

Former Holloway Prison

Arboricultural Impact Assessment



**ARBORICULTURAL
IMPACT
ASSESSMENT**

Former Holloway Prison

October 2021



Barton Hyett Associates
Arboricultural Consultants

Summary table		
Site Name:	Former Holloway Prison	
Project reference:	R.3291	
Site Address:	Parkhurst Rd, London, N7 0NU	
Nearest Postcode:	N7 0NU	
Central Grid reference:	TQ 30082 85567	
Local Planning Authority:	London Borough of Islington	
Relevant planning policies:	Islington's Core Strategy February 2011: 3.6 Open space, play and sport. Development Management Policies June 2013: DM2.1 Design. Draft Islington Local Plan Strategic and Development Management Policies (Draft Local Plan 2019, as modified 2021). Supplementary Planning Documents: Environmental design; Holloway Prison Site.	
Statutory Controls:	Tree Preservation Order	Conservation Area
	None.	No.
Soil Type: (Source: BGS online soils map © NERC 2019)	Superficial/Drift	Bedrock
	Deep clayey loam to silty loam.	London Clay Formation – Clay, Silt and Sand.
Topographical Survey:	Point Surveyors LS2208/T/3D/11 (May 2019) (incorporating Scopus 23-11-012 (Oct 2016))	
Site Layouts:	Masterplan Roof Plan 17105-0-(00)_122 Rev. J General Arrangement Plan - Ground Floor 1947-EXA-ZZ-ZZ-DR-L-00100 Rev SK02	
Notes:	-	
Report author:	Ian Monger MSc, BSc (Hons), TechCert (ArborA) MArborA	
Date of issue:	26.10.2021	

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1. INSTRUCTION

- 1.1. Barton Hyett Associates Ltd have been instructed by Potter Raper on behalf of Peabody Construction Limited to survey trees located at the Former Holloway Prison ('the site') in accordance with BS5837:2012 'Trees in relation to design, demolition and construction - recommendations'.
- 1.2. The scope of the instruction was to inspect trees relevant to a planning application for the site and provide written advice on how they inform feasibility and design options for the site. The instruction also required an assessment of the potential impact (the arboricultural impact assessment) of the proposed development on the site's arboricultural resource to be undertaken.
- 1.3. I carried out an initial survey of trees within the former prison boundary in 2017. I undertook a further site visit in September 2019 to update the original tree survey and to extend the survey to include trees immediately outside of the outer site perimeter and at certain potential site access points. Access was achieved to rear communal gardens of Dalmeny Avenue and Trecastle Way, as well as the public highway areas. Finally, trees in the north-west of the site were surveyed in September 2020 at the same time as Barton Hyett Associates carried out arboricultural ground investigations.

2. SITE DESCRIPTION

- 2.1. The site is the former H.M. Holloway Prison which closed in 2016, and which occupies an area of approximately 4.16ha. Although the original neo-Gothic prison was opened in 1852, it was completely rebuilt between 1971 and 1985. The present buildings and landscaping are very much in a style of their time.
- 2.2. The site is largely enclosed within the modern boundary prison wall. Brick security and utility buildings of various floor levels are laid out across the site. Between these are paved footpaths and vehicle driveways with areas of grass, shrubs, hedges and trees planted within landscaped beds, banks, and courtyards. The site soil levels are varied and artificial. The trees within the site have been planted for the purpose of amenity, and they range from semi-mature to mature, with a wide range of sizes.
- 2.3. To the south-west of the site are the rear communal gardens of Dalmeny Avenue, Trecastle Way and Dolphin Court. These areas are at a higher level than the land within the prison site and the trees grow close to the top of a brick retaining wall of about 1 metre in height, with the ground dropping further down to the level of the base of the main prison wall.
- 2.4. None of the trees are currently protected by Tree Preservation Order (TPO) (check made 20/09/2021), and the site is not within a Conservation Area.

3. TREE SURVEY FINDINGS

- 3.1. Within the prison site itself, a total of 73 trees, 13 groups of trees and 3 hedgerows were surveyed. These are summarised in terms of their quality in accordance with the recommendations of BS5837 below, and shown in more detail on the Tree Survey and Constraints Plan (Section 2) and within the Tree Survey Schedule (section 4).

	Total	A - High quality trees whose retention is most desirable.	B - Moderate quality trees whose retention is desirable.	C - Low quality trees which could be retained but should not significantly constrain the proposal.	U - Very poor quality trees that should be removed unless they have high conservation value.
Trees	73	1	49	22	1
Groups	13	0	4	9	0
Hedgerows	3	0	0	3	-
Total	89	1	53	34	1

Table 1: summary of arboricultural features within the former prison site of each BS5837 quality category

- 3.2. Within the communal gardens of Dalmeny Avenue and Trecastle Way and other adjacent land, a total of 40 trees and 10 groups of trees were surveyed. These are summarised in terms of their quality in accordance with the recommendations of BS5837 below, and shown in more detail on the Tree Survey and Constraints Plan (Section 2) and within the Tree Survey Schedule (section 4). For some of these trees, stem positions were estimated on the topographical survey, but once access was gained I was able to relocate them as accurately as possible using a laser measure to triangulate off of fixed points. These trees are indicated with an asterisk next to the identification number on the tree survey plan and schedule.

	Total	A - High quality trees whose retention is most desirable.	B - Moderate quality trees whose retention is desirable.	C - Low quality trees which could be retained but should not significantly constrain the proposal.	U - Very poor quality trees that should be removed unless they have high conservation value.
Trees	40	0	30	9	1
Groups	10	0	3	7	0
Total	50	0	33	16	1

Table 2: summary of arboricultural features adjacent to the former prison site of each BS5837 quality

4. KEY ARBORICULTURAL FEATURES

- 4.1. The tree stock within the site is generally in a good condition, and there are few signs of the pressure for management through pruning which is commonly seen on trees in the public realm. Shrubs at the site are overgrown, and Bramble and Buddleia have taken-over in some areas through lack of management for some years. The key distinction at the site is between trees which appear to pre-date the 1970/80s rebuilding of the prison, and those which were planted on completion of that redevelopment.
- 4.2. London Plane T51 is the only high-quality tree at the site. The upper part of its crown of this large tree is visible from the public highway. The tree is shown in images 13 and 14 (Section 4) and were taken in 2017 at the time of the initial tree survey. The tree is the largest within the site, both in terms of height and mass. The tree is of excellent form and condition. It grows within a square grass bed, with hard surfacing and building foundations within its root protection area (RPA).
- 4.3. I have only seen the tree in full leaf. Online photographic research has found a photograph of the tree (by an unknown photographer) taken when the tree was not in leaf (image 15 in section 4). The photograph is taken from Camden Road, and clearly shows that the crown of the tree has been pruned in the past to reduce its height and spread. The pruning points can be seen as dense junctions of branches approximately 3-4 metres below the branch tips. I do not know when the pruning work was carried out, as the work would not have been regulated by the Local Planning Authority (LPA) at the time.
- 4.4. The overlaid 1895 Ordnance Survey map for the site in Section 2 confirms that, before the prison was rebuilt between 1967 and 1977, the tree grew in a courtyard behind the south prison gatehouse. I have identified the plane tree in historic photographs of the original Victorian prison (images 16 - 18 in Section 4). Although the date of the photographs is not known, the age and location of T51 is clearly consistent with the tree circled red in the photographs.
- 4.5. The line of trees flanking the frontage of the site with Camden Road, which includes T63 to T69 and G5: Lime, Tree of Heaven, Common Ash, Horse Chestnut, London Plane presumably pre-date the redevelopment. One dead Sycamore T70 (U) has been felled since the 2017 survey. It is more difficult to assess whether the avenue of Limes and Silver Maples (T27 – T36) pre-date the redevelopment of the site or are contemporary with it. It is most likely they are contemporary to redevelopment.
- 4.6. Elsewhere on site, trees are clearly planted within beds that are components of the site redevelopment. These include Weeping Willows, Birches, Tulip Trees, Maples, Cherries, Sycamores, Whitebeams and other species very much of the period. Sweet Chestnut T26 (B1) is healthy and of good form and is worthy of being retained.
- 4.7. Outside of the site to the south-west, the main features are the screening belt of trees within the rear communal gardens of Dalmeny Avenue (T74 to T98), and other specimen trees within highway footpath or planted beds (e.g. T101, T106).
- 4.8. The screening belt includes a number of broadleaved trees including crack willow, sycamore, horse chestnut, Norway maple, common ash, wild cherry and small-leaved lime, and these are mostly of B1 or B2 quality category unless poor form or condition downgrades them to category C. Along the same boundary are Leyland Cypress trees T74, T86, G11, G12 and G14. These are of varying heights and stem sizes, but provide

denser year-round screening between the dwellings and the prison site. However, it was considered that they are only of quality category C2.

- 4.9. Beyond the westernmost corner of the site adjacent to Trecastle Way are off-site horse chestnut T72 as well as on-site common ash T100 and purple Norway maple T101. It is likely that ash T100 has naturally regenerated in this location. Also in this location are common ash T99 (B1) and the group of semi-mature to early-mature damson/plum, common ash, elder and Norway maple within G8 (C2).

5. DEVELOPMENT PROPOSAL

- 5.1. The development proposal is a full planning application for phased comprehensive redevelopment including demolition of existing structures; site preparation and enabling works; and the construction of 985 residential homes including 60 extra care homes (Use Class C3), a Women’s Building (Use Class F.2) and flexible commercial floorspace (Use Class E) in buildings of up to 14 storeys in height; highways/access works; landscaping; pedestrian and cycle connections, publicly accessible park; car (blue badge) and cycle parking; and other associated works.
- 5.2. The proposed site and landscape layouts have been overlaid on the Tree Retention & Removal Plan in Section 3.

6. IMPACT ASSESSMENT

- 6.1. Forty-four individual trees, 10 groups of trees and three hedges are proposed to be removed. These removals are summarised by quality category in the table below and shown on the Tree Retention and Removal Plan in Section 3.

	Total	A - High quality trees whose retention is most desirable.	B - Moderate quality trees whose retention is desirable.	C - Low quality trees which could be retained but should not significantly constrain the proposal.	U - Very poor quality trees that should be removed unless they have high conservation value.
Trees	44	0	25	18	1
Groups	10	-	3	7	-
Hedgerows	3	-	-	3	-
Total	57	0	28	28	1

Table 3: summary of proposed removals of each BS5837 quality category

- 6.2. The site layout has been designed with the aim of retaining as many of the most visually-significant trees as possible, and this has been achieved. The category A London plane T51 is to be retained as the primary feature within the Plane Tree Gateway for the site because it is a direct link with the former prison’s history. The proposal will significantly increase its visibility from and contribution to the street scene. Many of the

semi-mature to mature trees within the centre of the site, including the avenue of limes and maples, will be retained within a central public garden, forming a green heart for the site.

- 6.3. Tree removals have been largely limited to smaller, younger trees which can be mitigated through new tree planting. The majority of the trees to be removed are not currently visible, or are only partially visible, from public places and so the impact on the character and appearance of the area will be low.
- 6.4. The most significant removals within the site, in terms of crown size, are weeping willow T3 (B1), eucalyptus T14 (B1), sycamore T15 (B1), silver birch T45 (B1) and whitebeams T46-T48 (C1). Given that these trees were planted within beds and graded slopes which were created as an integral part of the 70/80s site design, their healthy retention would be reliant on the retention of the soil levels and gradients in which they currently grow. Consideration has been given to the retention of T3 and T15, but other constraints at the site mean that it would not be possible to do so. It would not be feasible to retain the Eucalyptus T14 through demolition because it grows very close to the existing building. The silver birch and whitebeams have been historically pollarded and they grow within a landscaped area requiring alteration. The impact of these removals on the character and appearance of the area will be low.
- 6.5. The removal of lime T63 (B1) is required both for demolition/construction access egress and for the final access junction. The loss of the tree will be compensated for by new tree planting at the access.
- 6.6. It has not been possible to retain tree of heaven T64 (C1) and common ash T65 (B1) in close proximity to the south building of Plot C. T64 is in poor condition and is a low-quality tree. Common ash T65 has been historically pollarded and, while a moderate-quality tree when last inspected in 2020, is likely to succumb to Ash Dieback Disease in the future. Although Forest Research advise a general presumption against felling living ash trees, whether infected or not (with the exception of felling for public safety), for the purposes of development design it can be reasonably presumed that T65 has a significantly reduced safe useful life expectancy.
- 6.7. Trees G6, G7 and T71 (B1) grow within a raised bed retained with low brick walls. The trees include four silver birches of semi-mature to early-mature age, and a group of early-mature evergreen oak, rowan and sycamore of early mature age. The trees are of moderate quality. The trees are part of the modern planting scheme for the site, and have grown within the retained ground such that excavation into this raised area will not be possible without significant root system damage. It will not be possible nor appropriate to attempt to retain the trees as there will be insufficient physical space for their existing root systems and for their future growth. Loss of the trees is mitigated with new tree planting.
- 6.8. The new access from Trecastle Way, in the far west of the site, will require the removal of multi-stemmed common ash T99 (B1) and plum/damson, common ash, elder and Norway maple group G8 (C2). Given the generally low quality (and in some cases poor or declining health) of these trees, their removal has a low overall impact. The new sloped and stepped access proposed includes new linear and specimen tree planting as well as planted screening buffers and so delivers a significant visual improvement on the existing arboricultural resource.
- 6.9. It is proposed to retain the small, low-quality cherry trees T20, T21 and T22 by relocating them to Plot C. The feasibility of this will depend of the existing ground conditions including whether underground services are

present. The success will depend on careful lifting and careful management of the trees until they are relocated in their final locations and afterwards. The trees can be temporarily relocated to the central area of the site where there is good quality soil and they can be properly cared for until final soft landscaping for Plot C takes place.

- 6.10. Any redevelopment proposal for the site would require tree losses because many of the trees have grown within the hard landscaping structures and levels created when the prison was redeveloped to its current form. However, the landscape scheme for the site will deliver a substantial net gain in tree number and canopy cover for the site. The redevelopment also provides the opportunity to select species that are resilient to a changing urban climate.

Impacts on retained trees

- 6.11. **London Plane tree T51:** During the tree's growth within the original courtyard, and since the rebuilding of the prison, the root system of T51 will have been constrained by nearby structures which will have caused rooting to occur asymmetrically. The exact nature of root system obstruction is not known and is likely to be complex.
- 6.12. A Root Protection Area (RPA) is a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain a tree's viability, and has been plotted as a circle centred on the base of the stem of T51. However, an RPA is not a prediction of the morphology or disposition of the roots. Where structures have clearly influenced the extent of rooting, an RPA can be modified to a polygon of equivalent area based on a sound arboricultural assessment of likely root distribution. However, given the lack of information of the nature of historic and modern foundations, as well as root severance that might have occurred during demolition and construction work when the prison was rebuilt, I have not modified the RPA. Clearly, the existing prison building foundations will have obstructed root system growth.
- 6.13. The north-east wall of Plot C building is in the same location as the existing building wall, and the south-west wall of Plot B is approximately 4m further away from the tree. London plane has been long-prized as a street tree in London and other cities because of its tolerance to soil compaction, root damage, hard surfaces and pruning. If demolition, construction and landscaping around the tree are carried out under careful arboricultural supervision, the potential impact on the tree can be controlled at an acceptable level, and the proposal will provide an increase in soil rooting volume available for the tree's future growth.
- 6.14. Consideration has been given to the future growth of the crown of T51 and the potential for conflict with the balconies of Plots B and C. A tree which conflicts with valued space, light and views can be subject to pressure for pruning to reduce its size.
- 6.15. London plane (*Platanus x hispanica*) is a C17 hybrid between two *Platanus* species - oriental plane and American buttonwood. As a hybrid, it grows with hybrid vigor (heterosis) and is capable of reaching 40m in height and over 25m in crown spread. One drawback of the tree is the stiff hairs which are shed from the young leaves and the dispersing seeds. These hairs are an irritant when inhaled and can exacerbate existing breathing difficulties in people. The pollen is also allergenic, and fallen leaves can take a long time to rot, so

can persist in the landscape for some time after they are shed. Nevertheless, the tree remains the most common and successful tree in London's streets.

- 6.16. It is impossible to accurately predict the future growth rate of a tree. The interplay of climatic and environmental conditions and variations over time creates a highly-dynamic system. Ideal micro-climatic conditions will speed tree growth, and stress or damage to a tree's root system will slow growth. Vigorous trees in the UK, such as London plane, will typically grow between 15cm and 50cm per year. However, when branches are pruned the temporary reduction of apical dominance (regulated by growth hormones) causes a very rapid growth of shoots from latent buds within the remaining branch. This is the type of vigorous response growth seen after a London plane tree is pollarded, and is the growth pattern that is responsible for the dense branch junctions seen in image 15 of T51 in section 4.
- 6.17. Planes, unlike many species such as poplar and ash, tend to recover very well from crown-reduction work and remain structurally very stable when allowed to regrow. Despite this, most LPAs will accept repeat crown-reduction work to vigorous trees which have been reduced in the past. Cyclical pruning of planes is obviously a common feature of London streets. The pruning history of T51 reframes future management options for the tree simply because growth intervention has taken place in the past. Concerns about future growth and conflict with balconies and buildings should be considered in the light of this, because it would be a reasonable future management option to reduce the tree's size again.
- 6.18. Demolition of existing structures within the RPA of T51 will need to be carried out with care and in accordance with an approved arboricultural method statement (AMS). Where possible, existing foundations and hard surface sub-bases within the RPA could be left in situ to minimise root system disturbance and damage. There should be no new excavation into the existing unobstructed RPA of the tree.
- 6.19. The separate Construction Environmental Management Plan indicates that the primary site hoarding can provide the majority of the physical protection for the tree by excluding it from the internal part of the site. However, a Sales and Marketing Suite is also proposed in this area, and so the detailed AMS will need to provide additional phased barrier and ground protection to account for phasing of demolition/construction including hard surfacing.
- 6.20. Hard landscaping within the RPA should avoid excavation into existing ground levels, and new surfacing should be of no-dig cellular confinement sub-base or other non-invasive engineering solution (such as GreenBlue Urban StrataCell or RootSpace). The location of drainage and other underground services should be carefully considered to avoid the need for additional excavation within tree's RPA. The separate Surface Water Drainage Pro-forma shows that much of the new surfacing within the RPA will be of permeable paving.
- 6.21. **Off-site south-west boundary trees:** There is a sharp drop in ground level between the Dalmeny Avenue rear garden retaining wall and the ground level within the former prison site, and a graded soil and rubble bank supports the level difference.
- 6.22. Air spade investigation of the extent of rooting of off-site trees along the south boundary into the site was carried out in September 2020. Our excavations found that there is no retaining wall between the height difference of Dalmeny Avenue and the prison site. We found that the earth bank is the only physical feature

retaining the ground level difference, and as such, root growth of the off-site trees into the earth bank has been unimpeded. Larger roots and a network of smaller roots were found throughout our excavations in the bank. The bank is of soil and rubble, and at its base is concrete haunching holding slab edging for the tarmac path. It is likely that tree root systems extend beyond this below the tarmac, as past excavations by others along the boundary in the west of the site show little or no compacted sub base below the tarmac. This would be consistent with the deformation of the tarmac that has occurred along the south of the site.

- 6.23. The proposed road runs along the peripheries of some of the tree RPAs, and a new retaining crib wall or similar will be installed to strengthen the retaining structure but incorporate as much of the existing bank as possible. The crib wall or similar will create new spaces for habitat and planting. Although some root severance and ground level increase would be required, my assessment is that the impact of root pruning would have a negligible impact on tree health and longevity. The location of the edge of the road is sufficiently distant that construction can be of standard compacted sub base without detriment to the off-site trees.
- 6.24. The lower crowns of the trees will require crown-lifting to provide height clearance for the egress of demolition vehicles, but this would have a negligible impact of the visual quality of the trees and would not reduce their screening value. No other facilitation pruning of tree crowns appears to be necessary to implement the proposal.
- 6.25. **Parkhurst and Camden Road frontage trees:** There is no significant incursion into the RPAs of the frontage trees by the new buildings. However, construction of foundations at the edges of the RPAs of horse chestnuts T62 and T67 will need to be discussed and planned in detail at the appropriate stage so that the correct approach to protecting the trees can be adopted. The approach might include airspade excavation to allow root pruning to take place, and would require an on-site arboricultural watching brief during works. Tree protection, including barriers and ground protection, would need to be phased.
- 6.26. The new footways within the RPAs of the frontage trees will be designed with the same considerations as for the London plane tree T51 – avoiding excavation and new services below the existing ground level. The footway reinstatement is expected to be secured as part of a S278 Agreement and further assessment of the new surfacing for the footway in relation to the RPAs of these trees could be provided and considered as part of the discussion and agreement between the applicant and authority with respect to this S278 Agreement.
- 6.27. **Central public park area:** For the retained trees in the central park area, there appears to be no significant ground level changes within RPAs. Removal of existing surfaces, structures and underground services will need careful consideration to avoid or minimise root system disturbance. Decommissioned underground services and structures should be left in situ wherever possible. New paths here and elsewhere within the site are likely to be either resin-bound gravel or a compacted gravel (hoggin), and so there is ample flexibility to install these more sensitively with the RPAs of trees so that impacts on root systems are reduced to an acceptable level.

- 6.28. **Trecastle Way access:** Plot E building and the new Trecastle Way access are at the edge the RPAs of off-site horse chestnut T72 (B1) and common ash T75 (B2). At my last site visit I noted that knotweed removal excavations have already severed roots of T72 within the site, and my assessment is that additional minor excavations and ground level grading at the edge of the RPAs would have a low impact on the trees. It may be possible to design the new access structure using a non-invasive engineering solution so that the need for excavation into the existing ground level is minimised and gaseous exchange is maintained to the root systems.
- 6.29. **Access reconfiguration in the north of the site:** Reconfigured hard surfacing is proposed within the RPAs of sycamore T56 (B1) and common ash T58 (B1) at the north site boundary, but with no significant change in ground levels. Existing hard surfacing exists in these locations, and I recommend that the sub-base is left in-situ within RPAs (where it is not being removal altogether). Core sampling and compaction testing can be used to determine whether this is feasible. New kerbing/haunching should be kept to a minimal design within the RPAs or avoided altogether.
- 6.30. **New utilities and drainage:** The Utilities Overview (REP-XX-10168-20210826-NB Rev 1) assesses requirements for new water, gas, electricity and telecoms services and concludes that all new incoming services supplies will avoid trees and that all new structures (such as switch rooms) have been incorporated into the architectural plans as integral to the proposed new buildings.
- 6.31. The Flood Risk Assessment and Drainage Report (WIE15702-100-R-1-1-3-FRA). Surface water storage will be provided through a combination of storage below permeable paving and storage tanks to discharge through an existing combined sewer that crosses the site. Suitability of this sewer would be confirmed following additional surveys to be undertake post planning. Foul drainage would connect to the combined sewer beneath Parkhurst Road, and a response to the capacity of the sewer is awaited from Thames Water.
- 6.32. The External Site Services Layout plan shows some conflicts with new services and retained tree RPAs. The Preliminary Drainage Strategy plan shows a conflict with a below ground storage tank and the RPA of T33. However, these plans are in a schematic and draft form at this stage. The locations of new underground utilities and drainage must avoid the RPAs of retained trees wherever possible. Where unavoidable, the use of trenchless installation techniques such as percussive boring or directional drilling are available. The use of these approaches would require specialist site-specific feasibility assessment, and launch and receiver pits must be capable of being excavated outside of the RPAs of the retained trees.
- 6.33. Following site demolition, construction will be phased over an extended period. Site conditions and construction priorities can change over time and so the most important component of effective protection of retained trees will be the involvement of a Project Arboriculturist in pre-commencement and site management meetings, and in regular monitoring of site activities and protective measures. The Project Arboriculturist will also be required to supervise or oversee particular aspects of the construction and the reconfiguration of protective barriers and ground protection at key stages. As such, the separate AMS document and Tree Protection Plans will require refining to account for other aspects of site design and management as those details are finalised, so that conflicts can be resolved, as well as for any relevant

planning conditions. However, at this stage I do not expect that the proposed protection measures at construction stage to significantly differ from those put forward in the AMS submitted with the application, and so it appears to me to be appropriate for an updated AMS to be submitted prior to works being undertaken to trees on the site.

- 6.34. There appear to be no significant conflicts at this stage between the proposed locations of cranes and other construction management aspects and the retained trees. However, lifting of materials over and in the vicinity of tree T51 will need to be considered so that damage to the tree's crown cannot occur.
- 6.35. A detailed hard and soft landscaping scheme will be devised and is also likely to evolve during the planning process, and so the input of the Project Arboriculturist will be required to assess whether there are any potential conflicts with the protection of retained trees. A separate Tree Protection Plan for the phased landscaping stages will be required, as well as pre-commencement meetings for each phase of landscaping so that retained trees can be afforded appropriate protection.
- 6.36. The proposal is feasible from an arboricultural perspective, and if carefully implemented according to an approved AMS there would be no or only a low potential negative impact on retained trees. The landscape scheme for the site will deliver a substantial net gain in tree number and canopy cover for the site. The redevelopment also provides the opportunity to select species that are resilient to a changing urban climate.
- 6.37. The Tree Retention and Removal Plan is included within Section 3 and draft demolition and construction Tree Protection Plans are included in Section 4. They are also included within the separate AMS document which has been submitted at the planning application stage.

7. RECOMMENDATION AND SUMMARY

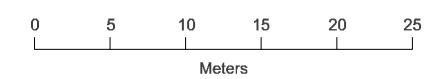
- 7.1. Subject to the implementation of the advice contained within this report the proposed development is acceptable from an arboricultural perspective. The loss of trees can be readily mitigated and the retained trees can be adequately protected during construction activities to sustain their health and longevity. The landscape scheme for the site will deliver a substantial net gain in tree number and canopy cover for the site.
- 7.2. An AMS and demolition and construction Tree Protection Plans have been produced, but will require refining to account for other aspects of site design and management as those details are finalised, so that conflicts can be avoided. However, at this stage I do not expect that the proposed protection measures at construction stage to significantly differ from those put forward in the AMS submitted with the application, and so it appears to me to be appropriate for an updated AMS to be submitted prior to works being undertaken to trees on the site.



Ian Monger *BSc (Hons.), MArborA*
Senior arboriculturist




- KEY**
- Category A Tree - High quality (Retention highly desirable)
 - Category A - Hedgerow, Group, Woodland - High quality (Retention highly desirable)
 - Category B Tree - Moderate quality (Retention desirable)
 - Category B - Hedgerow, Group, Woodland - Moderate quality (Retention desirable)
 - Category C Tree - Low quality (May be retained but should not constrain development)
 - Category C - Hedgerow, Group, Woodland - Low quality (May be retained but should not constrain development)
 - Category U Tree - Very low quality (Mostly unsuitable for retention)
 - Category U - Hedgerow, Group, Woodland - Very low quality (Mostly unsuitable for retention)
 - Root Protection Area (RPA) - Layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and soil volume to maintain the tree's viability
 - ✳ Stem position not shown/shown correctly on topographical survey. Tree located using laser measure triangulation off fixed point, but position is approximate
 - Shrub Mass
 - Bramble
 - Evergreen trees, groups of trees and shrubs growing off-site along the south site boundary



Note: The original of this drawing was produced in colour – a monochrome copy should not be relied upon. This drawing should be interpreted with reference to the accompanying tree schedule and written advice



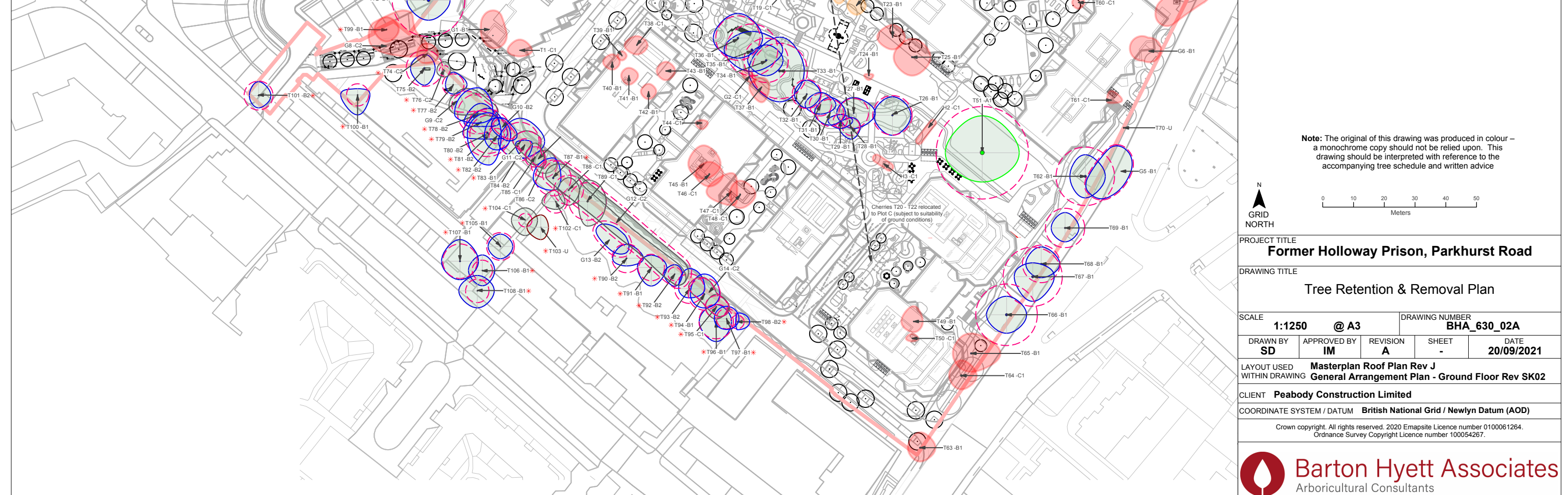
PROJECT TITLE					Holloway Prison (R.3291)				
DRAWING TITLE									
Tree Survey & Constraints Plan - Map Extract									
SCALE		DRAWING NUMBER							
1:500 @ A3		BHA_630_04							
DRAWN BY	APPROVED BY	REVISION	SHEET	DATE					
SD	IM	-	-	30/11/2020					
LAYOUT USED WITHIN DRAWING n/a									
CLIENT Potter Raper									
COORDINATE SYSTEM / DATUM British National Grid / Newlyn Datum (AOD)									
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 Barton Hyett Associates Arboricultural Consultants									
Tel: 01386 576161 Website: www.barton-hyett.co.uk Address: Barn 2, Oxpens Farm, Yanworth, Cheltenham, Gloucestershire, GL54 3QE									

TS - 'Section 2'

Tree No	Ht (m)	Species	Life Stage	RPA Radius (m)	RPA Area (m2)	Tree No	Ht (m)	Species	Life Stage	RPA Radius (m)	RPA Area (m2)
T1	7	Weeping Willow	SM	2.6	22						
T2	16	Silver Birch	EM	3.6	41						
T3	7	Weeping Willow	EM	6	113						
T4	6	Elder	M	3.8	46						
T5	10	Robinia 'Frissa'	SM	2.5	20						
T6	8	Tulio Tree	Y	1.5	7						
T7	5.5	Swedish Whitebeam	EM	2.2	15						
T8	11	Sycamore	EM	5.4	92						
T9	4	Weeping Willow	SM	0.8	2						
T10	9	Purple Norway Maple	SM	2.5	20						
T11	6	Silver Birch - Nothofagus menziesii	Y	1.7	9						
T12	9	Tulio Tree	SM	2.5	20						
T13	7	Swedish Whitebeam	SM	2.8	24						
T14	17	Eucalyptus spp.	EM	7	152						
T15	16	Sycamore	M	8.2	209						
T16	12	Contorted Willow	M	7.6	190						
T17	2	Weeping Cherry	Y	1.3	5						
T18	4.5	Cabbage Palm	EM	2.4	18						
T19	4	Cabbage Palm	SM	1.8	10						
T20	6.5	Cherry 'Kanzan'	EM	2.6	22						
T21	8	Bird Cherry	SM	2.4	18						
T22	8	Bird Cherry	SM	2.5	20						
T23	11	Cherry 'Kanzan'	EM	3.7	43						
T24	5	Cabbage Palm	M	4.2	55						
T25	11	Weeping Willow	EM	6	113						
T26	9	Sweet Chestnut	EM	6.4	127						
T27	9	Large-leaved Lime	EM	4.8	72						
T28	6	Small-leaved Lime	SM	3	28						
T29	9	Large-leaved Lime	SM	2.3	16						
T30	11	Large-leaved Lime	SM	4.4	62						
T31	11	Small-leaved Lime	EM	3.6	41						
T32	12	Caucasian Lime	EM	4.7	69						
T33	17	Silver Maple	M	9	255						
T34	17	Silver Maple	M	7.2	163						
T35	17	Silver Maple	M	8.4	222						
T36	17	Silver Maple	M	7.2	163						
T37	7	Cherry 'Kanzan'	SM	2	13						
T38	5	Tulio Tree	SM	3	28						
T39	4	Cabbage Palm	M	2.8	24						
T40	2.5	Weeping Cherry	EM	2.6	22						
T41	3	Weeping Silver Birch	SM	1.8	10						
T42	2	Weeping Silver Birch	SM	1.8	10						
T43	3	Weeping Silver Birch	SM	2	12						
T44	8	Sycamore	Y	1.1	4						
T45	16	Silver Birch	EM	3.3	35						
T46	9	Whitebeam	M	4.9	76						
T47	11	Whitebeam	M	4.4	62						
T48	11	Whitebeam	M	5	80						
T49	4.5	Cherry 'Kanzan'	EM	3.6	41						
T50	4	Lawson Cypress	Y	0	0						
T51	24	London Plane	M	15	707						
T52	6.5	Silver Birch	Y	1.8	10						
T53	5	Common Ash	Y	1	3						
T54	7	Tree of Heaven	SM	3.7	43						
T55	7	Tree of Heaven	SM	3	28						
T56	11	Sycamore	EM	6.6	137						
T57	6	Sycamore	SM	2.4	18						
T58	12	Common Ash	EM	5.4	92						
T59	5.5	Rowan	EM	2.3	16						
T60	6	Rowan	SM	1.8	10						
T61	6.5	Cherry Prunus x halleri	SM	2	13						
T62	11	Horse Chestnut	M	9.5	282						
T63	11	Common Lime	EM	5.4	92						
T64	16	Tree of Heaven	M	7.8	191						
T65	16	Common Ash	EM	6.7	142						
T66	15	Horse Chestnut	M	10	312						
T67	15	Horse Chestnut	M	9.8	290						
T68	11	Sycamore	EM	6.1	118						
T69	9	Common Lime	EM	6.4	127						
T70	2	Sycamore	EM	5.4	92						

Tree No	Ht (m)	Species	Life Stage	RPA Radius (m)	RPA Area (m2)	Tree No	Ht (m)	Species	Life Stage	RPA Radius (m)	RPA Area (m2)
T71	8	Silver Birch	EM	3.9	41						
T72	15	Horse chestnut	M	11.8	435						
T73	17	London plane	M	8.3	215						
T74	6	Levand cypress	SM	2.5	20						
T75	11.5	Sycamore	EM	5.9	109						
T76	5.5	Monterey cypress	SM	1.7	9						
T77	6	Portugal laurel	EM	3.5	38						
T78	16	Crack willow	M	8.5	132						
T79	16	Crack willow	M	3.7	43						
T80	17	Willow spp.	M	7.7	185						
T81	18	Crack willow	M	6.2	122						
T82	10	Sycamore	SM	2.5	20						
T83	18	Crack willow	M	8.2	122						
T84	7.5	Horse chestnut	SM	2	13						
T85	8	Horse chestnut	SM	3.3	35						
T86	12	Levand Cypress	SM	4.3	59						
T87	13	Sycamore	M	5.8	104						
T88	12	Purple Norway maple	M	4.8	72						
T89	13	Willow cherry	M	6.1	118						
T90	14	Horse chestnut	M	4.7	69						
T91	14	Common ash	M	4.3	59						
T92	10	Small-leaved lime	SM	2.2	15						
T93	12	Aesculus spp.	M	4.8	72						
T94	15.5	Sycamore	M	5.2	84						
T95	11	Norway maple	M	5.6	100						
T96	17	Common ash	M	5.6	100						
T97	9	Horse chestnut	SM	3.3	35						
T98	13	Horse chestnut	SM	2.2	15						
T99	10	Common ash	SM	3.7	43						
T100	13.5	Common ash	EM	3.6	41						
T101	10	Purple Norway maple	M	4.7	69						
T102	9	Goat willow	M	3.7	43						
T103	12	Silver birch	M	3.9	49						
T104	6.2	Goat willow	SM	2.2	15						
T105	16	Sycamore	M	4.5	65						
T106	6	Acer spp.	M	3.3	35						
T107	15	Common ash	M	5.6	100						
T108	5.2	Japanese cherry	M	3.8	46						
T109	10	London plane	M	8.4	222						
T110	14.5	London plane	M	7.8	191						
T111	14	Levand cypress	M	6.2	122						
T112	20	London plane	M	9	255						
T113	11.5	Sycamore	SM	4.1	52						
T114	8	Elder	M	4.3	69						

Tree No	Ht (m)	Species	Life Stage	RPA Radius (m)	RPA Area (m2)	Tree No	Ht (m)	Species	Life Stage	RPA Radius (m)	RPA Area (m2)
G1	4-9	Catalpa, goat willow	SM	9	28						
G2	2-4	Magnolia, Weeping Cherry	Y	1.3	5						
G3	9	Sycamore, Common Ash	EM	4.2	55						
G4	6-12	Norway Maple, Silver Birch, Common Ash	EM	4.2	55						
G5	6-11	Common Lime, London Plane	EM	5.4	92						
G6	5-8	Silver Birch	SM	2.9	26						
G7	6-9	Evergreen Oak, Quercus ilex, Rowan, Sycamore	EM	6.6	137						
G8	6-8.5	Plum/damson, common ash, elder, Norway maple	SM	2.8	24						
G9	4-6	Portugal laurel, elder	SM	1.6	8						
G10	2.5-4	Portugal laurel	EM	1.6	8						
G11	4-9	Levand Cypress	SM	2.4	18						
G12	4-17	Levand Cypress, lime	EM	4.1	52						
G13	15	Levand Cypress, small-leaved lime	EM	4.5	65						
G14	6-9	Levand Cypress	EM	3	28						
G15	4-10	Elder, sycamore, wild	SM	2.2	15						
G16	9-14	Levand cypress	M	4.8	72						
G17	3.5-5.5	Elder	M	2.4	18						
G18	4-6.5	Cherry plum, elder, common ash	Y	1.5	7						
G19	5-8	Griselinia, pittosporum	M	3	28						
G20	5.5-6	Cherry plum, common ash	SM	2.4	18						
G21	5-9	Goat willow	SM	2.2	15						
G22	5.5-10	Sycamore, pittosporum, ludlowia	SM	3.3	35						
G23	5-8	Sycamore, elder	SM	2.2	15						
H1	4	Cherry Laurel	SM	1.8	10						
H2	4	Levand Cypress	Y	1.3	5						
H3	4	Levand Cypress	Y	1.3	5						



KEY

- Category A Tree - High quality (Retention highly desirable)
- Category A - Hedgerow, Group, Woodland - High quality (Retention highly desirable)
- Category B Tree - Moderate quality (Retention desirable)
- Category B - Hedgerow, Group, Woodland - Moderate quality (Retention desirable)
- Category C Tree - Low quality (May be retained but should not constrain development)
- Category C - Hedgerow, Group, Woodland - Low quality (May be retained but should not constrain development)
- Category U Tree - Very low quality (Mostly unsuitable for retention)
- Category U - Hedgerow, Group, Woodland - Very low quality (Mostly unsuitable for retention)
- Root Protection Area (RPA) - Layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and soil volume to maintain the tree's viability
- Stem position not shown/shown correctly on topographical survey. Tree located using laser measure triangulation off fixed point, but position is approximate
- Site Boundary
- Tree / Group / Hedge to be removed
- Tree to be relocated to Plot C (subject to suitability of ground conditions)

Note: The original of this drawing was produced in colour – a monochrome copy should not be relied upon. This drawing should be interpreted with reference to the accompanying tree schedule and written advice

N
GRID NORTH

0 10 20 30 40 50
Meters

PROJECT TITLE
Former Holloway Prison, Parkhurst Road

DRAWING TITLE
Tree Retention & Removal Plan

SCALE
1:1250 @ A3

DRAWING NUMBER
BHA_630_02A

DRAWN BY SD	APPROVED BY IM	REVISION A	SHEET -	DATE 20/09/2021
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LAYOUT USED
Masterplan Roof Plan Rev J

WITHIN DRAWING
General Arrangement Plan - Ground Floor Rev SK02

CLIENT
Peabody Construction Limited

COORDINATE SYSTEM / DATUM
British National Grid / Newlyn Datum (AOD)

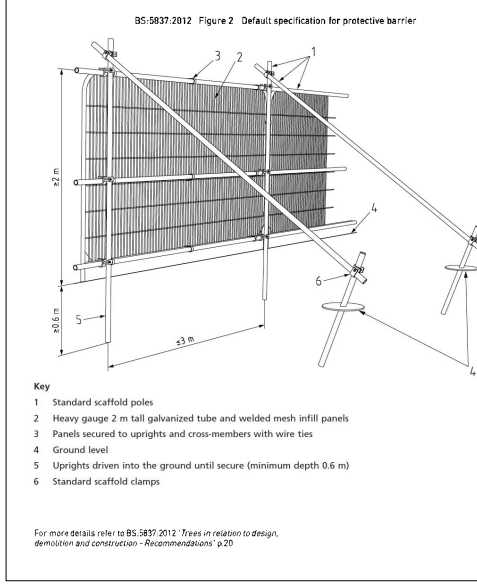
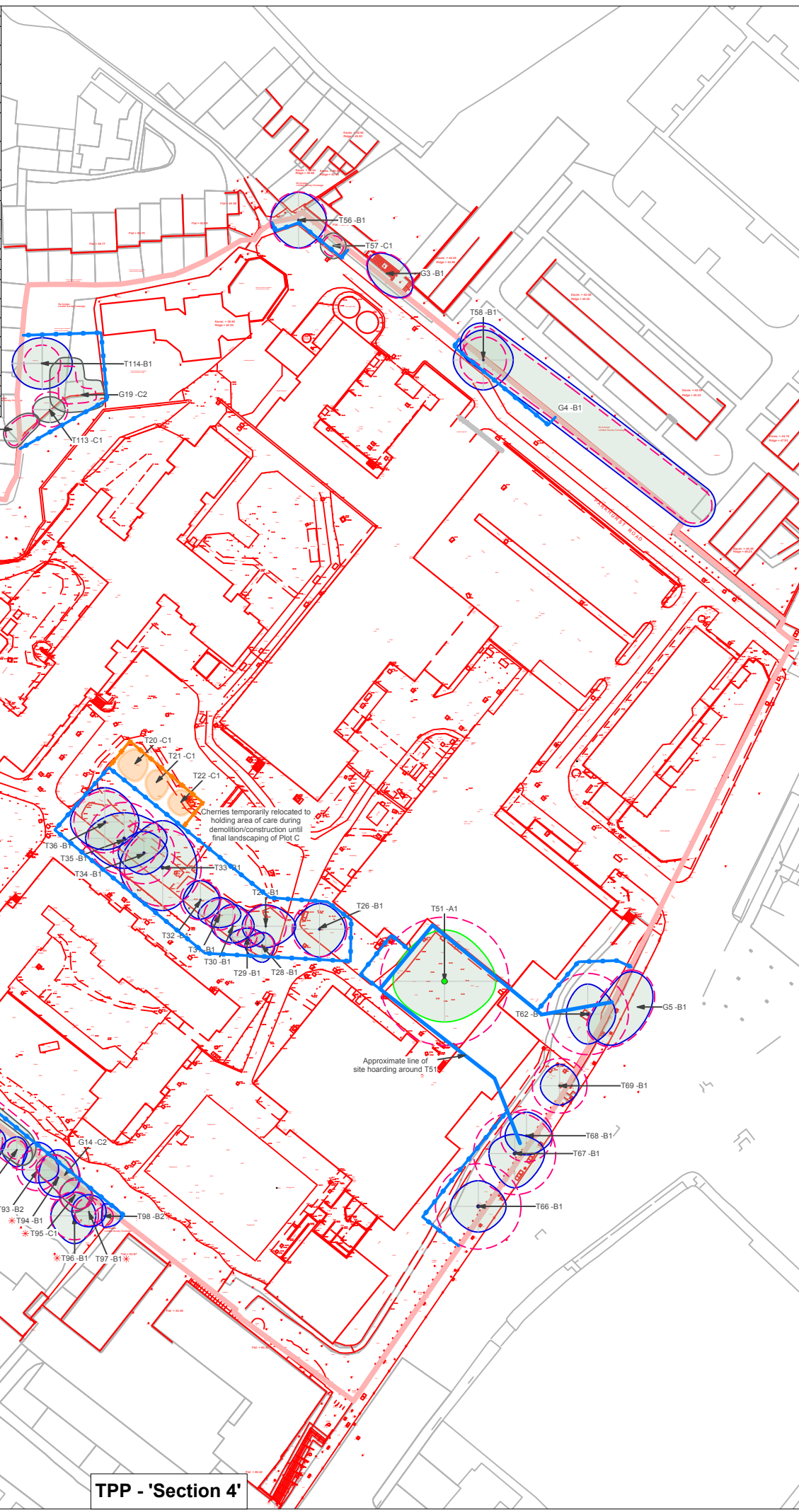
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Tree No	Ht (m)	Species	Life Stage	RPA Radius (m)	RPA Area (m ²)	Tree No	Ht (m)	Species	Life Stage	RPA Radius (m)	RPA Area (m ²)
T1	7	Weeping Willow	SM	2.6	22						
T2	16	Silver Birch	EM	3.6	41						
T3	7	Weeping Willow	EM	6	113						
T4	6	Elder	M	3.8	46						
T5	10	Robinia 'Frisia'	SM	2.5	20						
T6	8	Tulip Tree	Y	1.5	7						
T7	5.5	Swedish Whitebeam	SM	2.2	15						
T8	11	Sycamore	EM	5.4	92						
T9	4	Weeping Willow	SM	0.8	2						
T10	9	Purple Norway Maple	SM	2.5	20						
T11	6	Silver Birch - Nothofagus species	Y	1.7	9						
T12	9	Tulip Tree	SM	2.5	20						
T13	7	Swedish Whitebeam	SM	2.8	24						
T14	17	Eucalyptus spp.	EM	7	152						
T15	16	Sycamore	M	8.2	209						
T16	12	Common Willow	M	7.6	130						
T17	2	Weeping Cherry	Y	1.3	5						
T18	4.5	Cabbage Palm	EM	2.4	18						
T19	4	Cabbage Palm	SM	1.8	10						
T20	6.5	Cherry 'Kanzan'	EM	2.6	22						
T21	8	Bird Cherry	SM	2.4	18						
T22	9	Bird Cherry	SM	2.5	20						
T23	6.5	Cherry 'Kanzan'	EM	3.7	43						
T24	5	Cabbage Palm	M	4.2	55						
T25	11	Weeping Willow	EM	6	113						
T26	9	Sweet Chestnut	EM	6.4	127						
T27	9	Large-leaved Lime	EM	4.8	72						
T28	8	Small-leaved Lime	SM	3	28						
T29	9	Large-leaved Lime	SM	2.3	16						
T30	11	Large-leaved Lime	SM	4.4	62						
T31	11	Small-leaved Lime	EM	3.6	41						
T32	12	Caucasian Lime	EM	4.7	69						
T33	17	Silver Maple	M	9	255						
T34	17	Silver Maple	M	7.2	163						
T35	17	Silver Maple	M	8.4	222						
T36	17	Silver Maple	M	12	153						
T37	7	Cherry 'Kanzan'	SM	2	13						
T38	5	Tulip Tree	SM	3	28						
T39	4	Cabbage Palm	M	2.8	24						
T40	2.5	Weeping Cherry	EM	2.6	22						
T41	3	Weeping Silver Birch	SM	1.8	10						
T42	2	Weeping Silver Birch	SM	1.8	10						
T43	3	Weeping Silver Birch	SM	2	13						
T44	8	Sycamore	Y	1.1	4						
T45	16	Silver Birch	EM	3.3	35						
T46	9	Whitebeam	M	4.9	76						
T47	11	Whitebeam	M	4.4	62						
T48	11	Whitebeam	M	5	80						
T49	4.5	Cherry 'Kanzan'	EM	3.6	41						
T50	4	Lawson Cypress	Y	0	0						
T51	24	London Plane	M	15	707						
T52	6.5	Silver Birch	Y	1.8	10						
T53	5	Common Ash	Y	1	3						
T54	7	Tree of Heaven	SM	3.7	43						
T55	7	Tree of Heaven	SM	3	28						
T56	11	Sycamore	EM	6.6	137						
T57	6	Sycamore	SM	2.4	18						
T58	12	Common Ash	EM	5.4	92						
T59	5.5	Rowan	EM	2.3	16						
T60	6	Rowan	SM	1.8	10						
T61	6.5	Cherry Prunus x hybrid Stone	SM	2	13						
T62	11	Horse Chestnut	M	9.5	282						
T63	11	Common Lime	EM	5.4	92						
T64	16	Tree of Heaven	M	7.8	191						
T65	16	Common Ash	EM	6.7	142						
T66	15	Horse Chestnut	M	10	312						
T67	15	Horse Chestnut	M	9.8	290						
T68	11	Sycamore	EM	6.1	118						
T69	9	Common Lime	EM	6.4	127						
T70	2	Sycamore	EM	5.4	92						

Tree No	Ht (m)	Species	Life Stage	RPA Radius (m)	RPA Area (m ²)
T71	8	Silver Birch	EM	3.6	41
T72	15	Horse chestnut	M	11.8	435
T73	17	London plane	M	8.3	215
T74	6	Levland cypress	SM	2.5	20
T75	11.5	Monteney cypress	EM	5.9	109
T76	5.5	Portugal laurel	SM	1.7	9
T77	16	Crack willow	EM	3.5	38
T78	16	Crack willow	M	6.5	132
T79	16	Crack willow	M	3.7	43
T80	17	Willow spp.	M	7.7	185
T81	18	Crack willow	M	6.2	122
T82	10	Sycamore	SM	2.5	20
T83	18	Crack willow	M	8.2	122
T84	7.5	Horse chestnut	SM	2	13
T85	8	Horse chestnut	SM	3.3	35
T86	12	Levland Cypress	SM	4.3	59
T87	13	Sycamore	M	5.8	104
T88	12	Purple Norway maple	M	4.8	72
T89	13	Willow chery	M	6.1	118
T90	14	Horse chestnut	M	4.7	69
T91	14	Common ash	M	4.3	59
T92	10	Small-leaved lime	SM	2.2	15
T93	12	Aesculus spp.	M	4.8	72
T94	15.5	Sycamore	M	5.2	84
T95	11	Norway maple	M	3.6	41
T96	17	Common ash	M	6.6	100
T97	9	Horse chestnut	SM	3.3	35
T98	13	Horse chestnut	SM	2.2	15
T99	10	Common ash	EM	3.7	43
T100	13.5	Common ash	EM	3.6	41
T101	10	Purple Norway maple	M	4.7	69
T102	9	Goat willow	M	3.7	43
T103	12	Silver birch	M	3.9	49
T104	6.2	Goat willow	SM	2.2	15
T105	16	Sycamore	M	4.5	65
T106	6	Acer spp.	M	3.3	35
T107	15	Common ash	M	6.6	100
T108	5.2	Japanese cherry	M	3.8	46
T109	10	London plane	M	8.4	222
T110	14.5	London plane	M	7.8	191
T111	14	Levland cypress	M	6.2	122
T112	20	London plane	M	9	255
T113	11.5	Sycamore	SM	4.1	92
T114	8	Elder	M	4.3	69



KEY

- Category A Tree - High quality (Retention highly desirable)
- Category A - Hedgerow, Group, Woodland - High quality (Retention highly desirable)
- Category B Tree - Moderate quality (Retention desirable)
- Category B - Hedgerow, Group, Woodland - Moderate quality (Retention desirable)
- Category C Tree - Low quality (May be retained but should not constrain development)
- Category C - Hedgerow, Group, Woodland - Low quality (May be retained but should not constrain development)
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- Category U - Hedgerow, Group, Woodland - Very low quality (Mostly unsuitable for retention)
- Root Protection Area (RPA) - Layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and soil volume to maintain the tree's viability
- Stem position not shown/shown correctly on topographical survey. Tree located using laser measure triangulation off fixed point, but position is approximate
- Site Boundary
- Tree to be relocated to Plot C (subject to suitability of ground conditions)

Protection Measures

- Tree Protection Barrier
- Secondary Tree Protection Barrier to allow access for maintenance of trees in process of being relocated
- Temporary Ground Protection during demolition phase

PROJECT TITLE
Former Holloway Prison, Parkhurst Road

DRAWING TITLE
DRAFT Tree Protection Plan - Demolition

SCALE 1:1250 @ A3 **DRAWING NUMBER** BHA_630_03

DRAWN BY SD	APPROVED BY IM	REVISION -	SHEET -	DATE 20/09/2021
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LAYOUT USED **Masterplan Roof Plan Rev J**
WITHIN DRAWING **General Arrangement Plan - Ground Floor Rev SK02**

CLIENT Peabody Construction Limited

COORDINATE SYSTEM / DATUM British National Grid / Newlyn Datum (AOD)

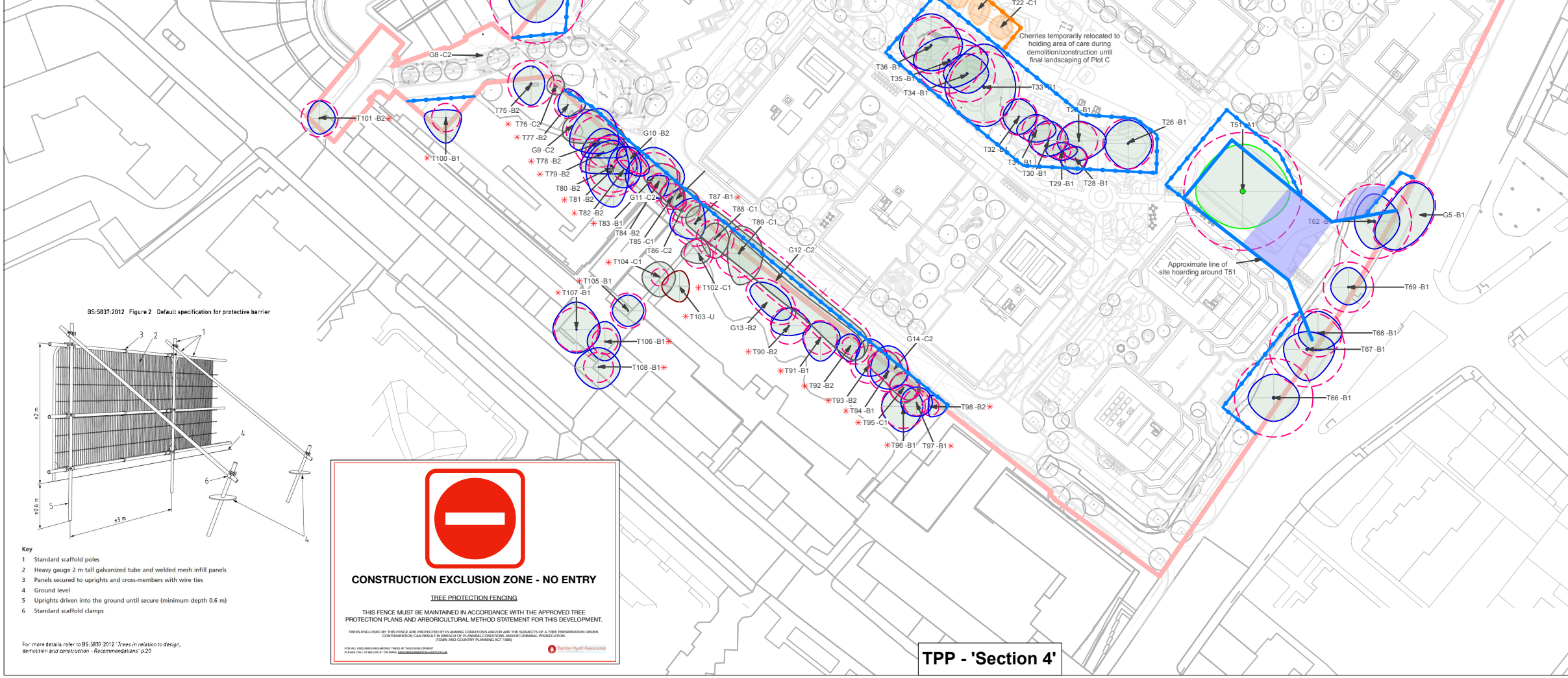
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TPP - 'Section 4'

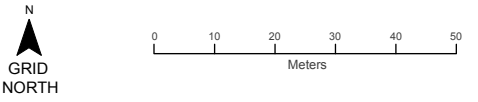
Tree No	Ht (m)	Species	Life Stage	RPA Radius (m)	RPA Area (m²)	Tree No	Ht (m)	Species	Life Stage	RPA Radius (m)	RPA Area (m²)	Tree No	Ht (m)	Species	Life Stage	RPA Radius (m)	RPA Area (m²)
T1	7	Weeping Willow	SM	2.6	22	T72	15	Silver Birch	EM	3.6	41	G1	4-9	Canada govt willow	SM	3	28
T2	16	Silver Birch	EM	3.6	41	T73	17	London plane	M	8.3	215	G2	2-4	Magnolia, Weeping Cherry	Y	1.3	5
T3	7	Weeping Willow	EM	6	113	T74	6	Levland cypress	SM	2.5	20	G3	9	Sycamore, Common Ash	EM	4.2	55
T4	6	Elder	M	3.8	48	T75	11.5	Monterey cypress	SM	5.9	109	G4	6-12	Norway Maple, Silver Birch, Common Ash	EM	4.2	55
T5	10	Robinia 'Frisia'	SM	2.5	20	T76	5.5	Portugal laurel	EM	3.5	38	G5	6-11	Common Lime, London Plane	EM	5.4	82
T6	8	Tulip Tree	Y	1.5	7	T77	16	Crack willow	M	6.5	132	G6	5-8	Silver Birch	SM	2.9	26
T7	5.5	Swedish Whitebeam	SM	2.2	15	T78	16	Crack willow	M	3.7	43	G7	6-9	Evergreen Oak, Quercus ilex, Rowan, Sycamore	EM	6.6	137
T8	11	Sycamore	EM	5.4	92	T79	16	Crack willow	M	3.7	43	G8	6-8.5	Plum/damson, common ash, elder, Norway maple	SM	2.8	24
T9	4	Weeping Willow	SM	0.8	2	T80	17	Willow spp.	M	7.7	185	G9	4-6	Portugal laurel, elder	SM	1.6	8
T10	9	Purple Norway Maple	SM	2.5	20	T81	18	Crack willow	M	6.2	122	G10	2.5-4	Portugal laurel	EM	1.6	8
T11	6	Silver Beech - Notoofagus menziesii	Y	1.7	9	T82	10	Sycamore	SM	2.5	20	G11	4-9	Levland Cypress	SM	2.4	18
T12	9	Tulip Tree	SM	2.5	20	T83	18	Crack willow	M	6.2	122	G12	4-17	Levland Cypress, lime	EM	4.1	52
T13	7	Swedish Whitebeam	SM	2.8	24	T84	7.5	Horse chestnut	EM	2	13	G13	15	Horse chestnut, small-leaved lime	EM	4.5	65
T14	7	Eucalyptus spp.	EM	7	152	T85	9	Horse chestnut	SM	3.3	35	G14	6-9	Levland Cypress	EM	3	28
T15	18	Sycamore	M	8.2	209	T86	12	Levland Cypress	SM	4.3	59	G15	4-10	Elder, sycamore, wild	SM	2.2	15
T16	12	Contorted Willow	M	7.6	190	T87	13	Sycamore	M	5.8	104	G16	9-14	Levland cypress	M	4.8	72
T17	2	Weeping Cherry	Y	1.3	5	T88	12	Purple Norway Maple	M	4.8	72	G17	3.5-5.5	Elder	M	2.4	18
T18	4.5	Cabbage Palm	EM	2.4	18	T89	13	Willow cherry	M	6.1	118	G18	4-6.5	Cherry plum, elder, common ash	Y	1.5	7
T19	4	Cabbage Palm	SM	1.8	10	T90	14	Horse chestnut	M	4.7	69	G19	5-8	Griselinia, pitosporum	M	3	28
T20	6.5	Cherry 'Kanzan'	EM	2.6	22	T91	14	Common ash	M	4.3	59	G20	5.5-6	Cherry plum, common ash	SM	2.4	18
T21	8	Bird Cherry	SM	2.4	18	T92	10	Small-leaved lime	SM	2.2	15	G21	5-9	Goat willow	SM	2.2	15
T22	9	Bird Cherry	SM	2.5	20	T93	12	Aesculus spp.	M	4.8	72			Sycamore, pitosporum, ludoviciana	SM	3.3	35
T23	6.5	Cherry 'Kanzan'	EM	3.7	43	T94	15.5	Sycamore	M	5.2	84	H1	4	Cherry laurel	SM	1.8	10
T24	5	Cabbage Palm	M	4.2	55	T95	11	Norway maple	M	3.6	41	H2	4	Levland Cypress	Y	1.3	5
T25	11	Weeping Willow	EM	6	113	T96	17	Common ash	M	5.6	100	H3	4	Levland Cypress	Y	1.3	5
T26	9	Sweet Chestnut	EM	6.4	127	T97	9	Common ash	M	3.3	35	H4	4	Levland Cypress	Y	1.3	5
T27	9	Large-leaved Lime	EM	4.8	72	T98	13	Horse chestnut	SM	2.2	15						
T28	8	Small-leaved Lime	SM	3	28	T99	10	Common ash	M	3.7	43						
T29	9	Large-leaved Lime	SM	2.3	18	T100	13.5	Common ash	EM	3.6	41						
T30	11	Large-leaved Lime	SM	4.4	62	T101	10	Small-leaved lime	SM	2.2	15						
T31	11	Small-leaved Lime	EM	3.6	41	T102	9	Goat willow	M	3.7	43						
T32	12	Caucasian Lime	EM	4.7	69	T103	12	Silver birch	M	3.9	49						
T33	17	Silver Maple	M	9	255	T104	6.2	Goat willow	SM	2.2	15						
T34	17	Silver Maple	M	7.2	163	T105	16	Sycamore	M	4.5	65						
T35	17	Silver Maple	M	8.4	242	T106	6	Acer spp.	M	3.3	35						
T36	17	Silver Maple	M	12	153	T107	15	Common ash	M	5.6	100						
T37	7	Cherry 'Kanzan'	SM	2	13	T108	5.2	Japanese cherry	M	3.8	46						
T38	5	Tulip Tree	SM	3	28	T109	10	London plane	M	8.4	222						
T39	4	Cabbage Palm	M	2.8	24	T110	14.5	London plane	M	7.8	191						
T40	2.5	Weeping Cherry	EM	2.6	22	T111	14	Levland cypress	M	6.2	122						
T41	9	Weeping Silver Birch	SM	1.8	10	T112	20	London plane	M	9	255						
T42	2	Weeping Silver Birch	SM	1.8	10	T113	11.5	Sycamore	SM	4.1	52						
T43	3	Weeping Silver Birch	SM	2	12	T114	8	Elder	M	4.3	59						
T44	8	Sycamore	Y	1.1	4												
T45	16	Silver Birch	EM	3.3	35												
T46	9	Whitebeam	M	4.9	76												
T47	11	Whitebeam	M	4.4	62												
T48	11	Whitebeam	M	5	80												
T49	4.5	Cherry 'Kanzan'	EM	3.6	41												
T50	4	Lavison Cypress	Y	0	0												
T51	24	London Plane	M	15	707												
T52	6.5	Silver Birch	Y	1.8	10												
T53	5	Common Ash	Y	1	3												
T54	7	Tree of Heaven	SM	3.7	43												
T55	7	Tree of Heaven	SM	3	28												
T56	11	Sycamore	EM	6.6	137												
T57	6	Sycamore	SM	2.4	18												
T58	12	Common Ash	EM	5.4	92												
T59	5.5	Rowan	EM	2.3	16												
T60	6	Rowan	SM	1.8	10												
T61	6.5	Cherry Prunus x hillii Stone	SM	2	13												
T62	11	Horse Chestnut	M	9.5	282												
T63	11	Common Lime	EM	5.4	92												
T64	16	Tree of Heaven	M	7.8	191												
T65	16	Common Ash	EM	6.7	142												
T66	15	Horse Chestnut	M	10	312												
T67	15	Horse Chestnut	M	9.8	290												
T68	11	Sycamore	EM	6.1	118												
T69	9	Common Lime	EM	6.4	127												
T70	2	Sycamore	EM	5.4	92												



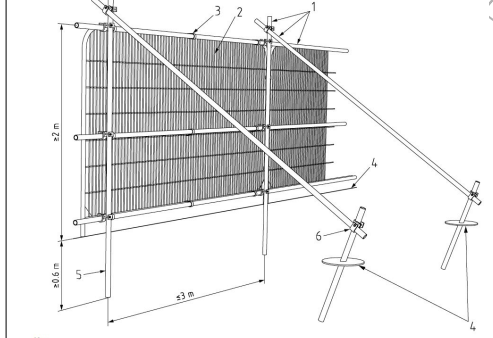
KEY

- Category A Tree - High quality (Retention highly desirable)
- Category A - Hedgerow, Group, Woodland - High quality (Retention highly desirable)
- Category B Tree - Moderate quality (Retention desirable)
- Category B - Hedgerow, Group, Woodland - Moderate quality (Retention desirable)
- Category C Tree - Low quality (May be retained but should not constrain development)
- Category C - Hedgerow, Group, Woodland - Low quality (May be retained but should not constrain development)
- Category U Tree - Very low quality (Mostly unsuitable for retention)
- Category U - Hedgerow, Group, Woodland - Very low quality (Mostly unsuitable for retention)
- Root Protection Area (RPA) - Layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and soil volume to maintain the tree's viability
- Stem position not shown/shown correctly on topographical survey. Tree located using laser measure triangulation off fixed point, but position is approximant
- Site Boundary
- Tree to be relocated to Plot C (subject to suitability of ground conditions)
- Protection Measures
 - Tree Protection Barrier
 - Secondary Tree Protection Barrier to allow access for maintenance of trees in process of being relocated
 - Temporary Ground Protection construction phase

Note: The original of this drawing was produced in colour – a monochrome copy should not be relied upon. This drawing should be interpreted with reference to the accompanying tree schedule and written advice



BS:5837:2012 Figure 2 Default specification for protective barrier



- Key**
- Standard scaffold poles
 - Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
 - Vertical and horizontal uprights and cross-members with wire ties
 - Ground level
 - Uprights driven into the ground until secure (minimum depth 0.6 m)
 - Standard scaffold clamps

CONSTRUCTION EXCLUSION ZONE - NO ENTRY

THIS FENCE MUST BE MAINTAINED IN ACCORDANCE WITH THE APPROVED TREE PROTECTION PLANS AND ARBORICULTURAL METHOD STATEMENT FOR THIS DEVELOPMENT.

TREE PROTECTION FENCING

THREE ENCLOSURES BY THESE FENCES ARE PROTECTED BY PLANNING CONDITIONS AND/OR ARE THE SUBJECTS OF A TREE PRESERVATION ORDER. COOPERATION CAN BE HELD TO BE A BREACH OF PLANNING CONSTRUCTION AND/OR TREE PRESERVATION ORDER AND/OR COUNTY PLANNING ACT 1990.

TPP - 'Section 4'

PROJECT TITLE
Former Holloway Prison, Parkhurst Road

DRAWING TITLE
DRAFT Tree Protection Plan - Construction

SCALE
1:1250 @ A3

DRAWING NUMBER
BHA_630_04

DRAWN BY	APPROVED BY	REVISION	SHEET	DATE
SD	IM	-	-	20/09/2021

LAYOUT USED: Masterplan Roof Plan Rev J
WITHIN DRAWING: General Arrangement Plan - Ground Floor Rev SK02

CLIENT: Peabody Construction Limited

COORDINATE SYSTEM / DATUM: British National Grid / Newlyn Datum (AOD)

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INDIVIDUAL TREES

Ref	Species	On/off site	Height (m)	No. of Stems	Est diam ?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. Canopy Height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m ²
T1	Weeping Willow	On	7	1	-	220	3.5-4-2-4	0.0	2	N	SM	None	Growing at base of retaining wall.	Good	Good	20	C1	2.6	22
T2	Silver Birch	On	16	1	-	300	3.5-3-2.5-4	3.0	4	N	EM	None	Good early form.	Good	Good	40	B1	3.6	41
T3	Weeping Willow	On	7	1	#	500	8-5-8.5-8	0.0	1.5	W	EM	None	Inaccessible. Low branching form.	Good	Good	40	B1	6.0	113
T4	Elder	On	6	7	#	320	2.5-2.5-3-3	1.0	2	N	M	None	Growing on earth bank.	Good	Good	40	B1	3.8	46
T5	Robinia 'Frisia'	On	10	1	-	210	3-4.5-3-3	1.5	2.5	N	SM	None	Minor deadwood.	Good	Good	40	B1	2.5	20
T6	Tulip Tree	On	8	1	-	120	2.5-3.5-2-3.5	1.5	2	W	Y	None	Staked tree.	Good	Good	40	C1	1.5	7
T7	Swedish Whitebeam	On	6	1	-	180	2-2-2-2.5	1.5	2	SW	SM	None	Basal shoots.	Good	Good	40	B1	2.2	15
T8	Sycamore	On	11	3	-	450	6-7-5-5.5	1.5	2	N	EM	None	Three stems from 1m. Leader dieback.	Good	Good	40	B1	5.4	92
T9	Weeping Willow	On	4	4	#	70	3-3-3-3	0.0	0.3	W	SM	None	Stump coppiced at 0.3m with regrowth.	Good	Fair	10	C1	0.8	2
T10	Purple Norway Maple	On	9	1	-	210	2-3-3-3	3.0	2.5	S	SM	None	Minor dieback to north.	Good	Good	40	B1	2.5	20
T11	Silver Beech - Nothofagus menziesii	On	6	1	-	140	2-3-2.5-2	1.5	1.5	W	Y	None	Young established tree. Lower crown dieback.	Fair	Good	10	C1	1.7	9
T12	Tulip Tree	On	9	1	-	210	3-3.5-4-3.5	1.0	2	A	SM	None	Original leader lost at 2m.	Good	Good	40	B1	2.5	20
T13	Swedish Whitebeam	On	7	1	-	230	3-3-3-2.5	1.5	2	NW	SM	None	Good form.	Good	Good	40	B1	2.8	24
T14	Eucalyptus spp.	On	17	1	-	580	5.5-8-6.5-7	3.0	4	S	EM	None	Not on topo. Position approximate. Canopy overhangs and in contact with adjacent building. Stem removal wound.	Good	Good	40.0	B1	7.0	152

Ref	Species	On/off site	Height (m)	No. of Stems	Est diam ?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. Canopy Height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m ²
T15	Sycamore	On	16	2	-	680	10-8-6.5-7	6.0	4	E	M	None	Two stems from near ground. Basal shoots. Historic crown reduction.	Good	Good	40.0	B1	8.2	209
T16	Contorted Willow	On	12	5	-	630	5-6.5-6-8	1.0	1	W	M	None	Minor deadwood.	Good	Good	40.0	B1	7.6	180
T17	Weeping Cherry	On	2	1	#	100	1-1-1.5-1.5	0.0	1	S	Y	None	Lopped branches.	Good	Good	20	C1	1.3	5
T18	Cabbage Palm	On	5	1	-	200	1.5-2-2-1.5	3.0	1.5	S	EM	None	No significant defects.	Good	Good	40	B1	2.4	18
T19	Cabbage Palm	On	4	1	-	150	1-1-1-1	3.0	2.5	N	SM	None	No significant defects.	Good	Good	20	C1	1.8	10
T20	Cherry 'Kanzan'	On	7	2	-	220	3.5-3-4-4	2.0	2	N	EM	None	Not on topo. Position approximate. Canopy in contact with building. Crown lift wounds. Past crown reduction.	Fair	Good	20	C1	2.6	22
T21	Bird Cherry	On	8.0	3	-	200	3-3-4-2.5	1.5	1.5	S	SM	None	Past crown reduction.	Fair	Good	20	C1	2.4	18
T22	Bird Cherry	On	8.0	3	-	210	3-3-3-3	2.0	1.5	W	SM	None	Basal shoots.	Fair	Good	20	C1	2.5	20
T23	Cherry 'Kanzan'	On	6.5	1	-	310	4-4-4-5	3.0	1.5	W	EM	None	Inspection chamber at base.	Good	Good	40	B1	3.7	43
T24	Cabbage Palm	On	5.0	12	#	350	0.5-1.5-1.5-1.5	2.0	0.5	E	M	None	No significant defects.	Good	Good	40	B1	4.2	55
T25	Weeping Willow	On	11.0	1	-	500	6-6-6-6	0.0	2.5	W	EM	None	Inspection chamber at base. Pruning wounds and stubs. Canopy overhangs building. Deadwood.	Good	Fair	40	B1	6.0	113
T26	Sweet Chestnut	On	9.0	1	-	530	6-6-6.5-6	2.5	2	A	EM	None	Crown lift stubs.	Good	Good	40	B1	6.4	127
T27	Large-leaved Lime	On	9.0	1	-	400	5-7-5-5.5	1.5	2	E	EM	None	Not on topo. Position approximate. Two stems from 1.5m.	Good	Good	40	B1	4.8	72

Ref	Species	On/off site	Height (m)	No. of Stems	Est diam ?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. Canopy Height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m ²
T28	Small-leaved Lime	On	8.0	1	-	250	3-3-4-4	2.5	2.5	S	SM	None	Pruning stubs.	Good	Good	40	B1	3.0	28
T29	Large-leaved Lime	On	9.0	1	-	190	2-4-2.5-4	3.0	2.5	E	SM	None	Pruning stubs	Good	Good	40	B1	2.3	16
T30	Large-leaved Lime	On	11.0	3	-	370	5-5-4-5	2.0	2	N	SM	None	Crown lift wounds.	Good	Good	40	B1	4.4	62
T31	Small-leaved Lime	On	11.0	1	-	300	4-5-3-5	2.5	2.5	N	EM	None	Included bark union at 2m.	Good	Fair	40	B1	3.6	41
T32	Caucasian Lime	On	12.0	1	-	390	4.5-4.5-4.5-4	2.5	3	NW	EM	None	Raised surface roots. Included bark unions at 2m.	Good	Fair	40	B1	4.7	69
T33	Silver Maple	On	17.0	1	#	750	11-8-10-10	4.0	3	A	M	None	Stem base obscured by vegetation. Previously pollarded at 8m apex with mature regrowth.	Good	Good	40	B1	9.0	255
T34	Silver Maple	On	17.0	1	#	600	5-5.5-5-6	5.0	3.5	N	M	None	Stem base obscured by vegetation. Previously pollarded at 8m apex with mature regrowth.	Good	Good	40	B1	7.2	163
T35	Silver Maple	On	17.0	1	#	700	6-10-7-9	5.0	2.5	N	M	None	Stem base obscured by vegetation. Previously pollarded at 8m apex with mature regrowth.	Good	Good	40	B1	8.4	222
T36	Silver Maple	On	17.0	1	-	600	8-8-6.5-8	5.0	3	NE	M	None	Stem Previously pollarded at 8m apex with mature regrowth.	Good	Good	40	B1	7.2	163
T37	Cherry 'Kanzan'	On	7.0	2	-	170	3-2.5-5-4	2.0	1.5	S	SM	None	Pruning wounds.	Good	Good	40	B1	2.0	13
T38	Tulip Tree	On	5.0	1	-	250	3-3.5-3-4	1.0	1.5	NE	SM	None	Foliage affected by likely viral disease. Active mammal burrows in root plate.	Fair	Good	20	C1	3.0	28

Ref	Species	On/off site	Height (m)	No. of Stems	Est diam ?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. Canopy Height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m ²
T39	Cabbage Palm	On	4.0	1	-	230	1.5-1.5-1.5-1.5	2.5	1.5	W	M	None	No significant defects.	Good	Good	40	B1	2.8	24
T40	Weeping Cherry	On	2.5	1	-	220	2.5-2.5-2.5-3	0.0	1.5	W	EM	None	Top-grafted specimen.	Good	Good	40	B1	2.6	22
T41	Weeping Silver Birch	On	3.0	1	-	150	2.5-3-3-2.5	0.0	2	N/A	SM	None	Top-grafted specimen.	Good	Good	40	B1	1.8	10
T42	Weeping Cherry	On	2.0	1	-	150	2.5-2.5-2.5-2.5	0.0	1.5	N/A	SM	None	Top-grafted specimen.	Good	Good	40	B1	1.8	10
T43	Weeping Silver Birch	On	3.0	1	-	160	3-3-3-3	0.5	2	N/A	SM	None	Top-grafted specimen.	Good	Good	40	B1	2.0	12
T44	Sycamore	On	8.0	1	-	90	1-2-2-2	1.5	0.3	N	Y	None	Inappropriate location.	Good	Good	20	C1	1.1	4
T45	Silver Birch	On	16.0	1	-	280	6-5.5-5-5	4.0	4	E	EM	None	Growing on earth bank. Historically pollarded.	Good	Good	40	B1	3.3	35
T46	Whitebeam	On	9.0	1	-	410	4-4.5-4-4.5	4.0	1.5	W	M	None	Pollarded at 5m apex with mature regrowth.	Good	Good	40	C1	4.9	76
T47	Whitebeam	On	11.0	1	-	370	6-2-4.5-8	4.0	1.5	SW	M	None	Pollarded at 6m apex with mature regrowth.	Good	Good	40	C1	4.4	62
T48	Whitebeam	On	11.0	1	-	420	4.5-5-4.5-3.5	4.0	2	S	M	None	Pollarded at 6m apex with mature regrowth.	Good	Good	40	C1	5.0	80
T49	Cherry 'Kanzan'	On	4.5	1	-	300	5-3-3.5-4	2.0	2	W	EM	None	Pruning wound at 2m.	Good	Good	40	B1	3.6	41
T50	Lawson Cypress	On	4.0	6	#	10	1.5-2-1-2	0.0	0.2	N/A	Y	None	No significant defects.	Good	Good	40	C1	0.0	0
T51	London Plane	On	24.0	1	-	1320	12-12-9.5-12	3.0	9	SW	M	None	Tree of excellent form.	Good	Good	40	A1	15.0	707
T52	Silver Birch	On	6.5	1	-	150	2.5-2.5-2.5-2.5	2.0	2	W	Y	None	Hard surfaced over 100% RPA. Stem deformed against vehicle barrier. Inappropriate location.	Good	Good	20	C1	1.8	10
T53	Common Ash	On	5.0	1	-	80	2-2-2-2	1.5	1.5	N	Y	None	Inappropriate location.	Good	Good	10	C1	1.0	3

Ref	Species	On/off site	Height (m)	No. of Stems	Est diam ?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. Canopy Height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m ²
T54	Tree of Heaven	On	7.0	4	-	310	4.5-5-4.5-4.2	1.0	1.5	S	SM	None	Multi-stemmed from ground. Growing against fence line.	Good	Good	40	B1	3.7	43
T55	Tree of Heaven	On	7.0	2	-	250	4-3-3-4.5	1.0	3	S	SM	None	Growing in fence line.	Good	Good	40	B1	3.0	28
T56	Sycamore	On	11.0	3	#	550	6.5-6.5-6.5-6.5	5.0	3	W	EM	None	Not on topo. Position approximate. Third-party tree. Offsite. Inaccessible.	Good	Good	40	B1	6.6	137
T57	Sycamore	Off	6.0	1	#	200	3-3-3-3	3.0	1.5	E	SM	None	Not on topo. Position approximate. Third-party tree. Offsite. Inaccessible.	Good	Good	20	C1	2.4	18
T58	Common Ash	On	12.0	2	-	450	7-7-7-7	3.0	4	N	EM	None	Minor deadwood.	Good	Good	40	B1	5.4	92
T59	Rowan	On	5.5	1	-	190	2.5-2.5-2.5-2.5	2.0	2	N	EM	None	Hard surfacing disrupted by root system growth.	Good	Good	40	B1	2.3	16
T60	Rowan	On	6.0	1	-	150	2-2-2-2	2.5	2	N	SM	None	Raised soil level around stem base causing cambium stress. Early upper crown decline.	Fair	Good	20	C1	1.8	10
T61	Cherry Prunus x hillieri Spire	On	6.5	3	-	170	3-3.5-1-1.5	2.0	1	N	SM	None	Unbalanced crown.	Good	Good	20	C1	2.0	13
T62	Horse Chestnut	On	11.0	1	-	790	7-6.5-7-5	3.0	4	N	M	None	Historically pollarded at 5m and more recently at 8m, with regrowth. Basal bark wound.	Fair	Fair	20	B1	9.5	282
T63	Common Lime	On	11.0	1	#	450	5-5-4.5-4	2.0	5	S	EM	None	Not on topo. Position approximate. Inaccessible. Basal shoots. Recent construction activity within tree RPA.	Good	Good	40	B1	5.4	92

Ref	Species	On/off site	Height (m)	No. of Stems	Est diam ?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. Canopy Height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m ²
T64	Tree of Heaven	On	16.0	1	-	650	5-5-4.5-4	2.0	3.5	W	M	None	Raised surface roots. Probable basal decay. Second co-dominant stem felled at base. Bark wound at 3.5m Pollarded at 7m with regrowth.	Fair	Fair	10	C1	7.8	191
T65	Common Ash	On	16.0	1	-	560	6.5-9.5-6-6	4.5	3.5	N	EM	None	Pollarded at 8m apex with regrowth. Minor deadwood.	Good	Good	40	B1	6.7	142
T66	Horse Chestnut	On	15.0	1	-	830	6-6.5-6-6.5	2.0	5	NE	M	None	Pollarded at 8m apex with regrowth. Crown reduced, with regrowth.	Good	Good	40	B1	10.0	312
T67	Horse Chestnut	On	15.0	1	-	800	4.5-7-8-6	3.0	4	N	M	None	Historically pollarded at 5m and more recently crown-reduced, with regrowth.	Good	Good	40	B1	9.6	290
T68	Sycamore	On	11.0	1	-	510	5.5-6-4.5-5	2.0	3.5	S	EM	None	Pollarded at 6m with regrowth. Exudate from old pruning wound cavity.	Good	Good	40	B1	6.1	118
T69	Common Lime	On	9.0	1	-	530	5-4.5-4.5-4.5	2.5	3.5	NW	EM	None	Basal shoots. Pollarded at 5m with regrowth	Good	Good	40	B1	6.4	127
T70	Sycamore	On	2.0	1	-	450	0-0-0-0	0.0	0	n/a	EM	None	Felled to 2m stump.	Dead	Dead	<10	U	5.4	92
T71	Silver Birch	On	8.0	1	#	300	3-3-3-3	3.0	1.5	S	EM	None	Not on topo. Position approximate. Inaccessible. Ivy on stem. Growing in raised bed.	Good	Good	40	B1	3.6	41
T72	Horse chestnut	On	15.0	1	-	980	5.5-7-6.5-7	3.0	5	S	M	None	Occluding bole wounds.	Good	Good	40	B1	11.8	435
T73	London plane	On	17.0	1	-	690	8-6-10-6	5.0	5.5	SW	M	None	Crown lifted over adjacent building.	Good	Good	40	B1	8.3	215
T74*	Leyland cypress	On	6.0	1	-	210	4-4-2.5-3	0.0	0.5	n/a	SM	None	Partially suppressed.	Good	Good	20	C2	2.5	20

Ref	Species	On/off site	Height (m)	No. of Stems	Est diam ?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. Canopy Height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m ²
T75	Sycamore	Off	11.5	3	-	490	4.5-3.5-5.5-4.5	2.5	2.5	N	EM	None	Three separate stems from ground. South-east stem topped at 2.5m.	Good	Good	40	B2	5.9	109
T76*	Monterey cypress	Off	5.5	1	-	140	3-2-2-2.5	0.0	0.5	S	SM	None	Smaller Monterey cypress growing within canopy spread.	Good	Good	40	C2	1.7	9
T77*	Portugal laurel	Off	5.0	5	#	290	4-4.5-3-2.5	0.0	1	N	EM	None	Clipped at pedestrian height.	Good	Fair	20	B2	3.5	38
T78*	Crack willow	Off	16.0	1	-	540	8.5-5-3-7.5	2.5	2	N	M	None	Decayed branch removal wound at 2m. Previously pollarded at 11m.	Good	Fair	20	B2	6.5	132
T79*	Crack willow	Off	16.0	1	-	310	6-6-1.5-5.5	3.0	3.5	NE	M	None	Occluding branch tear wounds on stem. Minor deadwood.	Good	Good	20	B2	3.7	43
T80	Willow spp.	Off	17.0	1	-	640	8-6.5-2-8	3.0	2	W	M	None	Slightly weeping form. Included bark stem union at 1.5m. Previously high pollarded.	Good	Fair	20	B2	7.7	185
T81*	Crack willow	Off	18.0	1	-	520	7-4-10-7	3.5	2	E	M	None	Previously high pollarded.	Good	Fair	20	B2	6.2	122
T82*	Sycamore	Off	10.0	1	-	210	6-4.5-4.5-4	2.0	3	N	SM	None	Original leader lost at 6m.	Good	Fair	20	B2	2.5	20
T83*	Crack willow	Off	18.0	1	-	520	7.5-8-5.5-7	3.5	6.5	E	M	None	Pruned back from building.	Good	Good	40	B1	6.2	122
T84	Horse chestnut	Off	7.5	1	-	170	1.5-2.5-4.5-3	2.0	3	W	SM	None	Suppressed.	Fair	Good	20.0	B2	2.0	13
T85	Horse chestnut	Off	8.0	1	-	280	4.5-3-2.5-3	3.0	3	N	SM	None	Extensive Bleeding Canker exudation and dead bark. Tree has been reduced.	Poor	Fair	10.0	C1	3.3	35
T86	Leyland Cypress	Off	12.0	1	-	360	4.5-4-3-3	1.5	1.5	E	SM	None	Crown is suppressed to north-west.	Good	Good	20.0	C2	4.3	59

Ref	Species	On/off site	Height (m)	No. of Stems	Est diam ?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. Canopy Height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m ²
T87*	Sycamore	Off	13.0	1	-	480	6.5-2.5-4-6.5	4.0	4.5	S	M	None	Two stems from ground. Branches pruned back from building.	Good	Good	40	B1	5.8	104
T88	Purple Norway maple	Off	12.0	1	-	400	4-3.5-5-3.5	5.0	2	E	M	None	Bark loss and decay cavity on west stem at 3m. Bark wounding and necrosis throughout crown structure.	Fair	Poor	<10	C1	4.8	72
T89	Wild cherry	Off	13.0	1	-	510	7-6-8-3	4.5	2	E	M	None	Exudate on bole. Silver leaf foliage symptoms. Thinning crown with dieback.	Poor	Fair	10	C1	6.1	118
T90*	Horse chestnut	Off	14.0	1	-	390	4.5-5.5-2.5-4.5	2.2	3	N	M	None	Occluded Bleeding Canker fissures on bole and stems.	Fair	Good	20	B2	4.7	69
T91*	Common ash	Off	14.0	1	-	360	4-5-6-4.5	4.5	4	S	M	None	High canopy. Minor deadwood.	Good	Good	20	B1	4.3	59
T92*	Small-leaved lime	Off	10.0	1	-	180	3-2.5-4-3.5	5.0	3	N	SM	None	Possibly occluded basal crack. Drawn-up form.	Good	Fair	20	B2	2.2	15
T93*	Aesculus spp.	Off	12.0	1	-	400	6.5-5-3-3.5	1.5	5	N	M	None	Bark fissures on bole. Large branch removal wound. Bark fissures with likely decay at base of NE stem at 6m.	Fair	Fair	20	B2	4.8	72
T94*	Sycamore	Off	15.5	1	-	430	6.5-5-4.5-4.5	2.5	3.5	E	M	None	High canopy.	Good	Good	40	B1	5.2	84
T95*	Norway maple	Off	11.0	1	-	300	4-4-4-3.5	5.0	3.5	NE	M	None	Crown lift wounds. Bark necrosis and/or squirrel damage and dieback from last reduction work has led to poor form. Deadwood.	Fair	Poor	10	C1	3.6	41
T96*	Common ash	Off	17.0	1	-	470	5.5-5-6.5-5.5	5.0	3.5	S	M	None	Good upright form.	Good	Good	20	B1	5.6	100
T97*	Horse chestnut	Off	9.0	1	-	280	4-4-3.5-4	3.0	3	N	SM	None	No significant defects.	Good	Good	20	B1	3.3	35

Ref	Species	On/off site	Height (m)	No. of Stems	Est diam ?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. Canopy Height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m ²
T98*	Horse chestnut	Off	13.0	1	-	180	3-4-2.5-0.5	2.0	3.5	E	SM	None	Growing phototropically towards east.	Good	Fair	20	B2	2.2	15
T99*	Common ash	On	10.0	1	-	310	4-4-4-4	3.0	4.5	SE	SM	None	Multi-stemmed.	Good	Good	20	B1	3.7	43
T100*	Common ash	On	13.5	1	-	300	2-4-6.5-5.5	4.0	4	S	EM	None	Good form.	Good	Good	20	B1	3.6	41
T101*	Purple Norway maple	On	10.0	1	-	390	4.5-4-4-3	2.5	3	n/a	M	None	Growing in planting pit and kicking up hard surfacing. Previously reduced. Vehicle strike wounds at 4m. Bark necrosis in crown and upper crown dieback.	Fair	Fair	20	B2	4.7	69
T102*	Goat willow	Off	9.0	1	-	310	4-3-2.5-4.5	5.0	5	W	M	None	Crown lift wound at 2m on stem with decay present. Thinning canopy.	Fair	Fair	10	C1	3.7	43
T103*	Silver birch	Off	12.0	1	-	330	4-2.5-4-4.5	5.0	6	W	M	None	Moribund tree.	Poor	Poor	<10	U	3.9	49
T104*	Goat willow	Off	6.2	2	-	180	4-4-5-4.5	2.5	2	W	SM	None	Planted in garden patron raised 60cm from footpath. Growing against wall.	Good	Good	10	C1	2.2	15
T105*	Sycamore	Off	16.0	1	-	380	4-4-4-4	6.0	4.5	S	M	None	Good upright form.	Good	Good	40	B1	4.5	65
T106*	Acer spp.	Off	6.0	1	-	280	5-4-5-4.5	3.0	2	n/a	M	None	Growing in paved area.	Good	Good	20	B1	3.3	35
T107*	Common ash	Off	15.0	1	-	470	7-6-6-6	2.5	3.5	N	M	None	Growing in raised walled bed. Previously reduced.	Good	Good	20	B1	5.6	100
T108*	Japanese cherry	Off	5.2	1	-	320	5-5.5-5.5-6	2.0	2	n/a	M	None	Top-grafted spreading form. Exposed surface roots.	Good	Good	20	B1	3.8	46

Ref	Species	On/off site	Height (m)	No. of Stems	Est diam ?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. Canopy Height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m ²
T109	London plane	Off	10.0	1	#	700	3.5-3-3.5-3	3.0	5	n/a	M	None	5m pollard with max 80mm basal diameter regrowth.	Good	Good	40	B2	8.4	222
T110	London plane	Off	14.5	1	#	650	5.5-6-8.5-5.5	6.0	4.5	SE	M	None	Previously reduced and crown lifted over site.	Good	Good	40	B2	7.8	191
T111	Leyland cypress	Off	14.0	2	#	520	1.5-6-7.5-7	3.0	2	SW	M	None	End tree of linear outgrown hedge group. Growing in narrow strip between chain link and concrete panel fences.	Good	Fair	10	C2	6.2	122
T112	London plane	Off	20.0	1	#	750	10-10-10-9	9.0	9	S	M	None	Historically high-pollarded. Upper crown twig dieback.	Good	Good	40	B1	9.0	255
T113	Sycamore	On	11.5	3	#	340	3-3.5-3-4	4.0	3.5	S	SM	None	Three stems from near ground. Crown lifted. Included bark stem union. Natural regeneration.	Good	Fair	20	C1	4.1	52
T114	Elder	On	8.0	1	#	360	6-7-6-7	0.5	1.5	S	M	None	Naturally regenerated and smothered with ivy.	Good	Fair	20	B1	4.3	59

GROUPS OF TREES

Ref	Species	On/off site	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. Canopy Height (m)	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
G1	Catalpa, goat willow	On	4-8	6	#	250	4	1.0	SM	None	Growing in raised bed behind retaining wall.	Good	Good	40	B1	3.0
G2	Magnolia, Weeping Cherry	On	2-4	2	#	100	1.5	0.0	Y	None	No significant defects.	Good	Good	40	C1	1.3
G3	Sycamore, Common Ash	Off	9	3	#	350	4	3.0	EM	None	Not on topo. Position approximate. Third-party trees.	Good	Good	40	B1	4.2
G4	Norway Maple, Silver Birch, Common Ash	Off	6-12	15	#	350	5	2.0	EM	None	Not on topo. Position approximate. Third-party trees. Low canopies over car parking spaces.	Good	Good	40	B1	4.2
G5	Common Lime, London Plane	On	6-11	4	-	450	5	3.0	EM	None	Pollarded at 5m with regrowth.	Good	Good	40	B1	5.4
G6	Silver Birch	On	5-8	3	#	240	4	2.0	SM	None	Inaccessible. Planted in raised bed.	Good	Good	40	B1	2.9
G7	Evergreen Oak Quercus ilex, Rowan, Sycamore	On	6-9	3	#	550	3.5	2.0	EM	None	Inaccessible. Planted in raised bed.	Good	Good	40	B1	6.6
G8	Plum/damson, common ash, elder, Norway maple	On	6-8.5	15	#	230	3	1.5	SM	None	Scrubby group of damson with young to semi-mature natural regeneration.	Good	Fair	10	C2	2.8
G9	Portugal laurel, elder	Off	4-6	6	-	130	2.5	1.0	EM	None	Scrubby group with bark wounds. Provides some screening.	Fair	Fair	10	C2	1.6
G10	Portugal laurel	Off	2.5-4	5	-	130	2.2	0.0	EM	None	Provides good screening.	Good	Good	20	B2	1.6
G11	Leyland Cypress	Off	4-9	9	-	200	2.5	0.2	SM	None	Generally suppressed. Growing close to boundary retaining wall.	Good	Fair	10.0	C2	2.4
G12	Leyland Cypress, lime	Off	4-17	30	-	340	3	0.5	EM	None	Tightly planted screen group growing close to boundary retaining wall.	Good	Good	10.0	C2	4.1
G13	Horse chestnut, small-leaves lime	Off	15	6	-	380	3.5	2.5	EM	None	Line of four Limes in north of group are suppressed.	Good	Good	40	B2	4.5
G14	Leyland Cypress	Off	6-9	6	-	250	3	0.5	EM	None	Tightly planted screen group growing close to boundary retaining wall.	Good	Good	10	C2	3.0
G15	Elder, sycamore, wild cherry	Off	4-10	6	#	180	2.5	2.5	SM	None	Taller semi-mature sycamore with smaller early mature elder and young cherry suckers.	Good	Fair	20	C2	2.2

Ref	Species	On/off site	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. Canopy Height (m)	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
G16	Leyland cypress	Off	9-14	11	#	400	6.5	2.5	M	None	Trees within line more suppressed form and stem size. Growing in narrow gap between chainlink and concrete panel fences.	Good	Fair	10	C2	4.8
G17	Elder	On	3.5-5.5	6	#	200	2.5	0.0	M	None	Scrubby natural regeneration with bramble.	Fair	Fair	20	C2	2.4
G18	Cherry plum, elder, common ash	On	4-6.5	10	#	120	2	0.0	Y	None	Cherry plum sucker growth and young ash.	Good	Fair	10	C2	1.5
G19	Griselinia, pittosporum	On	5-8	10	-	250	5	1.5	M	None	Multi-stemmed outgrown hedge group growing in rubble.	Good	Fair	10	C2	3.0
G20	Cherry plum, common ash	On	5.5-6	3	#	200	3	1.5	SM	None	Multi stemmed with young ash.	Good	Fair	10	C2	2.4
G21	Goat willow	On	5-9	3	-	180	2.5	3.5	SM	None	Squirrel damage.	Fair	Fair	20	C1	2.2
G22	Sycamore, pittosporum, buddleia	On	5.5-10	3	#	280	3.5	3.0	SM	None	Multi-stemmed sycamore natural regeneration of poor form and outgrown garden shrub.	Good	Fair	20	C2	3.3
G23	Sycamore, elder	On	5-8	9	#	180	2.5	1.0	SM	None	Scattered natural regeneration of poor location and/or form.	Good	Fair	10	C2	2.2

HEDGES

Ref	Species	On/off site	Av. Height (m)	Av. width (m)	Av. Stem diam (mm)	Avg. Canopy Height (m)	Life Stage	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
H1	Cherry Laurel	On	4	3	150	0.0	SM	Multi-stemmed shrubs.	Good	Good	20+	C1	1.8
H2	Leyland Cypress	On	3	2	100	0.0	Y	Previously maintained hedge.	Good	Good	20+	C1	1.3
H3	Leyland Cypress	Pn	4	2.5	100	0.0	Y	Previously maintained hedge.	Good	Good	20+	C1	1.3



PHOTO 1: View of eucalyptus T14 (right) and sycamore T15 (left) looking north, showing the varying ground levels within the prison site.



PHOTO 2: View of the central avenue of limes and maples T28 to T36, looking north.



PHOTO 3: View of silver maples T36 (front) to T33 looking south-east.



PHOTO 4: Sweet chestnut T26 looking north-east.



PHOTO 5: Whitebeams T48 (front) to T46 looking north-west.



PHOTO 6: View of sycamore T15 (rear-right) and weeping willow T16 looking west from T21.



PHOTO 7: View from the Dalmeny Avenue rear gardens looking north-east at sycamore T75 with T78 crack willow partially visible to the right.



PHOTO 8: Detail of G12 Leyland cypresses and G13 small-leaved limes and their location close to the site boundary retaining wall, looking north.



PHOTO 9: View over the Dalmeny Avenue garden boundary wall, looking south-east and showing the drop in ground level into the prison site.



PHOTO 10: View of the proposed location of the new access to Trecastle Way from the rear garden of Dalmeny Avenue, looking north-west. Common ash T99 is on the left surrounded by damson and other semi-mature trees within G8. The top of horse chestnut T72 is visible distant-right.



PHOTO 11: View from within the site of the proposed location of the new access to Trecastle Way. Off-site horse chestnut T72 is the large tree on the right.



PHOTO 12: General view of the north-west site boundary, looking south-west, with off-site London plane T110 on the right.



IMAGE 13: View of category A London plane T51 in 2017, looking east.



IMAGE 14: Detail of the lower part of plane T51 and its surroundings in 2017, looking east.



IMAGE 15: Photo of T51 while not in leaf, taken from Camden Road, looking north-west. Note that the tree has been previously pruned to reduced its size. Photographer and date not known.



IMAGE 16: Historic aerial view of the Victorian prison, with T51 circled red. Date of image not known.

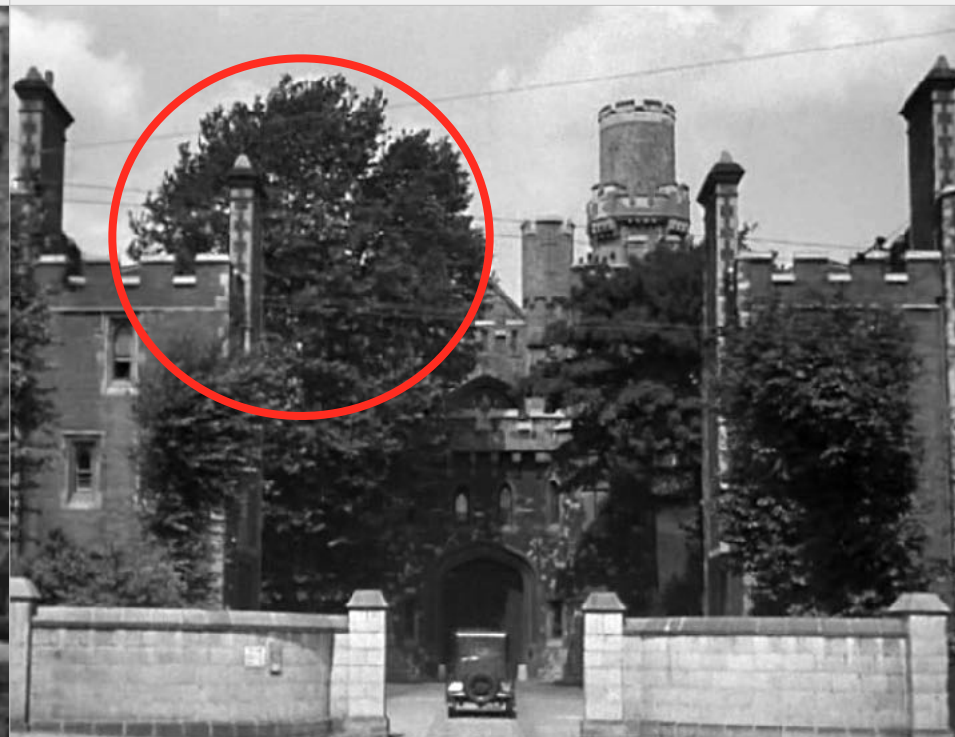


IMAGE 17: Historic view of the Victorian prison entrance, with T51 circled red. Date of image not known.



IMAGE 18: Historic view of the Victorian prison entrance, with T51 circled red. Date of image not known.

- The tree survey was carried out with reference to the methodology set out in BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'.
- Trees were surveyed individually or as groups where it was considered that they had grown together to form cohesive arboricultural features either aerodynamically (trees that provide companion shelter), visually (e.g. avenues or screens) or culturally (including for biodiversity). However, where it was considered that there was an arboricultural need to differentiate between attributes trees within groups and / or woodlands were also surveyed as individuals.
- The full tree survey findings are recorded in the following tree survey schedule.
- Within the tree survey schedule, each surveyed TREE (T), GROUP (G), HEDGEROW (H), WOODLAND (W) or SHRUB MASS on or adjacent to the site is given a reference number which refers to its position on the tree survey and constraints plan.
- TREE SPECIES are listed by common name.

The **DIMENSIONS** taken are:

- STEM-No. Indicates the number of main stems (i.e. whether the trunk divides at or below 1.5m; (Used in the calculation of RPA.) "m-s" = Multi-stemmed.
- STEM DIAMETER (measured in millimetres), obtained from the girth measured at approx. 1.5m. For trees with 2 to 5 sub-stems a notional figure is derived from the sum of their cross-sectional areas. For multi-stemmed trees, the notional diameter may be estimated on the basis of the average stem size x the number of stems. (A notional diameter may be estimated where measurement is not possible.)
- HEIGHT (measured in metres), recorded to the nearest half metre for dimensions up to 10m and to the nearest whole metre for dimensions over 10m.
- The CROWN SPREAD, taken at the four cardinal points to derive an accurate representation of the tree crown, recorded up to the nearest half metre for dimensions up to 10m and to up the nearest whole metre for dimensions over 10m.
- CROWN CLEARANCES are expressed both as existing height above ground level of first significant branch along with its direction of growth (e.g. 2.5m-N), and also in terms of the overall crown e.g. the average height of the crown above ground level. Measurements are recorded to the nearest half metre for dimensions up to 10m and to the nearest whole metre for dimensions over 10m.
- ESTIMATES. Where any measurement has had to be estimated, due to inaccessibility for example, this is indicated by a "#" suffix to the measurement as shown in the tree survey schedule.

LIFE STAGE is defined as follows:

- Y Young: Normally stake dependent, establishing trees. Should be growing fast, usually primarily increasing in height more than spread but as yet making limited impact upon the landscape.
- SM Semi-mature: Established young trees, normally of good vigour and still increasing in height but beginning to spread laterally. Beginning to make an impact upon the local landscape and environment. Semi-Mature (still capable of being transplanted without preparation, up to 30cm girth and not yet sexually mature).

- EM Early-mature: Not yet having reached 75% of expected mature size. Established young trees, normally of good vigour and still increasing in height but beginning to spread laterally. Beginning to make an impact upon the local landscape and environment.
- M Mature: Well-established trees, still growing with some vigour but tending to fill out and increase spread. Bark may be beginning to crack and fissure. In the middle half of their safe, useful life expectancies.
- LM Late-Mature: In full maturity but possibly beyond mature and in a state of natural decline). Still retaining some vigour but any growth is slowing.
- A Ancient: A tree that has passed beyond maturity and is old/aged compared with other trees of the same species. Typically having a very wide trunk and a small canopy.

PHYSIOLOGICAL CONDITION (HEALTH & VITALITY):

Essentially a snapshot of the general health of the tree based upon its general appearance, it's apparent vigour and the presence or absence of symptoms associated with poor health, physiological stress etc. (Fungal infections may be recorded here but decay giving rise to structural weakness would be recorded under 'Structural Condition' – see next parameter):

- Good: No significant health issues.
- Fair: Indications of slight stress or minor disease (e.g. the presence of minor dieback/deadwood or of epicormic shoot growth).
- Poor: Significant stress or disease noted; larger areas of dieback than above.
- Dead: (or Moribund).

STRUCTURAL CONDITION:

Defects affecting the structural stability of the tree including decay, significant dead wood, root-plate instability or significant damage to structural roots, weak forks (e.g. those where bark is included between the members) etc. Classified as:

- Good: No obvious structural defects: basically sound.
- Fair: Minor, potential or incipient defects.
- Poor: Significant defect(s) likely to lead to actual failure in the medium to long-term.
- Dead: (or Moribund).

ESTIMATED REMAINING CONTRIBUTION:

An estimate of the length of time in years that a tree might be expected to continue to make a useful contribution to the locality at an acceptable level of risk (based on an assumption of continued routine maintenance):

- Less than 10 years
- 10+ years
- 20+ years
- 40+ years

SPECIAL IMPORTANCE:

Trees that are particularly notable as high value trees such as ancient trees/woodland or veteran trees. Such trees may be regarded as the principal arboricultural features of a site and pose a significant constraint to potential development.

An *ancient* tree is one that has passed beyond maturity and is very old compared with other trees of the same species. Very few trees reach the ancient life-stage.

Veteran trees are often very old but not necessarily so; they may be regarded as ‘survivors’ that have developed some of the characteristic features of an ancient tree but have not necessarily lived as long. All ancient trees are veterans but not all veteran trees are ancient.

An ancient woodland is an area that has been wooded continuously since at least 1600 AD. It includes ancient semi-natural woodland (ASNW), plantations on ancient woodland sites (PAWS) and ancient replanted woodland (ARW)

QUALITY CATEGORY:

Trees are classed as category U, A, B or C, based on criteria given in BS5837:2012; summary definitions as follows (see BS5837 for further details). Categories A, B and C are further characterised by the use of sub-categories, which attempt to identify what aspect of the tree is the main source of its perceived value, These are:

- (1) arboricultural qualities
- (2) landscape qualities, and
- (3) cultural, historic or ecological/conservation qualities.

Examples of these qualities for each of the three categories are given below, although these are indicative only.

Note: This is NOT a health and safety classification; the classification does not take into account any requirement for remedial tree care or ongoing maintenance apart from that which may affect the trees’ general suitability for retention.

CATEGORY A: HIGH QUALITY:

Trees or groups whose retention should be given a particularly high priority within the design process. Normally with an expected useful life expectancy of at least 40 years.

- A1: Notably fine specimens; rare or unusual specimens; essential component trees within groups, semi-formal or formal plantings (e.g. dominant trees within an avenue etc.).
- A2: Trees, groups or woodlands of particular visual importance as landscape features.
- A3: Trees, groups or woodlands of particular significance by virtue of their conservation, historical, commemorative or other value (e.g. veteran trees or wood pasture.)

CATEGORY B: MODERATE QUALITY:

Trees or groups of some importance with a likely useful life expectancy in excess of 20 years. Their retention would be desirable; selective removal of certain individuals may be acceptable but only after full consideration of all alternative courses of action.

- B1: Fair quality but not exceptional; good specimens showing some impairment (e.g. remediable defects, minor storm damage or poor past management.)
- B2: Acceptable trees situated such as to have little visual impact within the wider locality. Also numbers of trees, perhaps in groups or woodlands, whose value as landscape features is greater collectively than would warrant as individuals (such that the selective removal of an individual would not impact greatly upon the trees’ overall, collective value).
- B3: Trees, groups or woodlands with clearly identifiable conservation or other cultural benefits.

CATEGORY C: LOW QUALITY:

Trees or groups of rather low quality, although potentially capable of retention for at least approx. 10 years. Also small trees with stems below 15cm diameter.

Potentially retainable, but not of sufficient value to be regarded as a significant planning constraint.

- C1: Unremarkable trees of very limited merit or of significantly impaired condition.
- C2: Trees offering only low or short-term landscape benefits; also secondary specimens within groups or woodlands whose loss would not significantly diminish their landscape value.
- C3: Trees with extremely limited conservation or other cultural benefit.

CATEGORY U:

Trees likely to prove to be unsuitable for retention for longer than 10 years should any significant increase in site usage arise as a result of development.

E.g. dead or moribund trees; those at risk of collapse or in terminal decline; trees that will be left unstable by other essential works such as the removal of nearby category U trees; trees infected by pathogens that could materially affect other trees; low quality trees that are suppressing better specimens.

(Category U trees may have conservation values that it might be desirable to preserve. This category may also include trees that should be removed irrespective of any development proposals.)

ROOT PROTECTION AREA (RPA):

These are normally represented as a circle centred on the base of each tree stem with a radius of 12 times stem diameter, measured at 1.5m above ground level. The shape of the RPA may be altered where site conditions dictate that there are sound reasons to do so.

VETERAN OR ANCIENT TREE BUFFER (VTB/ATB)

In line with the Standing Advice produced by the Forestry Commission and Natural England this is a buffer zone (in metres) around an ancient or veteran tree that should be at least 15 times larger than the diameter of the tree. The buffer zone should be 5m from the edge of the tree’s canopy if that area is larger than 15 times the tree’s stem diameter.

ANCIENT WOODLAND BUFFER (FOR ASNW, PAWS OR ARW)

In line with the Standing Advice produced by the Forestry Commission and Natural England this is a buffer zone of at least 15 metres to avoid root damage. Where assessment shows other impacts are likely to extend beyond this distance, a larger buffer zone may be required.

THE IMPORTANCE OF TREES

Wider benefits:

There is a growing body of evidence that trees bring a wide range of benefits to the places people live.

Some *Economic* benefits of trees include:

- Trees can increase property values
- As trees grow larger, the lift they give to property values grows proportionately
- They can improve the environmental performance of buildings by reducing heating and cooling costs, thereby cutting bills
- Mature landscapes with trees can be worth more as development sites
- Trees create a positive perception of a place for potential property buyers
- Urban trees improve the health of local populations, reducing healthcare costs

Some *Social* benefits of trees include:

- Trees help create a sense of place and local identity
- They benefit communities by increasing pride in the local area
- They can create focal points and landmarks
- They have a positive impact on people's physical and mental health
- They can have a positive impact on crime reduction

Some *Environmental* benefits of trees include:

- Urban trees reduce the 'urban heat island effect' of localised temperature extremes
- They provide shade, making streets and buildings cooler in summer
- They help remove dust and particulates from the air
- They help to reduce traffic noise by absorbing and deflecting sound
- They help to reduce wind speeds
- By providing food and shelter for wildlife, they help increase biodiversity
- They can reduce the effects of flash flooding by slowing the rate at which rainfall reaches the ground
- They can help remediate contaminated soil

On new development sites:

Trees bring many benefits to new development. Where retained successfully they can form important and sustainable elements of green infrastructure, contribute to urban cooling and reduce energy demands in buildings. Their importance is acknowledged in relation to adaptation to the effects of climate change. Other benefits brought by trees include:

- Increasing property values
- Visual amenity
- Softening, complementing and adding maturity to built form
- Displaying seasonal change
- Increasing wildlife opportunities in built-up areas
- Contributing to screening and shade
- Reducing wind speed and turbulence

NATIONAL PLANNING POLICY

The National Planning Policy Framework 2021 (NPPF paragraph 180) states that, when determining planning applications, local planning authorities should apply the following principle:

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.'

In this respect the following definitions apply:

'Ancient woodland: An area that has been wooded continuously since at least 1600 AD. It includes ancient semi-natural woodland and plantations on ancient woodland sites (PAWS)', and

'Ancient or veteran tree: A tree which, because of its age, size and condition, is of exceptional biodiversity, cultural or heritage value. All ancient trees are veteran trees. Not all veteran trees are old enough to be ancient, but are old relative to other trees of the same species. Very few trees of any species reach the ancient life-stage.'

Note: Further information from the National Planning Policy Guidance Suite and Standing Advice is provided in the design guidance section.

Other paragraphs of the NPPF 2021 of relevance to this report are:

Paragraph 131: *'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.'*

Paragraph 174: *'Planning policies and decisions should contribute to and enhance the natural and local environment by:*

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.'

STATUTORY CONTROLS

Statutory tree protection

Works to trees which are covered by Tree Preservation Orders (TPOs) or are within a Conservation Area (CA) require permission or consent from the Local Planning Authority. Where information is available on any Statutory designations such as this they are identified within the summary table in Section 1 and on the Tree Survey and Constraints Plan at Section 2.

Notwithstanding specific exceptions and in general terms, a TPO prevents the cutting down, uprooting, topping, lopping, wilful damage or wilful destruction of protected trees or woodlands without the prior written consent of the LPA.

Penalties for contravention of a TPO tend to reflect the extent of damage caused but can, in the event of a tree being destroyed, result in a fine of up to £20,000 if convicted in a Magistrates' Court, or an unlimited fine if the matter is determined by the Crown Court.

Similarly, and again notwithstanding specific exceptions, it is an offence to carry out any works to a tree in a Conservation Area with a trunk diameter greater than 75mm diameter at 1.5 height without having first provided the LPA with 6 weeks written notification of intent to carry out the works.

On many non-residential sites (excluding specific exemptions) there is also a statutory restriction relating to tree felling that relates to quantities of timber that can be removed within set time periods. In basic

terms, it is an offence to remove more than 5 cubic metres of timber in any one calendar quarter without having first obtained a felling licence from the Forestry Commission.

Any proposed tree works that are planned to be carried out on site must be carried out in accordance with the statutory controls outlined.

Statutory Wildlife Protection

Although preliminary visual checks from ground level of likely wildlife habitats are made at the time of surveying, detailed ecological assessments of wildlife habitats are not made by the arboriculturist and fall outside of the scope for this report.

Trees which contain holes, splits, cracks and cavities could potentially provide a habitat for protected species such as bats in addition to birds and small mammals. It is advised that in some instances specialist ecological advice may be required. This may result in tree works being carried out following a detailed climbing inspection to the tree to ensure that protected species or their nests/roosts are not disturbed. If any are found, the site manager, site owner or consulting arboriculturist should be informed and appropriate action taken as recommended by the appointed Ecologist or Natural England.

It is advised that tree/hedgerow works are carried out with the understanding that birds will generally nest in trees, hedges and shrubs between March and August. This time period only provides an indication of likely nesting times and as such diligence is required when undertaking tree works at all times.

Irrespective of the time of year and other than any actions approved under General Licence, it is an offence to intentionally kill, injure or take any wild bird or to intentionally take, damage or destroy the nest or eggs of any wild bird. Ideally, tree operations should be avoided during the likely bird nesting period. However, any tree works should always only be carried out following a preliminary visual check of the vegetation.

For information, the Wildlife and Countryside Act 1981 (as amended), The Countryside and Rights of Way Act 2000 (as amended) and the Conservation of Habitat and Species Regulations 2010, form the basis of the statutory legislation for flora and fauna in England and Wales. A different legislative framework applies in Scotland and Northern Ireland.

Any proposed tree works that are planned to be carried out on site must be carried out in accordance with any relevant statutory controls, outlined above.

DESIGN GUIDANCE

Approach

The approach adopts the guidelines set out in the British Standard BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations. The process is broken down to coordinate with the key elements within both the RIBA Plan of Work (2013) and British Standard 5837:2012 as set out in the table below:

Information Stage	RIBA Stage	BS5837:2012
Stage A – Tree Survey	2: Concept	4: Feasibility
Stage B – Arboricultural Impact Assessment	3: Developed design	5: Proposals
Stage C – Arboricultural Method Statement	4: Technical design	6: Technical Design
Stage D – Arboricultural Site Supervision	5: Construction	7: Demolition and construction

A hierarchical approach is adopted in order to achieve optimum use of the site and location of built structures. This is set out below:

Avoid

The starting point of Site layout design should be to avoid the RPA of retained trees and provide suitable clearance from above ground constraints [tree canopies]. Where possible building lines should be at least 2m outside the RPA to provide working space for construction. However, protection measures can be taken if such clearance is not achievable.

Mitigate

Where intrusion within the RPA is unavoidable then its impact on the tree can be mitigated by specialist measures:

Foundations that avoid trenching e.g. screw piles, suspended floor slabs or casting at ground level for lightweight structures such as bin and cycle stores.

Limited use may be made for parking, drives or hard surfaces within the root protection areas, subject to advice from a qualified arboriculturist. Cellular confinement systems that enable hard surfaces to be built above existing soil levels are acceptable methods subject to site-specific soil conditions.

Service runs that cannot be routed outside the RPA(s) can be installed by, for example, thrust boring, directional drilling, air excavation or hand digging. These operations often require supervision by the project arboriculturist.

Compensate

Replacement planting can ensure the continuity of tree cover where tree removal is unavoidable or desirable. Off-site provision may be considered in some circumstances but this will require negotiation with the local planning authority.

Considerations:

For proposed residential developments, consideration must be given to numerous factors future tree growth and orientation.

Tree constraints

Root Protection Areas:

With reference to BS5837:2012, a root protection area (RPA) is defined as “a layout design tool indicating the minimum area around a 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 should be treated as a priority”. **“The default position [when considering design layout in relation to RPAs] should be that structures are located outside the RPAs of trees to be retained”.**

BS5837:2012 states (4.6.2) that, “where pre-existing site conditions or other factors indicate that rooting has occurred asymmetrically, a polygon of equivalent area should be produced.” The BS goes on to state that, “modifications to the shape of the RPA should reflect a soundly based arboricultural assessment of likely root distribution,” and that any deviation from the original circular plot should take into account:

- Morphology and disposition of roots;
- topography and drainage;
- soil type and structure;
- the likely tolerance of the tree to root damage/disturbance.

Additional buffer zones beyond the RPA:

The following text is taken from the Standing Advice produced by the Forestry Commission and Natural England as included in the National Planning Policy Guidance:

'A buffer zone's purpose is to protect ancient woodland and individual ancient or veteran trees. The size and type of buffer zone should vary depending on the scale, type and impact of the development'.

Ancient woodland buffer:

'For ancient woodlands, you should have a buffer zone of at least 15 metres to avoid root damage. Where assessment shows other impacts are likely to extend beyond this distance, you're likely to need a larger buffer zone. For example, the effect of air pollution from development that results in a significant increase in traffic'.

Ancient and veteran tree buffer:

'A buffer zone around an ancient or veteran tree should be at least 15 times larger than the diameter of the tree. The buffer zone should be 5m from the edge of the tree's canopy if that area is larger than 15 times the tree's diameter'.

Above ground:

Above ground constraints posed by trees describe the capacity for trees to have an overbearing or dominating effect on new developments; usually post occupancy. Typical above ground constraints include a number or combination of inconveniences including shading, branch spread, movement of trees during strong winds and so on. If not adequately considered, above ground constraints can lead to repeated requests to fell or heavily prune retained and protected trees.

Shade:

Adverse shading and blocked views from windows raise concerns for incoming residents, which may lead to pressure to fell or remove trees in the future. Wherever possible it is advisable to arrange fenestration away from tree canopies to lessen the conflict, or increase window size to accommodate ambient light.

Conversely, appropriate designed development can use existing or new trees to create necessary and welcome shade and screening.

As part of the adopted approach the above considerations and constraints are assessed cumulatively in order to provide clear and site-specific advice on the areas of a site most suitable for the location of development.

Dependent on the site and nature of the proposed development, the Tree Survey and Constraints Plans may show the following:

Recommended Developable area - an advisory area defined in order to minimise arboricultural impacts using standard approaches to construction. Restricting proposed development to this area will limit the risk of harm to retained trees and of the Local Planning Authority objecting to the proposed development. It may be possible to propose development outside of this area but specific 'low impact' construction techniques may be needed recommended.

Recommended Buffer to development - similar to the Recommended Developable Area but defined as a line marking a suitable buffer to retained trees. More commonly used on large sites or sites where the presence of trees is localised.

Tree Opportunities

Depending on the scale of developments existing trees can often provide opportunities to enhance the existing arboricultural resource of a site by bringing it into good management or by putting in place remedial measures e.g. soil amelioration.

Appropriately designed new tree planting is extremely important in maintaining healthy and sustainable tree populations. For the reasons highlighted, new trees can bring many benefits to new developments. It is critical to the establishment of new tree planting that the locations, species and specification of new trees is appropriate. Subsequently the sourcing of high-quality stock, suitable planting and the provision of post planting maintenance are essential to allow new trees to establish and to allow them to mature.

HOW TREE DAMAGE CAN OCCUR

Above the ground

Damage can occur as a result of knocks and scuffs, breakages of branches and/or tree trunks. This is often but not always associated with machine operations, groundworks excavations, tele handlers, high sided vehicles and crane use. Other forms of above ground damage include fixings to trunk and unauthorised cutting back of branches. Wounds will harm a tree's health and shorten its life by letting in disease-causing organisms.

Below the ground

It is often not appreciated that the majority of most tree roots are generally located within the top 600mm of the ground. On this basis it needs to be understood that damage to roots can occur in three ways:

- Root severance can occur as a result of, for example, soil stripping during site clearance or excavations.
- Root dieback and death can result from compaction of the soil. Compaction can occur as a result of vehicle weight, weight of stored materials or increased pedestrian access. Compaction crushes out soil pore space and prevents tree respiration from occurring (respiration requires gas exchange between the ground and the atmosphere). Compacted soil is denser and therefore inhibits/prevents any further new root growth.
- Pollution of the soil with chemicals such as oil or cement washings can destroy the soil environment, making it inhospitable for the tree cause causing it stress.

The effects of these impacts can be disfiguring to a tree's appearance and also weaken a tree making it more liable to attack by pest and diseases. In addition, root damage or death results in corresponding decline above the ground with dieback occurring within the tree crown.

The effects of damage to trees generally take some time to become fully apparent. In many cases, damaged trees decline slowly after the completion of a new development, until they eventually need to be removed due to ill health.

Tree protection barriers and load distributing 'no-dig' paths are specified in order to prevent soil compaction from taking place.

GENERAL SITE RULES FOR TREE PROTECTION

Do not independently carry out any activity that is at odds with the site scheme of tree protection. This is contained within an approved Arboricultural Method Statement (AMS) and accompanying Tree Protection Plan.

In simple terms: do not carry out any work within any Construction Exclusion Zone (CEZ) without prior liaison with the Project Arboriculturist and written authorisation from the Local Planning Authority.

Within the CEZ:

- No mixing of cement
- No soil/turf stripping, raising/lowering of ground levels (unless advised), deposit or excavation of soil or rubble
- No excavations for services or installation of services
- No storage of materials, machinery fuel, chemicals or other materials of any other description
- No parking/use of tracked or wheeled machinery
- No siting of temporary structures including hard standing areas, portaloos, site huts
- No lighting of fires or disposal of liquids
- Fires on site should be avoided if possible. Where they are unavoidable, they must not be lit in a position where heat could damage foliage or branches. Fires must be a minimum of 20m from the trunk of any retained tree or the centre line of any hedgerow to be retained
- No signs, cables, fixtures or fittings of any other description shall be attached to any part of a retained tree