

AtkinsRéalis



Racton Booster Station Arboricultural Impact Assessment

Trant Engineering Ltd.

May 2026

RACTON BOOSTER STATION

Notice

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AtkinsRéalis assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

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1. Introduction

1.1 Terms of reference

AtkinsRéalis was commissioned by Trant Engineering Ltd. to undertake a tree survey in accordance with the British Standard BS 5837:2012 'Trees in Relation to Design, Demolition and Construction – Recommendations' to support the proposed Racton Booster Station (hereafter referred to as the Scheme) to be located on an area of land on New Road, Havant, PO9 3BB (hereafter referred to as the Site).

The survey data captured follows BS5837:2012 guidance as set out in Appendix A of this report. The survey data is presented in a schedule in Appendix B. A glossary of relevant terms is included in Appendix C.

This report is an Arboricultural Impact Assessment (AIA), focusing on the trees within the extents of the Scheme. It reports on the impacts on the recorded trees from the proposals and is supplemented by the production of a Tree Protection Plan (TPP), which is included within Appendix D of this report.

It also confirms whether any of the recorded trees could be classified as veteran specimens. The veteran classification includes trees which might also be classified as ancient.

1.2 Site location

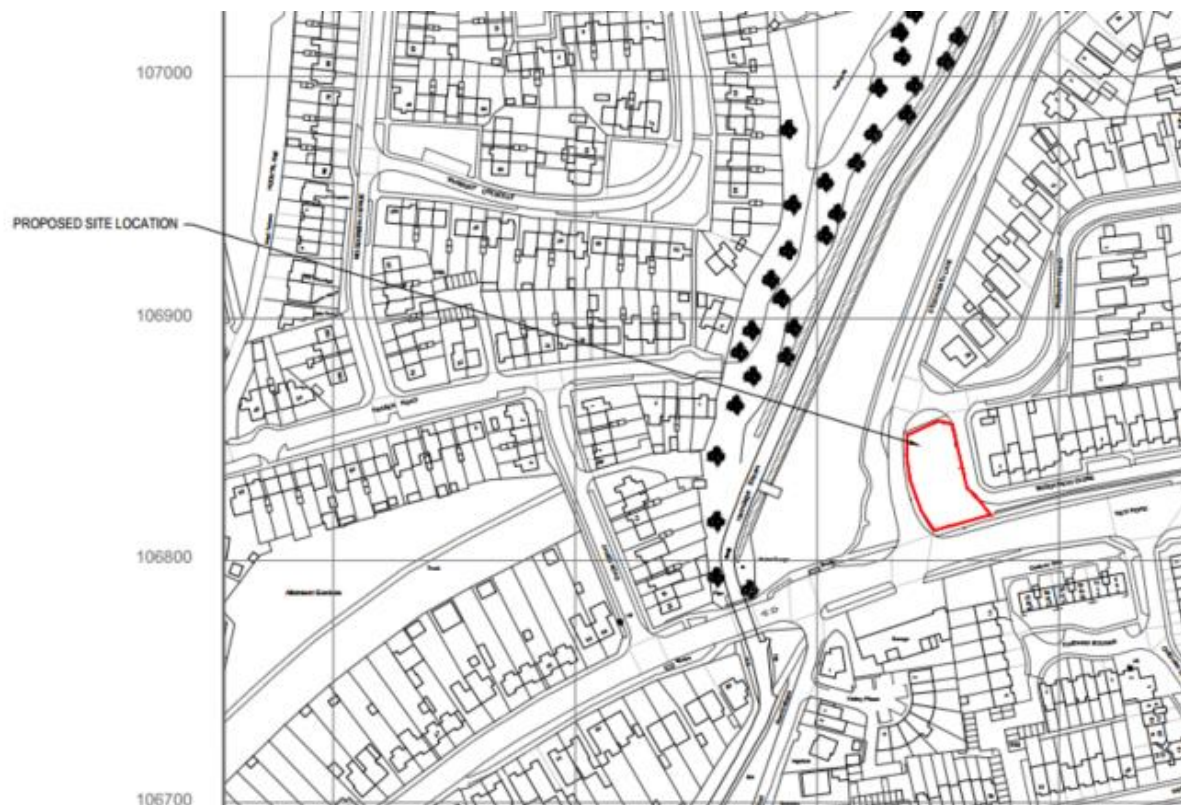
The Site is an area of land in the town of Havant, approximately 650m northwest of Havant Railway Station (National Grid Reference SU 7106 1484) as shown on Figure 1-1 below.

The Site is a broadly rectangular plot, comprising 0.2 hectares, with New Road to the south; Stockheath Lane to the West; Trosnant Road to the north; and Brookfield Close to the east.

The Site is bound by open park land to the west and north-west; whilst residential properties are found to the northeast, east and south.

The Scheme sits within Havant Borough Council. The Scheme is not within any National Landscape designations.

Figure 1-1 - Scheme extents



1.3 The Scheme

The Scheme consists primarily of a water booster station building that will connect to PW's existing water pipeline system in order to safeguard their pressurised water supply network. The proposed water booster station building will be 81.65m² in area. The proposed booster station comprises a plant room housing a floor mounted pump, and a control room housing a motor control centre (MCC), together with a separate kiosk housing a bespoke, new electricity substation.

The building housing the proposed water booster station will be approximately 10m long and 10m wide. The maximum height of the building will be 5.31m (north elevation) to 4.66m (south elevation) to the top of the pitched roof. The proposed building will have a tiled pitched roof and will be constructed of brick to match the existing surrounding buildings.

The Scheme includes a proposed "Grasscrete" hardstanding parking bay at 90 degrees to Brookfield Close, to allow for safe access for vehicles into the site. A double barrier / gate 1m back from the current kerb line is also proposed.

1.4 Scope of works

This report presents arboricultural information captured by AtkinsRéalis' Principal Arboriculturist. The report was prepared by AtkinsRéalis' Associate Arboriculturist and Landscape Manager Tom Dale BSc (Hons), Cert Arb L6 (ABC), M.Arbor.A.

The scope of works includes:

- The preparation of a tree survey plan showing all trees surveyed within the Scheme extents including root protection areas.

- The preparation of a tree schedule of all trees surveyed.
- The preparation of Tree Protection Plans showing those trees to be removed and retained, including the provision of preliminary protection measures for retained trees removal and retention plan.
- The preparation of an AIA which incorporates the survey schedule and associated TPPs.

This report has been prepared by an Arboriculturist with over 19 years' experience, and who is a Professional Member of the Arboricultural Association with a Level 6 qualification in Arboriculture.



2. Methodology

2.1 General

This tree survey has been undertaken in accordance with BS5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations. The standard gives recommendations and guidance on the relationship between trees and the design, demolition and construction process, setting out the principles and procedures to be applied to achieve a harmonious and sustainable relationship between trees and structures.

BS5837:2012 does not set explicit parameters for measuring the sensitivity of an arboricultural resource; nor does it assess the magnitude of impact of a Scheme on trees (other than by providing a record of the number or area of trees that would need to be removed to facilitate the development as presented at time of submission). Rather, the British Standard provides parameters which enable the Arboriculturist to assess the quality of all the trees and other arboricultural features that may be affected by the development that is proposed.

Whilst the BS categories are open to varied interpretation, the guidelines in the cascade chart of BS 5837:2012 (see insert A.1 in Appendix A of this report) provide details on how to determine tree qualities and can be used to inform the design process to retain those trees of higher quality where possible.

2.2 Planning policy and definition of veteran trees

The definition of veteran trees for the purposes of this assessment follows the core standing advice and planning policy.

The ‘Standing Advice’¹ on ancient woodland, ancient trees and veteran trees provides guiding principles for the classification of ancient and veteran trees. These principles are also covered within the Forestry Commission and Natural England (NE) guidance.

The standing advice clearly defines veteran trees as:

“All ancient trees are veteran trees, but not all veteran trees are ancient. A veteran tree may not be very old, but it has decay features, such as branch death and hollowing. These features contribute to its biodiversity, cultural and heritage value”.

There is a degree of ambiguity in its definition but it does provide clear guiding principles, namely that veteran trees have:

- Decay features, such as branch death and hollowing; and
- These features contribute to its biodiversity, cultural and heritage value.

The definition of ancient trees supplements this by focusing the definition of veteran trees arguably (but not definitively) on:

- Great age;
- Size;
- Condition;

¹ <https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences>

- Biodiversity value as a result of significant wood decay and the habitat created from the ageing process; and
- Cultural and heritage value.

Very few trees of any species become ancient.

As such this assessment has proceeded on the basis that the classification of veteran trees should take account of the specific features of trees (size and condition) alongside their biodiversity, cultural and heritage value.

The relevant planning policy is detailed within the National Planning Policy Framework (NPPF) (latest published version February 2025). The NPPF provides a joint definition of an ancient or veteran tree:

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'.*

This definition extends that within the standing advice to include additional criteria:

- Exceptional biodiversity, cultural or heritage value;
- Old relative to other trees of the same species.

Therefore, in line with this policy veteran trees have been classified in accordance with:

- Size.
- Condition (decay features, such as branch death and hollowing, plus associated species).
- Exceptional biodiversity value as a result of significant wood decay and the habit created from the ageing process.
- Exceptional cultural and heritage value.
- Old relative to other trees of the same species.

Further guidance to assist in classifying trees as old for their species based on stem size criteria was obtained from Figure 1.3 'Chart of girth in relation to age and developmental classification of trees' from the *Ancient and other veteran trees: further guidance on management* (Lonsdale, 2013). This lists tree species against ascending girth measurements to help define whether a tree is locally notable; veteran/notable; ancient or late ancient.

This chart is not definitive and further criteria as detailed previously is also used in the classification of the trees as veteran or locally notable.

Locally notable trees for the purposes of this assessment include those that can be defined as mature and standing out locally because of large size in comparison to other trees in locality or given the presence of veteran habitat features, but do not meet the criteria to be deemed a veteran tree in line with the approach adopted.

The Woodland Trust's Ancient Tree Inventory was also accessed (January 2024) to identify if any trees with the Site extents have been registered on the Trust's inventory as veterans or ancient specimens. This is a material consideration as part of this assessment. However, it does not imply the Arboriculturist agrees with their classification, as the approach may have differed to that applied by the Arboriculturist and author of this report.

The NPPF introduced greater protection for veteran trees in its July 2018 revision (subsequently updated - latest published version February 2025). The pertinent section is paragraph 193 c), which states: *'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'.*

Further planning policy in relation to trees and their impacts is covered in the Havant Borough Council Core Strategy (March 2011).

2.3 Statutory protection

Trees may be protected through a Tree Preservation Order (TPO) or through being located within a Conservation Area. The law on TPOs is in Part VIII of the Town and Country Planning Act 1990 as amended and in the Town and Country Planning (Tree Preservation) (England) Regulations 2012.

A TPO is made by a local authority in respect of a tree(s) as the tree is considered to bring amenity value to the surrounding area. A TPO makes it an offence to cut down, uproot, lop, top, wilfully damage or wilfully destroy a protected tree without authorisation.

The online mapping resource provided by Havant Borough Council ([Where I Live | Havant Borough Council](#)) was accessed (March 2026) to confirm the presence of any TPOs or Conservation Areas within the Site extents.

2.4 Spatial scope

The survey works focused on trees within the Site extents.

This AIA is targeted at the impacts on the trees. It does not cover the subsequent impacts such tree removal would have on ecological or landscape receptors which are outlined in specialist documentation provided by these professional disciplines.

The TPP (see Appendix D) illustrates the trees that have been surveyed.

2.5 Survey

The approach to the survey involved a ground-level walked assessment by qualified and experienced Arboriculturist.

The locations of individual trees and the start and end points of groups were, where possible, plotted using proprietary GIS data capture software on Trimble hand-held mobile mappers. These locations were verified using available aerial imagery and topographical survey data showing tree locations.

The extents of groups not surveyed as part of ground level walked assessments were plotted using available aerial imagery.

The arboricultural features were numbered sequentially from 001: individual trees recorded were prefixed with a 'T' (e.g. T001) and groups of trees with a 'G'.

No numbered tree tags were used for the survey, but where already fixed to trees these were noted within the survey schedule.

2.6 Data gathering

Data was collected following the guidance of BS5837:2012, as outlined in Appendix A of this report. The purpose of the tree categorisation method applied by the Arboriculturist was to identify the quality and value (in a non-fiscal sense) of the existing tree stock, allowing informed decisions to be made concerning which trees should be removed or retained if development is to occur.

For a tree to qualify under any given category, it should fall within the scope of that category's definition as defined in Appendix A of this report (categories U, A, B, C) and, for trees in categories A to C, it should qualify under one or more of the three subcategories (1, 2, 3). Subcategories 1, 2 and 3 are intended to reflect arboricultural and landscape qualities, and cultural values, respectively.

Trees were recorded as individual specimens or as groups. Where trees were not recorded as an individual specimen, the tree survey data within the schedule is based on what is a reasonable average measurement of the trees/shrubs within the group extents or it's taken from one of the largest specimens within the group.

This level of survey meets the requirements of BS5837:2012, which states that *'trees growing as groups or woodland should be identified and assessed as such'*. The standard defines the term group as *'trees that form cohesive arboricultural features either aerodynamically (e.g., trees that provide companion shelter), visually (e.g. avenues or screens) or culturally including for biodiversity (e.g. parkland or wood pasture)'*.

Crown spreads of the surveyed trees were given as an average measurement where the tree's crowns were balanced or where recorded as a group. If there was a notable difference in crown spread to a cardinal point, these were recorded. The average measurement was taken from the cardinal point relevant to the direction of the Scheme.

This level of survey is deemed sufficient by the Arboriculturist to establish the extent of the crown spread in the direction of the Scheme. All crown spread measurements should be taken from the tree survey schedules (see Appendix B). The method of measuring diameters is defined in Appendix A of this report and has been applied where access permitted.

2.7 Limitations to survey

Where access permitted, trees were identified and inspected from ground level only and were not climbed. No invasive examination techniques (such as increment boring, or internal decay detection) were carried out and as such no assessment of the internal condition of the wood of these trees can be given.

Where trees have not been surveyed as part of ground-level walked assessments this is due to the trees being within areas not readily accessible or due Site access limitations. The tree data in these areas, where within or adjacent to the Site, have been estimated using available imagery and supplementary information taken from points of safety. These trees were largely recorded as groups, in line with the BS5837 guidance on what constitutes a 'group' of trees (see section 2.6 above). Therefore, an outline of the groups was plotted using available aerial imagery to capture the combined crown extents of the groups, meaning the use of exact measurements was not required.

The tree survey undertaken is not intended to be a tree risk management survey targeting safety-related issues. However, where specific hazards have been identified these have been recorded and management recommendations provided. These are detailed within the tree survey schedules (see Appendix B).

Validity, accuracy, and findings of the tree locations will relate directly to the accuracy of the supplied topographical survey data, available aerial imagery and the GIS data capture software used by AtkinsRéalis. As such the accuracy of the tree locations is potentially open to discrepancies and their locations should be checked via measured survey prior to construction.

Where tree groups have been illustrated as an outline this covers the extents of the tree group. It does not always illustrate individual trees within the groups. Where individual trees were identified they were plotted separately.

The report does not comment on possible effects of trees on neighbouring properties, including in relation to subsidence or heave, or with regard to possible hazards presented by trees surveyed.

Trees are living organisms subject to changes outside human control. Trees and their environment alter with the seasons, and it is as well to inspect trees whilst in full leaf and when out of leaf. Following harsh or unexpected weather conditions, or heavy storms it is also prudent to inspect trees. Changes to ground water conditions will affect the root growth of a tree. Such changes are not always the result of human influence and other factors may be involved.

3. Existing site conditions

3.1 Existing land use

The Site is a greenfield site, largely consisting of a flat grassed area, raising slightly from the east pedestrian path to a plateau in the centre of the site. There are trees along the east and west boundaries of the Site. Within the grassed area there are several manholes.

3.2 Existing trees

The existing trees are a mixture of species and age classifications. 3 arboricultural features were recorded as part of the survey, of which all were classified as Category C.

Trees categorised under BS criteria as being 'Category C' are trees "of low quality with an estimated remaining life expectancy of at least 10 years or young trees with a stem diameter below 150mm". The trees were in fair to good physiological condition.

G001 is a multi-stemmed group of Alder trees, suggesting past felling and regeneration. The close spacing between the trees has led to mutual crown suppression, drawn stems and leans. The trees have been recommended for ivy severance at or close to the bases of stems to improve their vitality. The ivy at present is shading out the leaf bearing branches.

G002 is a lapsed hedgerow group of mixed species. At the time of the survey there was frequent dieback and dead wood in crowns of some of the trees; there were also collapsed stems that are indicative of a lapse in management. The tree group has been recommended for the removal of dead wood if the works are to proceed. The dead wood can be utilised to create dead wood habitat piles in the locality, where feasible.

Tree T003 is a young Field Maple specimen with no apparent significant structural defects recorded at the time of the survey.

The survey schedule provided in Appendix B provides all the information on the recorded trees and includes preliminary management recommendations. These recommendations being in relation to tree risk management operations, including if the Scheme were to proceed and where this would bring people or property in closer proximity to the trees.

3.3 Ancient woodland and priority habitats

On review of the MAGIC mapping facility (March 2026) provided by DEFRA (www.defra.gov.uk), no registered Ancient Woodlands or Deciduous Woodland registered as part of the Priority Habitat Inventory have been identified to be within or adjacent to the Scheme extents.

3.4 Veteran trees

No veteran trees have been recorded by AtkinsRéalis' as part of their survey.

No veteran trees have been registered on the Ancient Tree Inventory within the Site extents. [Tree Search - Ancient Tree Inventory \(woodlandtrust.org.uk\)](http://www.woodlandtrust.org.uk).

3.5 Statutory protection

The online mapping facility provided by Havant Borough Council ([Where I Live | Havant Borough Council](#)) has been reviewed (March 2026) to confirm the presence of any TPOs or Conservation Areas that maybe impacted upon by the Scheme and those directly adjacent. No TPOs or Conservation Areas have been identified to be within or adjacent to the Scheme extents.

Trees in a conservation area that are not protected by a TPO are protected under the provisions in section 211 of the Town and Country Planning Act 1990. There is a requirement to notify the local planning authority six weeks before carrying out certain work on such trees unless an exception applies.

Trees should be checked for protected species before works are undertaken. While it is outside of the scope of this tree survey to comment on the confirmed or likely presence of protected animal species, it is against the law to disturb bats or their roosts under the Conservation of Habitat and Species Regulations (2010). Likewise, nesting birds are protected by the Wildlife and Countryside Act (1981) (as amended).

4. Arboricultural impacts

4.1 General

This report determines the impact of the Scheme on the recorded tree stock. It provides details on the recorded trees including their condition and in some cases suitability for retention.

The report is supplemented by the TPP (Appendix D) which illustrate the Scheme and the recorded trees and trees that would require removal to facilitate the works.

The TPP is drawing number RPS-ATR-XX-XX-D-O-401000, revision P03.

4.2 Root protection areas

The root protection area (RPA), as defined in the BS5837:2012, is 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 is treated as a priority. This area should be protected from disturbance "in order to avoid unacceptable damage to the tree as a result of severance or asphyxiation of the root system."

The recommended minimum area (m²) to avoid potentially harmful disturbance has been calculated and entered into the tree schedules (see Appendix B) for all trees. The RPA for each individual tree has been illustrated on the TPPs as a circle centred on the tree's stem, while the RPAs of the tree groups and woodlands have been illustrated as an offset from the canopy extents, unless trees have specifically been recorded within the groups.

The calculation of the RPA does not consider existing site conditions that could affect the morphology of the tree roots, and 'modifications to the shape of the RPA' (para 4.6.2; BS5837:2012) can be undertaken through arboricultural assessment. However, as part of this assessment no modifications have been undertaken. Where existing ditches or highway infrastructure are located the spread of the tree roots is likely to be highly modified.

4.3 Arboricultural impacts and mitigation

The impacts of the Scheme have been assessed based on the supplied design and overlaid onto the TPP. Where trees are partly within the footprint of the works the Arboriculturists have used the percentage of RPA encroachment to determine whether a tree(s) could be retained, also based on existing site conditions that could have inhibited root development.

Where over approximately 20% of their RPAs are severed by the works the trees have been identified for removal. The 20% figure being referenced within BS5837:2012 for what is deemed potentially acceptable in terms of RPA infringement. But this is also dependent on existing site conditions, which have also been considered by the Arboriculturist. The table below reflects the impacts of the Scheme and the mitigation measures required to facilitate the Scheme.

If the works were to be approved, then the provision of compensation planting could be included as part of an appropriately worded condition. The tree losses are limited to low quality specimens and this should not hinder the development. A separate report in relation to Biodiversity Net Gain is being produced to support the scheme.

Reference	Impact	Impact Description and mitigation
G001	Retained	Proposed water main pipe encroaches c.700mm into south end of group. Proposed timber fencing ('starter' fencing for new hedge planting) encroaches into north and south ends of group. Install protective barriers as per TPP to protect retained trees and to define the construction exclusion zone. The area between the barriers and the RPA extents are a 'proceed with caution' zone. Cut back crowns to facilitate access and construction. Undertake hand excavations for the installation of the pipeline and the fence posts. These works are to be undertaken using hand tools or a vacuum excavator. The spoil is to be laid on top of plywood boards outside of the RPA of the tree group. Where tree roots are revealed, these are to be assessed by an Arboriculturist if they are greater than 25mm diameter. [A watching brief may be provided by the Contractor, who should notify the Arboriculturist in the event of roots greater than 25mm diameter being revealed.] Any roots 25mm diameter or less are to be pruned back to the extents of the excavation using a sharp pair of secateurs or a hand saw.
G002	Partial removal of group (71m ²)	Removal of 71m² of the north end G002 Install protective barriers as per TPP to protect remaining retained trees.
T003	Retained	Outside of Scheme extents, no impact.

4.4 Arboricultural impacts - TPO trees

No TPO tree impacts.

4.5 Arboricultural impacts – veteran trees and Ancient Woodland

No veteran trees or Ancient Woodlands have been identified to be within or adjacent to the Scheme extents.

4.6 Preliminary management recommendations

The tree survey schedules (see Appendix B) show management recommendations for those trees which at the time of the survey were identified as requiring management intervention. These works being in response to hazards recorded during the tree survey.

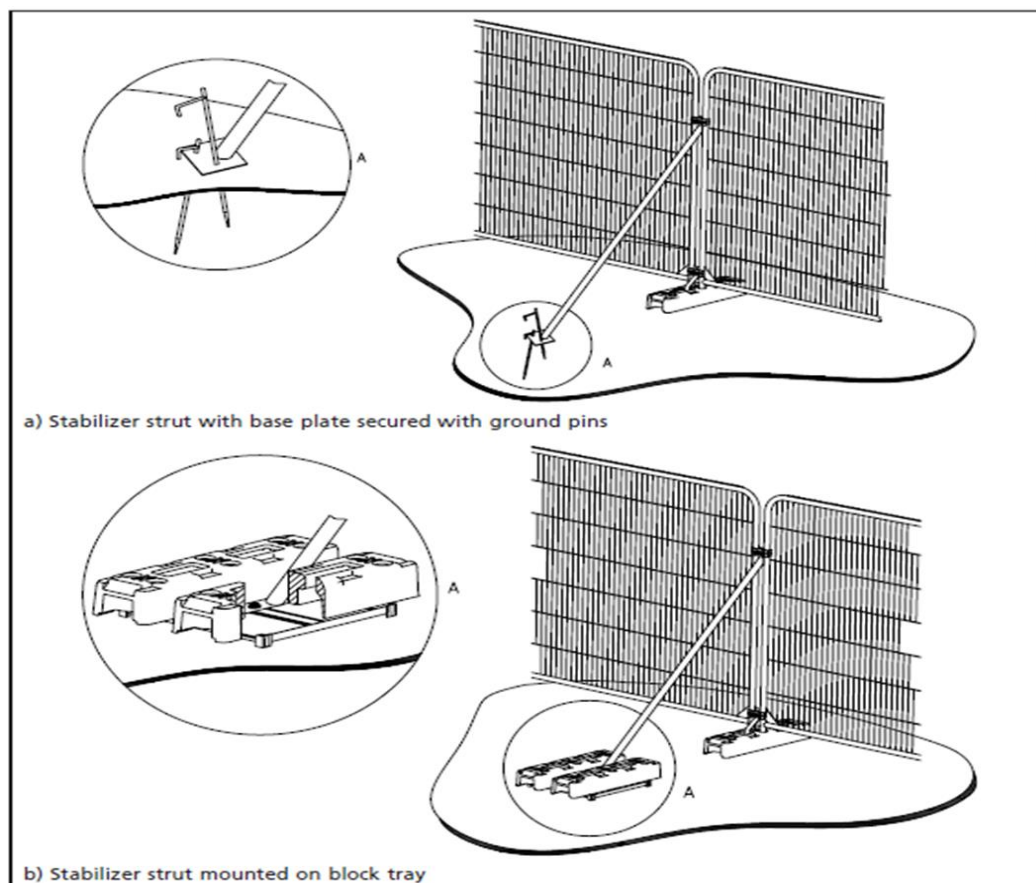
The works are recommendations and tree owners and managers are advised to seek further guidance should a tree on their land require management outside of the Scheme.

4.7 Tree protective barriers

The locations of any protective fencing have been illustrated on the TPP. The fencing should be erected before the commencement of works and kept in place throughout the duration of the works.

The protective barriers could comprise 2m tall welded mesh panels on rubber or concrete feet. The panels are to be joined together using a minimum of two anti-tamper couplers, installed so they can only be removed from inside the fence. The distance between the fence couplers is to be at least 1m and is to be uniform throughout the fence; the panels are to be supported by inner side stabiliser struts attached to a base plate secured on a block tray. See Figure 4-1 below.

Figure 4-1 - Tree protection fencing



The protected areas shall be seen as sacrosanct and once installed shall not be moved or altered without recommendation by an Arboriculturist.

4.8 Compound areas

The locations of site accommodation, temporary buildings and areas used for storage of materials are to be located outside of the RPAs of retained trees as defined on the TPP.

4.9 Tree works

All tree works are to be undertaken in line with current recommendations in accordance with BS3998:2010 Tree Work – Recommendations and comply with the current Arboriculture and Forestry Advisory Group (AFAG) or applicable Forestry Industry Safety Accord (FISA) advice published by the Health and Safety Executive (HSE) or FISA.

Tree works are to be planned to ensure protection of people, property and wildlife.

The tree works contractor shall provide access routes and loading bay locations for approval by the main contractor. These shall take into account the retention of trees and following existing access tracks or hard surfaces to try and reduce tree removals.

The tree works contractor will have to submit a risk assessment and method statement for review by the Appointed Principal Contractor or Arboriculturist prior to commencing works on Site.

APPENDICES

Appendix A. Key & British Standard 5837:2012 Survey Table

A.1 Survey key

Tree No: Sequential reference number given to the tree or group of trees as shown on the tree survey drawings.

Species: This is the common name given to the tree.

Height (Ht.): tree height from the base of the tree to its full stem height, measured in metres (m). Measurements are taken to the nearest half metre.

Stem diameter (mm): measured in accordance with Figure A2 below. Measurements are rounded to the nearest 10mm in some cases.

Branch spread (m): measurement of crown spread to the four cardinal points; if the crown is balanced a single measurement is given. Crown spread plotted on the tree survey drawings. Measurements are taken to the nearest half metre.

1st significant branch and direction of growth (m): measurement of the height of the first significant branch above ground level, given in metres and direction of growth e. g. 2. 4-N

Canopy height (m): height of the canopy above ground level. Measurements are taken to the nearest half metre.

Life stage: The following abbreviations are used:

Y = Young trees <1/5 life expectancy.

SM = Semi-Mature trees 1/5 – 2/5 life expectancy.

EM = Early Mature trees 2/5 – 3/5 life expectancy.

M = Mature trees 3/5 – 4/5 life expectancy

OM= Over-Mature trees >4/5 life expectancy

VET = veteran tree

Vitality: Good, fair, poor or dead

Good – a tree with little or no obvious physiological defects; leaf density and colour are typical for the species, bud, flower and fruit production are good and there are no signs of dieback at any point throughout the crown.

Fair – a tree with moderate physiological defects; leaf density is less than typical for the species, leaf cover is chlorotic, bud, flower or fruit production are deficient, there are signs of minor dieback within the crown, there is a moderate degree of deadwood within the crown.

Poor – a tree with major or multiple physiological defects; evidence of extensive crown thinning, bud, flower or fruit production is poor or missing, there are signs of advanced dieback throughout the crown, there is extensive or major deadwood throughout the crown.

Dead – a tree that has died due to either old age, drought, disease, pest infestation, physical damage to the main stem or rooting system, or a combination of these factors.

General observations, particularly of structural and/or physiological condition: e. g. observations of any decay and physical defect.

Preliminary management recommendations: any identified preliminary management to rectify defects recorded in general observations. These may include the need for further detailed inspection, or works to address immediate hazard to life or property.

Estimated remaining contribution, in years:

<10

10+

20+

40+

Category grading: As per BS 5837:2012 chart in accordance with Figure A3 below.

A – Illustrated as light green (RGB code 000-255-000)

B – Illustrated as mid blue (RGB code 000-000-255)

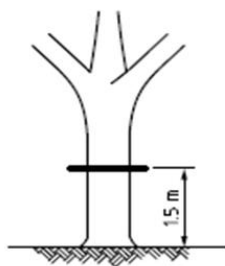
C – Illustrated as grey (RGB code 091-091-091)

U – Illustrated as dark red (RGB code 127-000-000)

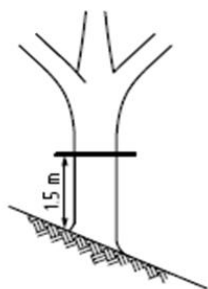
Root Protection Area (m): plotted around each of the trees on relevant drawings, illustrating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability. The protection of the roots and soil structure is treated as of paramount importance.

A.2 Measuring table

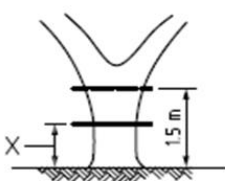
Measurement of tree stems dependant on tree form.



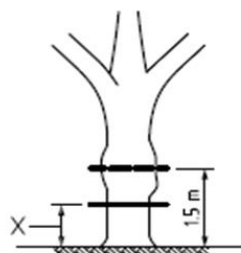
a) Stem diameter measured at 1.5 m above ground level



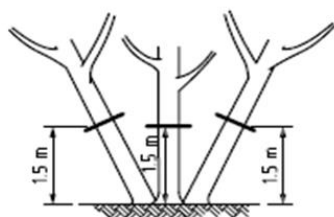
b) Measurement on sloping ground



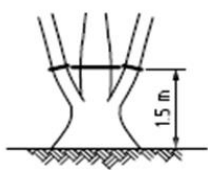
c) Trees with low branching measured at narrowest point below the fork



d) Measurement of stem with irregular swelling made at the narrowest point below the swelling



e) Measurement of a multi-stemmed tree



f) Measurement of a tree with more than one stem at 1.5 m above ground level

Key

X Height varies

A.3 BS 5837:2012 cascade chart

Cascade chart for tree quality assessment from BS 5837:2012

Table 1 Cascade chart for tree quality assessment			
Category and definition	Criteria (including subcategories where appropriate)		Identification on plan
Trees unsuitable for retention (see Note)			
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	- Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) - Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline - Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality <i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i>		See Table 2
Trees to be considered for retention			
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	1 Mainly arboricultural qualities Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	2 Mainly landscape qualities Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	3 Mainly cultural values, including conservation Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation		See Table 2
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories		See Table 2

Appendix B. Tree survey schedule

Tree ID	Species	Height (m)	Stem Diameter (mm)	Branch spread N (m)	Branch spread E (m)	Branch spread S (m)	Branch spread W (m)	First significant branch height (m)	Canopy height (m)	Life Stage	Vitality	General observations	Preliminary management recommendations	Estimated Remaining Contribution (Years)	Category Grading	RPA Radius (m)
G001	Common Alder	11	300 + 300	6	6	6	6	2	2	EM	Good	Multi-stemmed clump - apparently comprising two four-stemmed trees, now densely ivy-clad to mid-crown, limiting assessment; some stems leaning; mutual crown suppression; light crown-lifting above road; dimensions shown are indicative	Severance and removal of ivy recommended to enable fuller assessment and promote increased vitality	20+	C2	5.2
G002	A Group	8	300	3.5	3.5	3.5	3.5	0	0	M	Fair	Hawthorn hedge, recently unmanaged; native privet, ivy, brambles; frequent dieback and sub-50mm diameter deadwood; occasional collapsed stems; dimensions shown are indicative	Remove larger deadwood if adjacent to proposed works	10+	C2	3.6
T003	Field Maple	8	230	4	4	4	4	1.5	1.5	SM	Good	Young tree with good form; occasional bark-included unions	No works required at time of survey	10+	C2	2.8

Appendix C. Glossary of terms

Term	Description
Access Facilitation Pruning	One-off tree pruning operation, the nature and effects of which are without significant adverse impact on tree physiology or amenity value, which is directly necessary to provide access for operations on site.
Adaptive Growth	The process whereby wood formation is influenced both in quantity and in quality by the action of gravitational force and mechanical stresses on the cambial zone
Amenity Value	The environmental and landscape benefits of trees as opposed to their commercial value for timber
Ancient Woodland	Sites which have been wooded since at least 1600, as defined by English Nature and recognised as being of high nature conservation value, whether managed or not. They may be semi-natural or replanted.
Arboricultural Method Statement	Methodology for the implementation of any aspect of development that is within the root protection area, or has the potential to result in loss of or damage to a tree to be retained.
Arboriculture	The study and care of trees and other woody vegetation
Arboriculturist	A person who has, through relevant education, training and experience, gained expertise in the field of trees in relation to construction.
Cavity	An open wound, characterised by the presence of decay and resulting in a hollow
Co-dominant stems	Where a tree's main stem splits into two leaders, can also be called twin-stemmed.
Competent person	A person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached.
Construction	Site-based operations with the potential to affect existing trees.
Construction Exclusion Zone	The area based on the root protection area to which access is prohibited for the duration of a project.
Coppice	A traditional method of woodland management in which young tree stems are repeatedly cut down to near ground level. In subsequent growth years, many new shoots will emerge, and, after a number of years the coppiced tree, or stool, is ready to be harvested, and the cycle begins again
Crown clearance	This is the removal of all dead, dying and diseased branches; in addition branches that are cleared away from a specific hazard e. g. live railway line.
Crown lifting	The removal of lower branches to provide a desired amount of clearance above ground level. This can be achieved either by the complete removal of a branch or only parts of which extend below the desired height
Crown reduction	The overall reduction of both the height and spread of the crown.
Decay	Process of degradation of woody tissues by fungi and bacteria through decomposition of cellulose and lignin.

Deadwood	Deadwood is often present within the crown or on the stems of trees. In some instances it may be an indication of ill health; however, it may also indicate natural growth processes. If a target is present beneath the tree, and falling deadwood may cause injury or damage it should be removed; if no target is present the deadwood may be retained intact for conservation purposes (insects, fungi, birds etc.).
Epicormic growth	A secondary growth from dormant adventitious buds on the stem or main branches.
Failure	In connection with tree hazards, a partial or total fracture within woody tissue or loss of cohesion between roots and soil.
Hazard beam	A branch that has over-extended in which strong internal stresses may occur without the compensatory formation of extra wood (longitudinal splitting may occur in some cases).
Hung-up limb	Dead or fallen branch from within the crown or from another tree's crown that has failed and been caught up by, and resting on, branches of a tree
Included Bark Junction	Pattern of development at branch junctions where bark is turned inward rather than pushed out. Potential weakness due to a lack of a woody union.
Ivy Growth	Ivy growth may ascend into the tree's crown, increasing wind resistance, concealing potential defects and reducing the tree's photosynthetic capacity. Ivy growth is often acceptable in woodland areas as a conservation benefit.
Monolith	A large bulk of standing dead wood. Usually the trunk of the tree or the trunk with the base of the branch frame work. These should be retained for wildlife habitat when the risk is appropriate for the location.
Pollarding	This involves the removal of whole branches to leave only the main trunk. In species such as willows and poplars such significant pruning is acceptable with new branches developing from the pollard heads. Secondary pruning of the new wood can help form a new canopy to the tree several years after the initial pollard
Reaction Wood	Specialised secondary xylem, which develops in response to a lean or similar mechanical stress, attempting to restore the stem to the vertical.
Root Protection Area (RPA)	The 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 is treated as a priority.
Service	Any above or below ground structure or apparatus required for utility provision.
Stem	The principal above-ground structural component(s) of a tree that supports its branches.
Structure	A manufactured object, such as a building, carriageway, path, wall, service run, and built or excavated earthwork.
Structural Defect	Internal or external points of weakness, which reduce the stability of the tree
Sub-dominant stem	A branch within the crown that is not the dominant leader
Suppressed	Trees which are dominated by surrounding vegetation and whose crown development is restricted from above.

TPO	A Tree Preservation Order is an order made by a Local Planning Authority which in general makes it an offence to cut down, lop, top, uproot, wilfully damage or wilfully destroy a tree without first getting permission. Tree Preservation Orders are usually made to protect trees that make a significant contribution to the amenity of an area. They may particularly be made when it is felt that a tree may be under threat.
Tree Constraints Plan	Abbreviated to TCP. Plans showing specific tree constraints including Root Protection Areas and Crown spread.
Tree Protection Plan	Abbreviated to TPP. Scaled drawing, informed by descriptive text where necessary, based upon the finalised proposals, showing trees for retention and illustrating the tree and landscape protection measures.
Visual Tree Assessment	A non-invasive method of examining the health and structural condition of trees. Developed by Claus Mattheck and David Breloer 1994
Wound	Any injury, which induces a compartmentalisation response
Wound Wood	Wood with atypical anatomical features, formed in the vicinity of a wound and a term to describe the occluding tissues around a wound as opposed to the ambiguous term "callus. "

Table C-1 – Glossary Table

Appendix D. Tree protection plan

Drawing provided separately.



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