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Arboricultural Implications Report

Proposed re-development at

Site 2- Garages

Ferrymoor

Ham

Richmond

March 2022

Ref. SJA air 22071-01

SUMMARY

S1. On the basis of our assessment, we conclude that the arboricultural impact of this scheme is of negligible magnitude, as defined according to the categories set out in ***Table 1*** of this report.

S2. Our assessment of the impacts of the proposals on the existing trees concludes that none of the existing trees are to be removed. As such, there will be no alteration of the main arboricultural features of the site or to the overall arboricultural character of the site and will not have an impact on the arboricultural character and appearance of the local landscape.

S3. The proposed pruning is minor in extent, will not detract from the health or appearance of these trees, and complies with current British Standards.

S4. The incursions into the Root Protection Areas of trees to be retained are minor, and subject to implementation of the measures recommended on the Tree Protection Plan and set out at **Appendix 1**, no significant or long-term damage to their root systems or rooting environments will occur.

S5. None of the proposed dwellings or amenity space are likely to be shaded by retained trees to the extent that this will interfere with their reasonable use or enjoyment by incoming occupiers, which might otherwise lead to pressure on the Local Planning Authority to permit felling or severe pruning that it could not reasonably resist.

S6. As the proposed development will retain all existing trees, including those of landscape importance and will ensure that retained trees are adequately protected during construction, it complies with Policies LP15 and LP16 of the London Borough Richmond upon Thames Local Plan.

CONTENTS

APPENDICES

1. INTRODUCTION AND BACKGROUND INFORMATION

1.1. Instructions

1.1.1. SJAtrees has been instructed by Zuber Dobson Architects to visit the garages east of Ferrymoor, Ham and to survey the trees growing on or immediately adjacent to this site.

1.1.2. We are further asked to identify which trees are worthy of retention within a proposed re-development of the site; to assess the implications of the development proposals on these specimens, and to advise how they should be protected from unacceptable damage during demolition and construction.

1.2. Scope of report

1.2.1. This report and its appendices reflect the scope of our instructions, as set out above. It is intended to accompany a planning application to be submitted to London Borough of Richmond upon Thames (the LPA), and complies with local validation requirements, and with the recommendations of British Standard BS 5837:2012, *Trees in relation to design, demolition and construction – Recommendations* ('BS 5837').

1.2.2. The proposed development comprises the demolition of the garages and the construction of two, 3 storey, townhouses with parking and gardens.

1.2.3. This report summarises and sets out the main conclusions of the baseline data collected during the tree survey and identifies those trees or groups of trees whose removal could result in a significant adverse impact on the character or appearance of the local area (Section 3). It then details and assesses the impacts of the proposed development on individual trees and groups of trees, including those to be removed (Section 4), those to be pruned (Section 5), those which might incur root damage that might threaten their viability (Section 6) and those that might become under pressure for removal after occupation because of shading (Section 7). A summary and conclusions, with regard to local planning policy, are presented in Section 8.

1.3. Site inspection

1.3.1. A site visit and tree inspection were undertaken by Anthony Harte of SJAtrees on Wednesday the 11th June 2020. Weather conditions at the time were dry and overcast. Deciduous trees were in full leaf.

1.4. Site description

1.4.1. The site is approximately 320m^2 in size and is located on the west side of Ferrymoor, which forms the northeast site boundary, as shown at ***Figure 1*** below. The northwest boundary abuts a row of garages off Ferrymoor. The southwest and southeast boundaries adjoin residential properties off Riverside Drive and Croft Way respectively.

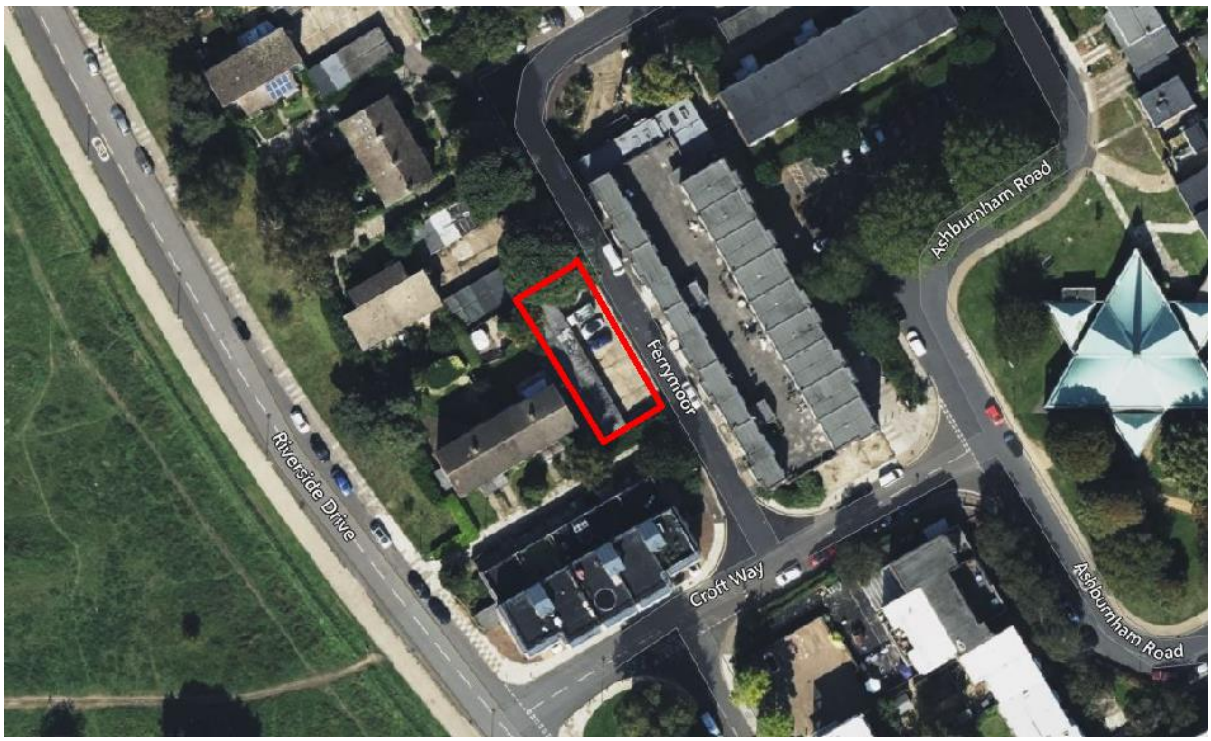

Figure 1: Site location shown on Google Earth image

1.4.2. It is on level ground, and currently comprises ten disused brick garages with associated hard surface.

1.5. Soil type

1.5.1. The British Geological Survey Solid and Drift Geology map of the area indicates the site lies on superficial deposits of Kempton Park Gravel Member (sand and gravel) above a bedrock of London Clay Formation.

1.5.2. Whilst no site investigation or soil analysis has been undertaken, the British Geological Survey map suggests that that the soil is unlikely to be particularly susceptible to compaction.

1.6. Statutory controls

1.6.1. Two of these trees are covered by a tree preservation order (TPO). This is TPO no. T0657 made by London Borough Richmond, which protects 2 individual trees immediately adjoining the site. The trees protected by this TPO are identified within our tree survey schedule at **Appendix 2** and on the accompanying tree locations and tree protection plans.

1.6.2. The site is not within a conservation area, and therefore there are no constraints relating to existing trees in this regard.

1.7. Non-statutory designations

1.7.1. There are no woodlands within or abutting the site that are classified as ‘Ancient’. Ancient woodland is defined as “any area that’s been wooded continuously since at least 1600 AD” and is considered an important and irreplaceable habitat.

1.7.2. There are no trees within or abutting the site that can be classified as ‘Ancient’ or ‘Veteran’. Ancient and veteran trees are also considered to be irreplaceable habitats, and contribute to a site’s biodiversity, cultural and heritage value, and the National Planning Policy Framework (see below) states that development resulting in the loss or deterioration of ancient or veteran trees should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists.

2. METHODOLOGY

2.1. National policy context

2.1.1. Under Section 197 of the Town and Country Planning Act 1990, local authorities have a statutory duty to consider the protection and planting of trees when considering planning applications. The effects of proposed development on trees are therefore a material consideration, and this is normally reflected in local planning policies.

2.1.2. The National Planning Policy Framework (NPPF) (July 2021) sets out the Government's planning policies for England and how these should be applied in both plan and decision-making. Paragraph 2 makes it clear that the NPPF is itself a material consideration in the determination of planning application. Paragraph 11 states that "**Plans and decisions should apply a presumption in favour of sustainable development.**"

2.1.3. In paragraph 130, within Section 12 "Achieving well-designed places" the NPPF states: "**Planning policies and decisions should ensure that developments:**

a) will function well and add to the overall quality of the area, not just for the short term but over the lifetime of the development;

b) are visually attractive as a result of good architecture, layout and appropriate and effective landscaping;

c) are sympathetic to local character and history, including the surrounding built environment and landscape setting, while not preventing or discouraging appropriate innovation or change (such as increased densities);

d) establish or maintain a strong sense of place, using the arrangement of streets, spaces, building types and materials to create attractive, welcoming and distinctive places to live, work and visit;

e) optimise the potential of the site to accommodate and sustain an appropriate amount and mix of development (including green and other public space) and support local facilities and transport networks; and

f) create places that are safe, inclusive and accessible and which promote health and well-being, with a high standard of amenity for existing and future users; and where crime and disorder, and the fear of crime, do not undermine the quality of life or community cohesion and resilience."

2.1.4. Paragraph 131 in this section states: "**Trees make an important contribution to the character and quality of urban environments, and can also help mitigate and adapt to climate change. Planning policies and decisions should ensure that new streets are tree-lined, that opportunities are taken to incorporate trees elsewhere in developments (such as parks and community orchards), that appropriate measures are in place to secure the long-term maintenance of newly-planted trees, and that existing trees are retained wherever possible. Applicants and local planning authorities should work with highways officers and tree officers to ensure that the right trees are planted in the right places, and solutions are found that are compatible with highways standards and the needs of different users.**"

2.1.5. The section titled Planning for climate change states at paragraph 153: "**Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures. Policies should support appropriate measures to ensure the future resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure."**

2.1.6. In paragraph 174, within Section 15 "Conserving and enhancing the natural environment" the NPPF states: "**Planning policies and decisions should contribute to and enhance the natural and local environment by:**

a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);

b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;…

d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans;

2.1.7. In paragraph 180, under the 'Habitats and biodiversity' section, the NPPF states: "**When determining planning applications, local planning authorities should apply the following principles:**

c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists…."

2.2. Regional policy context

2.2.1. Policy G1 'Green infrastructure' of the London Plan (March 2021) states:

"A London's network of green and open spaces, and green features in the built environment, should be protected and enhanced. Green infrastructure should be planned, designed and managed in an integrated way to achieve multiple benefits.

B Boroughs should prepare green infrastructure strategies that identify opportunities for cross-borough collaboration, ensure green infrastructure is optimised and consider green infrastructure in an integrated way as part of a network consistent with Part A.

C Development Plans and area-based strategies should use evidence, including green infrastructure strategies, to:

1) identify key green infrastructure assets, their function and their potential function

2) identify opportunities for addressing environmental and social challenges through strategic green infrastructure interventions.

D Development proposals should incorporate appropriate elements of green infrastructure that are integrated into London's wider green infrastructure network."

2.2.2. Policy G7 ‘Trees and woodlands’ of the London Plan states:

“A London’s urban forest and woodlands should be protected and maintained, and new trees and woodlands should be planted in appropriate locations in order to increase the extent of London’s urban forest – the area of London under the canopy of trees.

B In their Development Plans, boroughs should:

1) protect ‘veteran’ trees and ancient woodland where these are not already part of a protected site[139]

2) identify opportunities for tree planting in strategic locations.

C Development proposals should ensure that, wherever possible, existing trees of value are retained.[140] If planning permission is granted that necessitates the removal of trees there should be adequate replacement based on the existing value of the benefits of the trees removed, determined by, for example, i-tree or CAVAT or another appropriate valuation system. The planting of additional trees should generally be included in new developments – particularly large-canopied species which provide a wider range of benefits because of the larger surface area of their canopy.

[140] Category A, B and lesser category trees where these are considered by the local planning authority to be of importance to amenity and biodiversity, as defined by BS 5837:2012”.

2.3. Local policy context

2.3.1. Local planning policies are contained in the London Borough of Richmond upon Thames adopted Local Plan 2018.

2.3.2. Policy LP 16, Trees, Woodland and Landscape, of the Local Plan states:

“A. The Council will require the protection of existing trees and the provision of new trees, shrubs and other vegetation of landscape significance that complement existing, or create new, high quality green areas, which deliver amenity and biodiversity benefits.

B. To ensure development protects, respects, contributes to and enhances trees and landscapes, the Council, when assessing development proposals, will:

1. resist the loss of trees, including aged or veteran trees, unless the tree is dead, dying or dangerous; or the tree is causing significant damage to adjacent structures; or the

tree has little or no amenity value; or felling is for reasons of good arboricultural practice; resist development that would result in the loss or deterioration of irreplaceable habitat such as ancient woodland;

2. resist development which results in the damage or loss of trees that are considered to be of townscape or amenity value; the Council will require that site design or layout ensures a harmonious relationship between trees and their surroundings and will resist development which will be likely to result in pressure to significantly prune or remove trees;

3. require, where practicable, an appropriate replacement for any tree that is felled; a financial contribution to the provision for an off-site tree in line with the monetary value of the existing tree to be felled will be required in line with the 'Capital Asset Value for Amenity Trees' (CAVAT);

4. require new trees to be of a suitable species for the location in terms of height and root spread, taking account of space required for trees to mature; the use of native species is encouraged where appropriate;

5. require that trees are adequately protected throughout the course of development, in accordance with British Standard 5837 (Trees in relation to design, demolition and construction – Recommendations). The Council may serve Tree Preservation Orders or attach planning conditions to protect trees considered to be of value to the townscape and amenity and which are threatened by development.

Landscape

1. require the retention of important existing landscape features where practicable;

2. require landscape design and materials to be of high quality and compatible with the surrounding landscape and character; and

3. encourage planting, including new trees, shrubs and other significant vegetation where appropriate."

2.3.3. Policy LP 15, Biodiversity, of the Local Plan states:

"A. The Council will protect and enhance the borough's biodiversity, in particular, but not exclusively, the sites designated for their biodiversity and nature conservation value, including the connectivity between habitats. Weighted priority in terms of their importance will be afforded to protected species and priority species and habitats

including National Nature Reserves, Sites of Special Scientific Interest (SSSI) and Other Sites of Nature Importance as set out in the Biodiversity Strategy for England, and the London and Richmond upon Thames Biodiversity Action Plans. This will be achieved by:

1. protecting biodiversity in, and adjacent to, the borough's designated sites for biodiversity and nature conservation importance (including buffer zones), as well as other existing habitats and features of biodiversity value;

2. supporting enhancements to biodiversity;

3. incorporating and creating new habitats or biodiversity features, including trees, into development sites and into the design of buildings themselves where appropriate; major developments are required to deliver net gain for biodiversity, through incorporation of ecological enhancements, wherever possible;

4. ensuring new biodiversity features or habitats connect to the wider ecological and green infrastructure networks and complement surrounding habitats;

5. enhancing wildlife corridors for the movement of species, including river corridors, where opportunities arise; and 6. maximising the provision of soft landscaping, including trees, shrubs and other vegetation that support the borough-wide Biodiversity Action Plan.

B. Where development would impact on species or a habitat, especially where identified in the relevant Biodiversity Action Plan at London or local level, or the Biodiversity Strategy for England, the potential harm should:

1. firstly be avoided (the applicant has to demonstrate that there is no alternative site with less harmful impacts),

2. secondly be adequately mitigated; or

3. as a last resort, appropriately compensated for."

2.4. Neighbourhood policy context

2.4.1. The site is located within the Wates Estate (area 7) of the Ham and Petersham Neighbourhood 2018-2033 (January 2019) states at Policy C2:

"**Policy C2 - Character and Context Appraisals**

A. All applications for new buildings must demonstrate how the proposal addresses the key elements of the character of the designated Conservation Area or neighbourhood character area in which the site is located.

B. All new development will be assessed against guidance in the relevant character and context area study (Appendix 4) or the relevant Conservation Area Appraisal for the purposes of policy LP 3 in the Richmond Local Plan."

2.5. Tree survey and baseline information

2.5.1. We surveyed individual trees with trunk diameters of 75mm and above[1], trees with trunk diameters of 150mm and above growing in groups or woodlands, and shrub masses, hedges and hedgerows[2] growing within or immediately adjacent to the site; and recorded their locations, species, dimensions, ages, condition, and visual importance in accordance with BS 5837 recommendations.

2.5.2. The baseline information collected during the site survey was recorded on site using a hand-held digital device. This information was then imported into an Excel spreadsheet and used to produce the tree survey schedule at **Appendix 2**. The numbers assigned to the trees in the tree survey schedule correspond with those shown on the appended tree protection plan.

2.5.3. We surveyed trees as groups where they have grown together to form cohesive arboricultural features, either aerodynamically (trees that provide companion shelter), visually (e.g., avenues or screens) or culturally[3]. However, where it might be necessary to differentiate between specific trees within these groups, we also surveyed these individually.

2.5.4. We inspected the trees from the ground only, aided by binoculars as appropriate, but did not climb them. We took no samples of wood, roots or fungi. We

[1] BS 5837, paragraph 4.2.4 b), recommends that all trees over 75mm stem diameter should be included in a pre-planning land and tree survey.

[2] Ibid, 4.4.2.7

[3] Ibid, 4.4.2.3

did not undertake a full hazard or risk assessment of the trees, and therefore can give no guarantee, either expressed or implied, of their safety or stability.

2.5.5. We have categorised the trees in accordance with BS 5837, and details of the criteria used for this process can be found in the notes that accompany the tree survey schedule.

2.5.6. We have applied this methodology in line with the NPPF's presumption in favour of sustainable development, giving greater weighting to the contribution of a tree to the character and appearance of the local landscape, to amenity, or to biodiversity, where its removal might have a significant adverse impact on these factors.

2.6. Tree constraints

2.6.1. In line with the NPPF's presumption in favour of sustainable development, we have assessed whether any trees should be retained in the context of a proposed re-development. To do this, we identified the main arboricultural features within or immediately adjacent to the site, whose removal we considered could have an adverse impact on the character and appearance of the local landscape, on amenity or on biodiversity.

2.6.2. Whilst BS 5837 states that trees in categories 'A', 'B' and 'C' are all a material consideration in the development process, the retention of category 'C' trees, being of low quality or of only limited or short-term potential, will not normally be considered necessary should they impose a significant constraint on development.

2.6.3. Furthermore, BS 5837 makes it clear that young trees, even those of good form and vitality, which have the potential to develop into quality specimens when mature "**need not necessarily be a significant constraint on the site's potential**"[4].

2.6.4. Moreover, BS 5837 states that "**.... care should be taken to avoid misplaced tree retention; attempts to retain too many or unsuitable trees on a site can result in**

[4] Ibid. 4.5.10.

excessive pressure on the trees during demolition or construction work, or post-completion demands for their removal"[5].

2.6.5. The 'Root Protection Areas' (RPAs)[6] of the trees identified for retention were calculated in accordance with Section 4.6 of BS 5837; and were assessed taking account of factors such as the likely tolerance of a tree to root disturbance or damage, the morphology and disposition of roots as influenced by existing site conditions (including the presence of existing roads or structures), as well as soil type, topography and drainage. Where considered appropriate, the shapes of the RPAs (although not their areas) were modified based on these considerations, so that they reflect more accurately the likely root distribution of the relevant trees.

2.6.6. To assess whether the trees identified for retention would be in a sustainable relationship with the proposed development (without casting excessive shade or otherwise unreasonably interfering with incoming residents' prospects of enjoying their properties, and thereby leading inevitably to requests for consents to fell), we plotted a segment or "shading arc" from each trunk, with a radius equal to the current height of the tree concerned, from due north-west to due east. This gave an indication of potential direct obstruction of sunlight and the shadow pattern cast through the main part of the day[7].

2.6.7. Based on these principles and recommendations, the tree survey and assessment of suitability for retention informed the production of a tree constraints plan (TCP) which indicates the most suitable trees for retention, and their associated below-ground and above-ground constraints.

2.6.8. As a design tool, the TCP also indicates how close to those trees selected for retention the proposed development could be positioned, in terms of three key criteria:

a). avoidance of unacceptable root damage;

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[5] Ibid. 5.1.1.

[6] The minimum area around a retained tree "deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority." BS 5837, paragraph 3.7.

[7] BS 5837, paragraph 5.2.2 Note 1.

b). avoidance of the necessity for unacceptable pruning works; and

c). avoidance of future felling or pruning works to prevent unacceptable shading or apprehension on behalf of the occupants.

2.7. Arboricultural impact assessment and tree protection plan

2.7.1. Once finalised, we assessed the arboricultural impacts of the proposed layout, by overlaying it onto the TCP, and produced the tree protection plan (TPP) presented at **Appendix 3.** This is based on the proposed site layout by Zuber Dobson Architects, drawing no. 19021-P-122.

2.7.2. The TPP identifies the trees which will be removed to accommodate the proposed development, either because they are situated within the footprints of proposed structures or surfaces, or because in our judgment they are too close to these structures or surfaces to enable them to be retained. These are shown by means of **red crosses** on the TPP.

2.7.3. The TPP also shows how trees to be retained will be protected from damage during demolition and construction, and the measures identified are set out and described at **Appendix 1** to this report. The implementation of, and adherence to, these measures can readily be secured by the imposition of appropriate planning conditions.

2.7.4. For the trees shown to be retained, all measurements for pruning specifications, percentage estimates of RPA incursions and shading issues have been calculated using AutoCAD software.

2.7.5. Details of the impacts identified within these categories, and our assessment of their respective significance, are analysed in Sections 4 to 7 below.

2.7.6. Based on these findings, we have assessed the magnitude of the overall arboricultural impact of the proposals according to the categories defined in ***Table 1*** below.

Impact	Description
High	Total loss of or major alteration to main elements/ features/ characteristics of the baseline, post-development situation fundamentally different
Medium	Partial loss of or alteration to main elements/ features/ characteristics of the baseline, post-development situation will be partially changed
Low	Minor loss of or alteration to main elements/ features/ characteristics of the baseline, post-development changes will be discernible but the underlying situation will remain similar to the baseline
Negligible	Very minor loss of or alteration to main elements/ features/ characteristics of the baseline, post-development changes will be barely discernible, approximating to the 'no change' situation

Table 1: Magnitude of impacts[8]

[8] Determination of magnitude based on DETR (2000) Guidance on the Methodology for Multi-Modal Studies, as modified and extended.

3. THE TREES

3.1. Survey findings

3.1.1. We surveyed a total of seven individual trees, and one group of trees growing adjacent to the site or within the surrounding area. Their details can be found in the tree survey schedule at **Appendix 2**.

3.1.2. The arboricultural quality of the site is very limited as there are no trees growing within the site itself, the large London plane (no. 1) is the defining arboricultural feature of the site. The trees adjacent to the site help soften the urbanised landscape character.

3.2. Assessment of suitability for retention

3.2.1. As noted above in Section 2.3, local planning policies require the retention of trees that are "**of landscape significance**." We consider that the London planes nos. 1 and 2 meet these criteria due to their size and prominence in the local landscape.

3.2.2. There are no category 'A' trees, but there are two category 'B' specimens plane trees nos. 1 and 2. The remaining 5 individuals and one group of trees are assessed as category 'C' trees, being either of low quality, very limited merit, only low landscape benefits, no material cultural or conservation value, or only limited or short-term potential; or a combination of these.

4. TREES TO BE REMOVED

4.1. Details

4.1.1. None of the trees on or adjacent to the site are to be removed to facilitate the proposed development.

4.2. Assessment

4.2.1. As all existing trees and groups of trees are to be retained, the main arboricultural features of the site which make the greatest contribution to the character and appearance of the local landscape, to amenity or to biodiversity (see paragraph 3.2.1), will be unaltered.

4.2.2. Taking account of the fact that all existing trees are to be retained there will be no alteration to the existing arboricultural character of the site, as such, there will be no impacts in this regard.

5. TREES TO BE PRUNED

5.1. Details

5.1.1. The southeast canopy of the London plane is to be crown lifted from 3.5m to 5.5m to provide sufficient space for construction.

5.2. Assessment

5.2.1. The southeast canopy of the London plane is to be crown lifted from 3.5m to 5.5m to provide sufficient space for construction space and to accommodate the private amenity space to the rear of plots nos. 1 and 2. This work will not require the removal of either of the substantial limbs that are orientated south and south-east; these already provide sufficient clearance.

5.2.2. The extent of pruning proposed is minor. Branches to be removed are small in size and will result in a maximum wound size no greater than 70mm in diameter; this will have an insignificant effect on the health and physiological condition of these trees and complies with the recommendations of British Standard BS 3998:2010, *Tree work – Recommendations*.

5.2.3. In terms of impact upon the landscape, the proposed pruning is minor in extent and is in the context of the tree being managed in a reduced form in any event. These works will be largely screened in views by either the remainder of the trees' canopies, or by other trees growing within or adjacent to the site. It will have a negligible effect on the appearance of the trees when viewed from outside the site itself, and accordingly will not detract from the character or appearance of the site.

5.2.4. Following the pruning specified, none of the proposed dwellings will lie within 5.5m of the extents of the canopies of trees to be retained, thereby providing adequate working space for construction, and a reasonable margin of clearance for future growth**.**

6. ROOT PROTECTION AREA INCURSIONS

6.1. Details

6.1.1. Parts of the proposed buildings and hard surface will encroach within the RPA of London plane no. 1.

6.2. Assessment

6.2.1. The incursion into the RPA of London plane no. 1 is by the proposed foundations, the incursion is no closer than 12.7m from the trunk and equates to 12.9m^2 or 2% or its RPA. To minimise impacts on these specimens, the foundations will be formed by sheet-piling, thus limiting the need for over-dig.

6.2.2. The first 750mm of excavation within these RPAs will be undertaken manually, under the direct control and supervision of an appointed arboricultural consultant. Thereafter, sheet piles will be installed within the trench that has been excavated and deeper excavation to the south (away from the tree) may continue without harming the tree or being at risk of soil collapse. In this way any over dig into the RPAs is avoided, which might be as much as 2-3m if a 45 degree batter were to be needed for the basement formation, and any roots encountered can be treated appropriately.

6.2.3. As a species London plane has been identified as good at tolerating root pruning and disturbance[9]. As this specimen is of average physiological condition, there is no reason to suggest that it will not be able to tolerate the cutting of roots within this small section of its RPA.

6.2.4. Furthermore, as a significant proportion of the existing garages and associated hard surface will be reverted to soft landscaping for the rear gardens, there is an opportunity for the soil used by the tree for root growth to be improved. Subject to proposed landscaping, the soil and rooting environments within the RPA of this specimen could be enhanced to promote improved root growth by de-compaction, aeration fertilisation or mulching, as appropriate, and this can be ensured by condition.

[9] MATHENY, N. P. and CLARK, J. R. (1998). Trees and Development. International Society of Arboriculture.

As this tree can remain viable by being able to root in other areas, contiguous to its RPA, and the soil environment in which they are rooting can be improved, these incursions comply with paragraph 5.3.1 of BS5837.

6.2.5. The remaining incursion into the RPA of the London plane no. 1 is by the proposed parking bay and equates to 25.7m^2 or 4.1% of its RPA. The area of proposed hard surface is located entirely within the existing hard surface, such that there will be no incursion into unsurfaced ground.

6.2.6. Taking account of existing ground levels and likely proposed levels of these areas, this will allow for design and construction of the replacement surface to be no deeper than the sub-base of the existing hard surface, and accordingly no excavation will be required.

6.2.7. Furthermore, where appropriate, replacement surfaces could incorporate an appropriate cellular confinement system, filled and finished with suitable porous materials, to minimise soil compaction. To ensure no damage occurs to the roots or rooting environments of the relevant trees, installation will be undertaken under the control and supervision of the arboricultural consultant.

6.2.8. As noted at Section 1.5 above, the site overlies a sandy soil. This means it will tolerate compaction better than a clay soil, and so compaction caused by the above-soil surfacing is less likely to be severe or damaging to the tree in the long-term.

6.2.9. Moreover, London plane has been shown to be more tolerant of soil compaction than other tree species, based on their effectiveness in reacting to mechanical damage quickly, in surviving anaerobic soil conditions, and in adjusting their root systems to new conditions. Coupled with the small area of the RPA to be surfaced and its average physiological condition there is no evidence to suggest that it will not be able to tolerate any soil compaction caused by the installation or use of this surfacing.

6.2.10. Implementation of measures to prevent other incursions into the RPAs of retained trees and to protect them during demolition and construction can be assured by the erection of appropriate protective fencing, as shown on the TPP at **Appendix 3.**

6.2.11. Accordingly, subject to implementation of the above measures, and considering the ages, current physiological condition and tolerance of disturbance of these retained trees, no significant or long-term damage to their root systems or environments will occur as a result of the proposed development.

7. RELATIONSHIP OF RETAINED TREES TO NEW DWELLINGS

7.1. Details

7.1.1. In none of the proposed new dwellings does the fenestration of their main habitable rooms (living rooms, kitchens) exclusively and directly face trees within the shadow patterns[10] of which they are situated; that is, where proposed dwellings or apartments are sited in an arc between the north-west and the east of retained trees and are closer to them than the current heights of these specimens.

7.2. Assessment

7.2.1. As none of the proposed dwellings or amenity space lie within the shadow patterns of any retained trees, they will not be shaded by retained trees to the extent that this will interfere with their reasonable use or enjoyment by incoming occupiers; which might otherwise lead to pressure to permit felling or severe pruning that the LPA could not reasonably resist.

[10] BS 5837, 5.2.2, Note 1: "An indication of potential direct obstruction of sunlight can be illustrated by plotting a segment, with a radius from the centre of the stem equal to the height of the tree, drawn from due north-west to due east, indicating the shadow pattern through the main part of the day."

8. CONCLUSIONS

8.1. Summary

8.1.1. Our assessment of the impacts of the proposals on the existing trees concludes that none of the existing trees are to be removed. As such, there will be no alteration of the main arboricultural features of the site or to the overall arboricultural character of the site and will not have an impact on the arboricultural character and appearance of the local landscape.

8.1.2. The proposed pruning is minor in extent, will not detract from the health or appearance of these trees, and complies with current British Standards.

8.1.3. The incursions into the Root Protection Areas of trees to be retained are minor, and subject to implementation of the measures recommended on the Tree Protection Plan and set out at **Appendix 1**, no significant or long-term damage to their root systems or rooting environments will occur.

8.1.4. None of the proposed dwellings or amenity space are likely to be shaded by retained trees to the extent that this will interfere with their reasonable use or enjoyment by incoming occupiers, which might otherwise lead to pressure on the Local Planning Authority to permit felling or severe pruning that it could not reasonably resist.

8.2. Compliance with national planning policy

8.2.1. As the proposals will retain all the main arboricultural features of the site, its arboricultural attractiveness, history and landscape character and setting will be maintained, thereby complying with Paragraph 130 of the National Planning Policy Framework.

8.2.2. The proposals do not necessitate the removal of any trees, including the mature trees of large ultimate size, which make the greatest contribution to carbon sequestration and storage, surface water run-off, biodiversity and landscape and air temperature and cleanliness; for all of which, appropriate space for their retention is provided. Accordingly, insofar as this relates to existing trees, the scheme can be seen

to have taken a proactive approach to mitigating climate change and thereby complies with Paragraph 153 of the National Planning Policy Framework.

8.2.3. As the proposals will not result in the loss or deterioration of any ancient woodland or any ancient or veteran trees, they comply with paragraph 180 of the NPPF.

8.3. Compliance with regional planning policy

8.3.1. As no trees are to be removed, all existing trees assessed as being features in the existing built environment will be retained, in arboricultural terms the proposed development complies with Policy G1 ‘Green infrastructure’ of the London Plan.

8.3.2. As all trees of significant value and importance to amenity will be retained, and space exists within the proposed layout for replacement planting, including of large-canopied trees, the proposed development will protect, maintain and enhance the main arboricultural features of the site. As such, it complies with Policy G7 ‘Trees and woodlands’ of the London Plan.

8.4. Compliance with local planning policy

8.4.1. As the proposed development will retain all existing trees, including those of landscape importance and will ensure that retained trees are adequately protected during construction, it complies with Policies LP15 and LP16 of the London Borough Richmond upon Thames Local Plan.

8.5. Conclusion

8.5.1. On the basis of our assessment, we conclude that the arboricultural impact of this scheme is of negligible magnitude, as defined according to the categories set out in ***Table 1*** of this report.

APPENDIX 1

Outline Arboricultural Method Statement

Outline arboricultural method statement

A1.1. Tree Protection Plan

A1.1.1. The TPP at **Appendix 3** shows the general and specific provisions to be taken during construction of the proposed development, to ensure that no unacceptable damage is caused to the root systems, trunks or crowns of the trees identified for retention. These measures are indicated by coloured notations in areas where construction activities are to occur either within, or in proximity to, retained trees, as described in the relevant panels on the drawing.

A1.2. Pre-start meeting

A1.2.1. Prior to the commencement of any site clearance, ground preparation, demolition or construction works the developer will convene a pre-start site meeting. This shall be attended by the developer's contract manager or site manager, the fencing/boarding contractor, the groundwork contractor(s) and the arboricultural consultant. The LPA tree officer will be invited to attend. If appropriate, the tree felling/surgery contractor should also attend. At that meeting contact numbers will be exchanged, and the methods of tree protection shall be fully discussed, so that all aspects of their implementation and sequencing are made clear to all parties. Any clarifications or modifications to the TPP required as a result of the meeting shall be circulated to all attendees.

A1.3. Site clearance

A1.3.1. No clearance of trees or other vegetation shall be undertaken until after the pre-start meeting and after the erection of the tree protection fencing (see below). If any vegetation clearance is required behind the line of the protection fencing this will be made clear at the pre-start meeting and arrangements will be made to do this prior to the fencing's erection, under the supervision of the arboricultural consultant, who will ensure it doesn't cause any soil compaction or damage to the roots of trees to be retained.

A1.3.2. Except where within the RPAs of trees to be retained, all trees and other vegetation to be removed may be cut down or grubbed out as appropriate; but within

the RPAs of trees to be retained, trees and vegetation will be cut by hand to ground level and stumps will be either left in place or ground out with a lightweight self-powered stump grinding machine. No excavators, tractors or other vehicles will enter the RPAs.

A1.4. Ground preparation and demolition

A1.4.1. No ground preparation or excavation of any kind, including topsoil stripping or ground levelling, shall be undertaken until after the pre-start meeting and after the erection of the tree protection fencing (see below).

A1.4.2. Demolition of existing buildings and removal of existing areas of hard surfacing that abut or overlie RPAs will be undertaken with care, under the control and supervision of an appointed arboricultural consultant, to ensure that the adjacent soil is not unacceptably excavated, disturbed or compacted.

A1.5. Tree protection fencing

A1.5.1. Construction exclusion zones (CEZs) will be formed by erecting protective fencing around the RPAs of all on-site trees to the specification recommended in BS 5837, Section 6.2, prior to the commencement of construction. This will consist of a scaffold framework comprising a vertical and horizontal framework, well braced to resist impacts, with vertical tubes spaced at maximum intervals of 3.5m. Onto this, welded mesh panels should be securely fixed with wire or scaffold clamps, as shown in ***Figure 2*** of that document. "**TREE PROTECTION ZONE - KEEP OUT**" or similar notices will be attached with cable ties to every third panel.

A1.5.2. The RPAs of the off-site trees will also be enforced by the erection of protective fencing to the same specification, prior to the commencement of construction, thereby safeguarding them from incursions by plant or machinery, storage and mixing of materials, or other construction-related activities which could have a detrimental effect on their root systems.

A1.5.3. The recommended positions of the protective fencing are shown by **bold blue lines** on the TPP. The precise positioning of the fencing around the trees will be considered in conjunction with any other protective hoarding/fencing which may be required around the site boundary.

A1.5.4. Within the CEZs safeguarded by the protective fencing, there will be no changes in ground levels, **no soil stripping**, and no plant, equipment, or materials will be stored. Oil, bitumen, diesel, and cement will not be stored or discharged within 10m of any trees. Areas for the storage or mixing of such materials will be agreed in advance and be clearly marked. No notice boards, or power or telephone cables, will be attached to any of the trees. No fires will be lit within 10m of any part of any tree.

A1.6. Manual excavation within RPAs

A1.6.1. The first 750mm depth of excavations required within the RPAs of the trees to be retained (as shown by **bold orange lines** on the TPP) will be dug by hand, using a compressed air soil pick if appropriate, and under on-site arboricultural supervision, to safeguard against the possibility of unacceptable root damage being caused to these specimens. Any roots encountered of over 25mm diameter will be cut back cleanly to the face of the dig nearest to the tree, using a sharp hand saw or secateurs, and their cut ends covered with hessian to prevent desiccation.

A1.7. Proposed hard surfaces within RPAs

A1.7.1. Unacceptable damage to the roots and rooting environments of the trees to be retained during the construction of proposed hard surfaces that encroach within RPAs will be avoided by building them above existing soil level, to avoid digging and thus severing of roots; and an appropriate ground covering will be used beneath the sub-base, to prevent or minimise compaction of the soil. This will be done in accordance with Section 7.4 of BS 5837. The locations where these measures will be required are marked by red **cross-hatching** on the TPP.

APPENDIX 2

Tree Survey Schedule

SJA trees
ARBORICULTURAL PLANNING CONSULTANTS

17 CROSS ROAD
TADWORTH
SURREY KT20 5ST

Tel: (01737) 813058
E-mail: sja@sjatrees.co.uk

Principal: Simon R. M. Jones Dip. Arb. (RFS), F. Arbor. A.,
Arboricultural Association Registered Consultant
Frank P. S. Spooner BSc (Hons), MArborA, TechCert (ArborA)

Preliminary Tree Survey Schedule

Ferrymoor, Ham, Richmond

June 2020

SJA Ref: 20245-01

Tree Survey Schedule: Explanatory Notes

Ferrymoor, Ham, Richmond

This schedule is based on a tree inspection undertaken by Anthony Harte of SJAtrees (the trading name of Simon Jones Associates Ltd.), on Wednesday the 11th June 2020. Weather conditions at the time were dry and overcast. Deciduous trees were in full leaf.

The information contained in this schedule covers only those trees that were examined, and reflects the condition of these specimens at the time of inspection. We did not have access to the trees from any adjacent properties; observations are thus confined to what was visible from within the site and from surrounding public areas.

The trees were inspected from the ground only and were not climbed, and no samples of wood, roots or fungi were taken. A full hazard or risk assessment of the trees was not undertaken, and therefore no guarantee, either expressed or implied, of their safety or stability can be given.

Trees are dynamic organisms and are subject to continual growth and change; therefore the dimensions and assessments presented in this schedule should not be relied upon in relation to any development of the site for more than twelve months from the survey date.

1. Tree no.
Given in sequential order, commencing at "1.

2. TPO no.
Number assigned to tree in the Richmond Upon Thames Borough Council Tree Preservation Order no. T0657 T1, as shown in the TPO schedule and plan.

3. Species.
'Common names' are given, taken from MITCHELL, A. (1978) A Field Guide to the Trees of Britain and Northern Europe.

4. Height.
Estimated with the aid of a hypsometer, given in metres.

5. Trunk diameter.
Trunk diameter measured at approx. 1.5m above ground level; or where the trunk forks into separate stems between ground level and 1.5m, measured at the narrowest point beneath the fork. Given in millimetres.

6. Radial crown spread.
The linear extent of branches from the base of the trunk to the main cardinal points, rounded up to the closest half metre, unless shown otherwise. For small trees with reasonably symmetrical crowns, a single averaged figure is quoted.

7. Crown break.
Height above ground and direction of growth of first significant live branch.

8. Crown clearance.
Distance from adjacent ground level to lowest part of lowest branch, in metres.

9. Age class.
Young: Seedling, sapling or recently planted tree; not yet producing flowers or seeds; strong apical dominance.
Semi-mature: Trunk often still smooth-barked; producing flowers and/or seeds; strong apical dominance, not yet achieved ultimate height.
Mature: Apical dominance lost, tree close to ultimate height.
Over-mature: Mature, but in decline, no crown re-trenchment
Veteran: Mature, with a large trunk diameter for species; but showing signs of veteranisation, irrespective of actual age, with decay or hollowing, and a crown showing retrenchment and a structure characteristic of the latter stages of life.
Ancient: Beyond the typical age range and with a very large trunk diameter for species; with extensive decay or hollowing; and a crown that has undergone retrenchment and has a structure characteristic of the latter stages of life.

10. Physiology.
Health, condition and function of the tree, in comparison to a normal specimen of its species and age.

11. Structure.
Structural condition of the tree – based on both the structure of its roots, trunk and major stems and branches, and on the presence of any structural defects or decay.
Very good: No significant physiological or structural defects, an upright and reasonably symmetrical structure; a particularly good example of its species.
Good: No significant physiological or structural defects, and an upright and reasonably symmetrical structure.
Moderate: No significant pathological defects, but a slightly impaired physiological structure; however, not to the extent that the tree is at immediate or early risk of collapse.
Indifferent: Significant physiological or pathological defects; but these are either remediable or do not put the tree at immediate or early risk of collapse.
Poor: Significant and irremediable physiological or pathological defects, such that there may be a risk of collapse.
Hazardous: Significant and irremediable physiological or pathological defects, with a risk of imminent collapse.

12. Comments.
Where appropriate comments have been made relating to:
-Health and condition
-Safety, particularly close to areas of public access
-Structure and form

13. Category.
Based on the British Standard "Trees in relation to design, demolition and construction - Recommendations", BS 5837: 2012, Table 1, adjusted to give a greater weighting to trees that contribute to the character and appearance of the local landscape, to amenity, or to biodiversity.

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.
• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category 'U' trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning).
• Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline.
• Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality.

Category A: Trees of high quality with an estimated remaining life expectancy of at least 40 years.
(1) Trees that are particularly good examples of their species, especially if rare or unusual.
(2) Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features.
(3) Trees, groups or woodlands of significant conservation, historical, commemorative or other value.

Category B: Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.
(1) Trees that might be included in category 'A', but are downgraded because of impaired condition (e.g. presence of significant though remediable defects including unsympathetic past management and minor storm damage) such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category 'A' designation.
(2) Trees present in numbers, usually growing as groups or woodlands, such that they form distinct landscape features, thereby attracting a higher collective rating than they might as individuals; or trees present in numbers but situated so as to make little visual contribution to the wider locality.
(3) Trees with material conservation or other cultural value.

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.
(1) Unremarkable trees of very limited merit or of such impaired condition that they do not qualify in higher categories.
(2) Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value, and/or trees offering low or only temporary landscape benefits.
(3) Trees with no material limited conservation or other cultural value.

TREE SURVEY SCHEDULE

Ferrymoor, Ham, Richmond

No.	TPO no.	Species	Height	Trunk diameter	Radial crown spread	Crown break	Crown clear-ance	Age class	Physio - logy	Structure	Comments	Cate gory
1	T0657 T2	London plane	17.5m	1170mm	N 8.7m E 9.1m SE 9m S 8.6m W 8.5m	S 2.5m	SE 3m	Mature	Average	Indifferent	Off-site tree; metal tag no. 388; growing in brick planter with wall height up to 340mm; tensile main unions; moderate sized wound at base of lowest lateral limb to SE; pollarded tree; canopy comprised of 2-3 year old regrowth forming dense tufts at ends of main structural limbs; partially visible in views from main road Riverside Drive to W; significant component of local landscape.	B (2)
2	T0657 T1	London plane	17.5m	995mm ivy	N 8.1m E 6.3m SE 5.8m S 8.5m W 7.5m	E 3.5m	SE 3m	Mature	Average	Indifferent	Off-site tree; trunk base ivy-covered to 1m; growing in brick planter with wall height up to 340mm; twin-stemmed from 2.5m with tensile union; pollarded tree; canopy comprised of 2-3 year old regrowth forming dense tufts at ends of main structural limbs; broad though slightly asymmetrical crown; partially visible in views from main road Riverside Drive to W; significant component of local landscape.	B (2)
3		Norway maple	8.5m	270mm est.	N 5m E 4.3m S 3.3m W 4.7m	2m	E 2m	Semi-mature	Average	Indifferent	Off-site tree; metal tag no. 297; asymmetrical crown as suppressed by adjacent London plane tree no. 2.	C (2)
4		Whitebeam	12m	620mm ivy est.	N 4.9m E 8m S 5.9m W 6.1m	2.5m	N 2m E 3m	Mature	Average	Indifferent	Heavily ivy-covered; trunk leans slightly to E; multi-stemmed from 2.5m typical of species; lowest lateral limb to E at 2.5m grows strongly and accounts for majority of E crown; broad, dense canopy which contributes to roadside amenity of Ferrymoor but short-lived species with propensity for limb failure.	C (2)
5		Whitebeam	12.5m	490mm ivy est.	N 7.9m E 6.7m S 5.7m W 5.9m	2.5m	E 4m W 2m	Mature	Average	Indifferent	Heavily ivy-covered; broad, dense canopy which contributes to roadside amenity of Ferrymoor but short-lived species with propensity for limb failure.	C (2)
6		Whitebeam	8m	320mm est.	N 4.4m E 4m S 5.2m W 5.5m	N 2.5m	E 3m	Semi-mature	Low	Indifferent	Growing in brick planter; crown shows notable dieback.	U
7		Whitebeam	9m	470mm	N 3.7m E 5.1m S 6m W 7m	2.5m	NE 2.5m S 3m	Mature	Below average	Indifferent	Metal tag no. 298; crown divides at 2.5m into multiple tightly growing stems with compression forks; N crown sparsely foliated where suppressed; SE stem severely reduced leaving long stub.	C (2)

No.	TPO no.	Species	Height	Trunk diameter	Radial crown spread	Crown break	Crown clear-ance	Age class	Physio - logy	Structure	Comments	Cate gory
8		False acacia	11m	450mm est.	N 2m E 3m SE 3.5m S 3m W 3m	W 4.5m	N 3m	Semi-mature	Below average	Indifferent	Off-site tree; growing in brick planter in dense vegetation; twin-stemmed from 1m; heavily reduced; crown comprised of dense young 1-2 year old regrowth.	C (2)
9		Common alder	13.5m	430mm ivy est.	N 4.2m E 4.1m S 7m W 5m	S 3m	E 2m	Semi-mature	Average	Indifferent	Off-site tree; metal tag no. 293; partially ivy-covered; tree leans slightly to S; significant component of group in which it stands.	C (2)
10		Common alder	13m	345mm	N 4.3m E 4.2m S 4.4m W 4.2m	W 3m	S 2.5m	Semi-mature	Average	Indifferent	Off-site tree; significant component of group in which it stands.	C (2)
G1		Common alder	13m	Min 210mm ivy Max 430mm both est.	4m	2.5m	SE 2m	Semi-mature	Average	Indifferent	Off-site group of trees; comprised of 4 alders and 1 purple plum growing in single line alongside Ferrymoor where they contribute to road's amenity and provide some screening of dwellings to N.	C (2)

Root Protection Areas (RPAs)

Root Protection Areas have been calculated in accordance with paragraph 4.6.1 of the British Standard 'Trees in relation to design, demolition and construction – Recommendations', BS 5837:2012. This is the minimum area which should be left undisturbed around each retained tree. RPAs are portrayed initially as a circle of a fixed radius from the centre of the trunk; but where there appear to be restrictions to root growth the circle is modified to reflect more accurately the likely distribution of roots.

Tree No.	***Species***	***RPA***	***RPA Radius***
1	London plane	619.3m²	14.0m
2	London plane	447.9m²	11.9m
3	Norway maple	33.0m²	3.2m
4	Whitebeam	173.9m²	7.4m
5	Whitebeam	108.6m²	5.9m
6	Whitebeam	46.3m²	3.8m
7	Whitebeam	99.9m²	5.6m
8	False acacia	91.6m²	5.4m
9	Common alder	83.6m²	5.2m
10	Common alder	53.8m²	4.1m
G1	Common alder	83.6m²	5.2m

APPENDIX 3
TREE PROTECTION PLAN

Arboricultural Impacts: Summary

(For details, see below)

Impact	No. of Trees
Trees to be removed	0
Groups of trees to be removed	0
TPO trees to be removed	0
Trees to be pruned	1
Trees where supervised demolition needed within RPAs	1
Trees where manual excavation needed within RPAs	1
Trees where above soil surfacing needed within RPAs	1
Trees with proposed underground services within RPAs	0

Trees to be pruned

No.	Species	Works
1	London plane	Crown lift southeast canopy to 5.5m above ground level

Pruning is to be undertaken in accordance with the British Standard Recommendations for Tree work, BS3998: 2010.
Climbing irons or spikes are not to be used whilst pruning trees.

Trees that require supervised demolition within RPAs

No.	Species	Type of structure / surface
1	London plane	Removal of existing garage foundations and associated hard surface

Trees that require manual excavation within RPAs

No.	Species	Type of structure
1	London plane	Proposed foundations

Trees that require above soil surfacing within RPAs

No.	Species	Type of structure
1	London plane	Proposed parking bay

10 Common alder

G1 Common alder

Common alder 9

Ferrymoor

FERRYMOOR

8 False acacia

SITE 3

SJA Root Protection Areas

3 Norway maple

2 London plane

SJA Off-site trees

SJA Trees to be pruned to specification in inset panel

SJA Protective fencing as per BS5837; see inset panel

London plane 1

SITE 2

SJA Proposed hard surfacing to be founded no deeper than base of existing; soil beneath not to be disturbed

SJA Excavation for proposed foundations to be undertaken manually, under arboricultural supervision; see inset panel

SJA Site boundary

1 to 15

N

0 2m 4m 6m 8m 10m

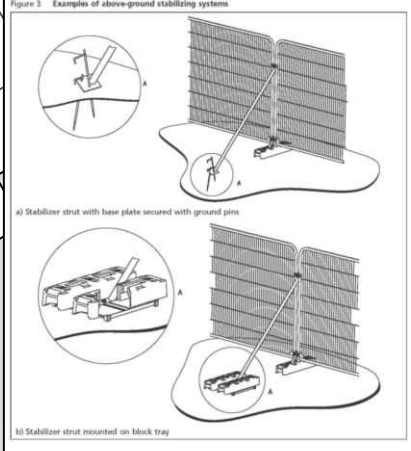
METRES

1 : 250 @A3

Protective Fencing

To be erected prior to the commencement of all works on site, and retained in place throughout construction. To comprise 2m tall 'Heras' welded mesh panels on rubber or concrete feet. The panels shall be joined together with two anti-tamper couplers, installed so that they can only be removed from inside the fence. Distance between the couplers should be at least 1m and should be uniform throughout the fence. Panels should be supported (where possible) on the inner side by stabilizer struts, which should normally be attached to a base plate secured with ground pins (Figure 3a). Where the fencing is to be erected on retained hard surfacing or it is otherwise unfeasible to use ground pins, e.g. due to the presence of underground services, the stabilizer struts shall be mounted on a block tray (Figure 3b). "TREE PROTECTION ZONE - KEEP OUT" or similar notices to be attached to every fifth panel.

Figure 3 Examples of above-ground stabilizing systems



TREE PROTECTIVE FENCING as shown in BS 5837: 2012, Section 6.2.2 & Figure 3.

Supervised demolition

Within root protection areas ('RPAs') existing foundations and hard surfaces shall be removed with care, under the direct supervision of the arboricultural consultant. Foundations or surfaces will be broken up with handheld breakers, and then removed by hand, wheelbarrow, or in the bucket of an excavator standing outside the RPA. At the discretion of the arboricultural consultant, an excavator positioned outside the RPA and using an appropriately sized toothless bucket may be used in some instances. Once completed, the base of the excavation and/or the edge closest to the trees will be covered immediately with hessian sacking to prevent drying out of the soil, and where necessary be shuttered to prevent soil collapse.

Manual Excavation

Within root protection area of London plane no. 1, the first 750mm depth of excavation for proposed foundations shall be undertaken by hand under arboricultural supervision. The soil will be loosened with a pick or fork, and then will be cleared from roots with a compressed air soil pick. All roots will be cut cleanly with a hand saw or secateurs. The edge of the excavation closest to the trees will be covered with hessian sacking to prevent drying out, and if necessary be shuttered with an appropriate material to prevent soil collapse. Where appropriate, the soil beneath this depth may be sheet piled; and deeper excavation may be undertaken by a machine provided it works from outside the root protection areas.

Above Soil Surfacing

Proposed hard surfacing within root protection area of London plane no. 1 shall be constructed in accordance with section 7.4 of BS 5837: 2012, Trees in relation to design, demolition and construction - Recommendations. Other than the careful removal, using hand tools, of any turf layer, surfaces will be installed no deeper than the base of any existing surfacing it is replacing, so that the soil is not disturbed and no roots are severed; and an appropriate ground covering, possibly using a geogrid, a geoweb, or a combination of the two will be placed beneath the sub-base to minimise compaction of the soil in which tree roots are growing. Edge supports will also be installed above existing soil level.

Arboricultural Supervision

The arboricultural consultant will directly supervise all construction works that have to be undertaken within root protection areas. These include:

1. Location of protective fencing and ground protection.
2. Lifting/excavation of existing hard surfaces.
3. Excavation/demolition of existing foundations.
4. Construction of above-ground hard surfacing.
5. All excavations, whether for proposed foundations, hard surfacing, or underground services.

SJA ARBORICULTURAL PLANNING CONSULTANTS

Project:	Ferrymoor, Ham
Client:	Zuber Dobson Architects
Drawing:	TREE PROTECTION PLAN
Drawing no:	SJA TPP 22071-041
Based on:	19021-P-122

Drawn by: FJC		Date of Issue: March 2022	Scale: 1: 250 @ A3
Checked by: FPS		Tel:(01737) 813058	sja@sjatrees.co.uk

Tree nos.:	● 1	Category 'U' trees:	● [6]	Canopies of trees to be retained:	
Category 'B' RPA:		Category 'C' RPA:		Trees to be pruned:	
Protective fencing:		Above soil surfacing:		Manual excavation:	

For further information refer to the SJAtrees Tree Survey Schedule

Do not scale from this drawing: please check all dimensions on site, and notify us of any discrepancies. SJAtrees (the trading name of Simon Jones Associates Ltd.) cannot be held responsible for inaccuracies in the topographical plan on which this drawing is based.

This drawing is based on the proposed layout plan shown and referred to above. SJAtrees authorises its reproduction, without amendment, by the Local Planning Authority (LPA), and to its posting on the LPA website, to assist in consideration of this application only.

This drawing is designed to reflect only the principles of layout and /or design insofar as these relate to the protection of trees to be retained, and should NOT be read as a definitive engineering or construction method statement. Reference should be made to the architect or structural engineer, as appropriate, over any matters of construction detail or specification, or any engineering standards or regulatory requirements relating to proposed structures, hard surfaces or underground services.