton Low Rise	Sheet 1 of 1
Date 28/09/16	



APPENDIX 5.0: LANDSCAPE STRATEGY



APPENDIX 6.0: EXAMPLE TREE PROTECTION SIGNAGE



REFERENCES

-
- ¹ British Standards Institution. (2012). 5837: *Trees in relation to design, demolition and construction - Recommendations*. London: BSI.
- ² Greengage Environmental (2012) *Bacton Low Rise, Tree Survey, Implications Assessment & Constraints Report*
- ³ <https://data.gov.uk/data/map-preview>
- ⁴ British Standard (2010) BS 3998 '*Tree work – Recommendations*'.
- ⁵ British Standard Institution (2014) BS 8545 '*Trees: from nursery to independence in the landscape – Recommendations*'.