



Havant Gas Project, Harts Farm Way, Havant, Portsmouth
Arboricultural survey
10th Febuary 2026.

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1. Introduction

The initial survey was commissioned by EL (Havant) Ltd in February 2025. It is an arboricultural survey and impact assessment relating to the land adjacent to Harts Farm Way in Havant. To the immediate west of the proposed site is land owned by Havant Borough Council, upon which trees are growing. This report looks at the impacts that the proposal will have on these trees, and how these can be avoided and minimised.

Planning application APP/24/00237 with HBC for a Proposed gas fuelled capacity mechanism embedded generation plant to support the National Grid was approved in July 2024 and included the following condition:

Condition 3:

Prior to commencement of development on site, details of the tree protection measures for trees off site on the western boundary in accordance with British Standard 5837:2012 "Trees in relation to design, demolition and construction" shall be submitted to and agreed in writing by the Local Planning Authority. The approved scheme shall be implemented prior to commencement of development and thereafter retained in the approved position.

Reason: In the interest of tree protection and with due regard to policies CS16 and CS11 of the Havant Borough Council Local Plan (Core Strategy) 2011 and National Planning Policy. It is considered necessary for this to be a pre-commencement condition as these details need to be agreed prior to the construction of the development and thus go to the heart of the planning permission.

The previous version of this report was submitted to HBC and the condition was formally discharged in June 2025 based on the approved layout. The Applicant is now seeking to vary the approved layout so this report has been updated to reflect the new site layout and ensure Condition 3 can still be complied with.

This report details the findings of a tree survey undertaken according to *BS5837 (2012): Trees in Relation to Design, Demolition and Construction - Recommendations*. The purpose of the survey is to assess existing trees in relation to potential development in order to:

- Record their principal attributes (species, height, crown spread, stem diameter, etc.)
- Determine their quality and value in order to:

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- Identify their retention priorities
- Determine Root Protection Areas (RPAs) as detailed in the British Standard.

The survey indicates which trees will be impacted or in need of protection to retain safely and facilitates the mapping of the constraints which will be imposed by those trees identified for retention.

This report provides an arboricultural impact assessment (AIA) which is an assessment of the proposed development on the existing trees, and the impact of the existing trees on the proposed development.

2. Summary

- A reconfiguration of the site layout has been proposed which enables all trees to be retained. The moving of the switch room container within the site to the far north east corner of the site allows Group 9, a group of self-set sycamore, to be retained rather than removed, as per the approved site layout.
- The site is constrained by the existence of both an existing pressurised sewage pipe, and a high pressure gas main, which has dictated much of the site layout. The location of these are shown in section 13, the tree protection plan.
- The location of two most northerly generator containers will come close to, but outside of ,the RPA's of G8 and G9.
- The crown spreads of G8 and G9 will touch the above ground parts of these containers. This will be solved by access facilitation pruning, detailed in the AMS.
- The majority of the site lies to the east of the trees, the development of which can take place away from all parts of the trees with plenty of space and poses no impact on the trees. Protective fencing must be used during construction to protect retained trees from the majority of site, as shown on the tree protection plan.
- Mitigation planting has been proposed and an improved rooting condition area that will be created. This will contribute towards biodiversity gains, as detailed within the landscaping documents submitted with the proposal. The location of the mitigation planting is close to the existing gas main, and as such will need to be agreed with Southern Gas Networks prior to installation, in line with their guidance.
- The following parts of the proposal relate to the western boundary, and are within the RPA's of the trees:
 - Palisade security fencing.
 - The security column close to Tree 3.
 - The existing, and proposed surfacing within the RPA's and in areas across the site.

Each of these has been considered in the arboricultural impact assessment, tree protection plan and arboricultural method statement.

3. Limitations

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4. Site Visit and Survey Methodology

An initial site visit was undertaken on the 7th of February 2025.

This report was produced following a ground level survey only. No soil samples were taken, and this report does not consider any potential influence the trees may have on adjacent or new structures. Internal investigations to determine decay extent are limited to basic sounding and probing only. No invasive diagnostic tools were employed.

Only principal trees were recorded that may affect development i.e. those over 75mm diameter and/or with potential to influence site layout. All dimensions are measured as far as reasonably practicable. Survey methodology follows that prescribed in the British Standard, where applicable.

5. Site Description

This is a brownfield site surrounded by existing an industrial building to the East, site access via Hermitage Park to the north. Harts Farm way runs along the southern boundary. The land along the western edge is owned by Havant Borough Council and is home to a large poplar located on the southwestern corner, and a row of self -seeded mature and semi mature Norway maples. Some of these semi mature trees, described as 'Group9' in the schedule, are growing inside the boundary.

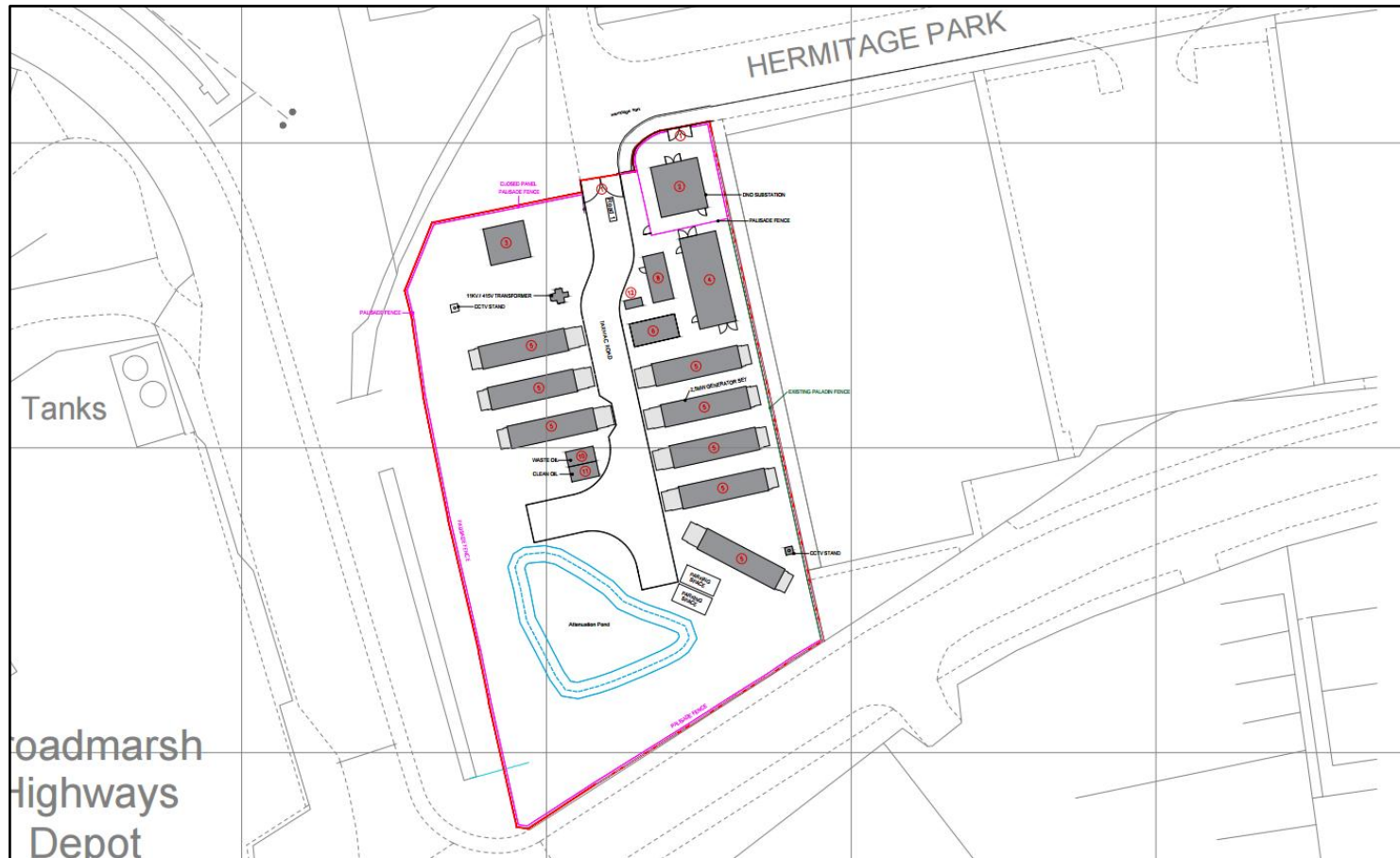


The site itself is overgrown with brambles and buddleia. The concrete and tarmac surface is in bad repair with some large holes and cracks.

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6. Proposal

The approved site layout comprises hardstanding surrounded by fencing on which containerised gas engines and associated infrastructure.



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7. Root Protection Areas and Constraints Mapping

The ground area, calculated in m², should be protected during construction to safeguard sufficient roots and resources for the sustained health and viability of any trees retained.

This area is found by multiplying the stem diameter of the tree concerned by a factor of twelve (or following the formulaic methodology for multi-stem trees within the British Standard). The RPA is a factor of the stem diameter with various other considerations used to determine the most likely extent of roots for an individual tree or group of trees. It is possible for a competent arboriculturist to offset that area where previous land use, development, or simply rooting conditions are likely to restrict root development.

Retained trees will result in constraints being placed on the land. The most important is the RPA. This is detailed in the Schedule as both an area and radial dimension for all trees, whether they are intended to be retained or not.

Protection for tree roots will be based upon the RPA for retained trees. This will be provided by suitable fencing prior to the start of work on site. It may include the use of temporary ground protection and/or special engineering solutions where construction is proposed near to retained trees. This is known as the Construction Exclusion Zone. No works or activities likely to affect the retained trees should be carried out in this zone without further arboricultural advice. This includes any excavation services, drainage, soakaways and hard landscaping, drives and parking areas.

8. Other Constraints

The above-ground area occupied by the crown of the tree, plus allowances for working space and, if appropriate, for future growth, can also impose constraints on site planning. The extent of this constraint is determined by considering the existing and future crown spread of the tree(s), bearing in mind that this may be modified by arboriculturally acceptable pruning. Further matters relating to the above-ground portions of the tree include shading, seasonal debris and perceived safety issues. Site planning must take into account these concerns and adequate separation given to the buildings to prevent future problems arising. Design strategies such as orientation, and room layout will help alleviate these issues.

9. BS5837 Tree grading

Trees on site have been graded according to Table 1 of the British Standard, and are described as follows:

Category U

In accordance with the advice of BS5837:2012, those trees in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.

Category C

In general, C grade trees are those of low quality with an estimated life expectancy of at least 10 years, or young trees with a stem diameter under 150mm. These are further categorized as “unremarkable trees of limited merit” or “trees present in groups or woodlands.... trees offering low or only temporary/transient landscape benefits” and with no cultural value.

Category B

Trees of moderate quality with an estimated remaining life expectancy of at least 20 years. Further categorized as “trees of impaired condition, significant but remediable defects.... unsuitable for retention beyond 40 years or lacking the special quality” of Category A trees; and/or “trees present in numbers, usually growing as groups ... such that they attract a higher collective rating than they might as individuals.”

Category A

Trees of high quality with an estimated remaining life expectancy of at least 40 years. “Particularly good examples of their species, especially if rare or unusual, essential components of groups or formal or semi-formal features” and “trees, groups or woodlands of particular visual importance” and with significant cultural values.

Clause 5.1.1 of the British Standard states: “The constraints imposed by trees, both above and below ground ... should inform the site layout design, although it is recognised that the competing needs of development mean that trees are only one factor requiring consideration.

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Certain trees are of such importance and sensitivity as to be major constraints on development or to justify its substantial modification. However, care should be taken to avoid misplaced tree retention; attempts to retain too many or unsuitable trees on a site can result in excessive pressure on the trees during demolition or construction work, or post-completion demands for their removal.”

10. Tree Schedule

Tree	Common and Scientific Name	Height (m)	Trunk Diameter at 1.5m above ground level	Crown Spread (m)				Height of Crown Clearance (m)	Age Class	Physiological Condition	Structural Condition	BS5837 Category	RPA area (m squared)	RPA Radius (metres)
				N	E	S	W							
1	Poplar <i>Populus alba</i>	Est 26	1200	12	12	12	12	2	Mature	Good	Good	A	652	652 14.4
2	Poplar <i>Populus alba</i>	Est 15	300	6	5	5	10	2	Semi mature	Poor. Ivy clad and suppressed by T1	Fair	C	41	3.6
3	Norway maple <i>Acer platanoides</i>	Est 18	360	5	5	5	5	1.8	Semi mature	Good – canopy partially suppressed by T4.	Good	B	59	4.3
4	Norway maple <i>Acer platanoides</i>	Est 18	600	7	7	7	7	3	Mature	Good	Good	B	163	7.2
5	Norway maple <i>Acer platanoides</i>	Est 18	320	7	7	7	7	2.4	Mature	Good	Good	B	46	3.8
6	Norway maple <i>Acer platanoides</i>	Est 18	520	9	9	9	9	2	Mature	Good	Good	B	122	6.2
7	Norway maple <i>Acer platanoides</i>	Est 18	520	9	9	9	9	3	Mature	Good	Good	B	122	6.2
Group 8	Norway maple <i>Acer platanoides</i>	Est 15-18	420, 400, 300, and 300	9	9	9	9	Average 4m	Semi mature and mature	Dense clump of Norway maples, some encroached with ivy.	Fair.	C	234	8.6
Group 9	Three Norway maples. <i>Acer platanoides</i>	Est 18	280, 280 and 280	8	8	8	8	3m	Semi mature and juvenile	Self-set trees growing inside the boundary fence.	Fair	C	106	5.8

11. Statutory Controls and Legal Considerations Relating to Arboriculture

Enquiries were made to Havant Borough Council planning department regarding the presence of TPO listed trees at this site. None of the trees on site are subject to any TPO listings. Here is a copy of the email reply:

From: HBCArboriculturalTeam<Treeofficer@havant.gov.uk>

Date: Monday, 23 September 2024 at 08:44

To: FalklandLittle<falklandlittle@hotmail.com>

Subject: RE: Harts Farm way, Havant, Portsmouth

Good morning,

Thank you for your email.

There are no TPO's within the site outlined in the attached.

The council owns the land on the other side of Harts Farm Way – the road itself is adopted by highway & the site to the West is also owned by Hampshire County Council - I don't think we would anticipate any damage to HBC trees. See below.

Many thanks,

Andy Winter

Development Infrastructure & Arboricultural Technical Officer | Place

Andrew.winter@havant.gov.uk | M: 07803 428 067

Havant Borough Council, Public Service Plaza, Havant, PO9 2AX

Under the Wildlife and Countryside Act and the Countryside and Rights of Way Act, active bird nests are protected and should not be disturbed. Bats and their roosts, whether occupied or not, are also protected. It is an offence to carry out any works that may harm nesting birds or cause them to desert their nests or disturb bats or their roosts. It is outside the scope of this report to consider these issues in any detail, and you are advised to carry out necessary investigations prior to carrying out any works

12. Arboricultural impact assessment

The effect of the proposed development on Trees 1,2 ,3 ,4, 5, 6,7 and group 8 and group 9 is very minimal as the development can be sited away from the RPAs. Protective fencing must be erected to protect all retained trees during development.

The two most northerly generator containers come slightly within the crown spreads of G8 and G9. Therefore, the lowest branches of the easterly sides of these trees will require access facilitation pruning. An arboricultural watching brief is required to ensure the minimum amount of the eastern side of the crowns of Group 8 is removed. This will take place at the same time as the access facilitation pruning for the palisade fencing.

The following parts of the proposal relate to the western boundary, and are within the RPA's of the trees:

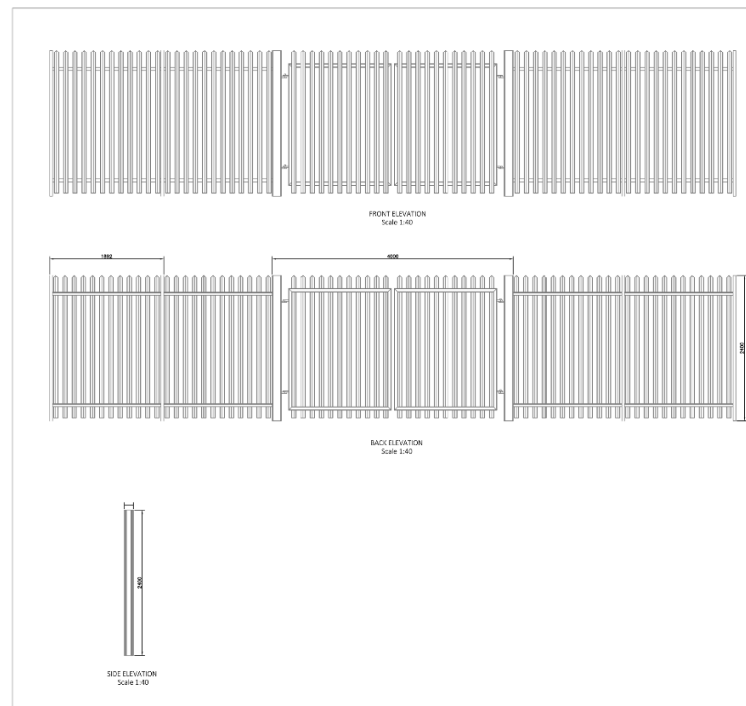
- Palisade security fencing.
- The security column close to T3.
- The proposed surfacing across the site.

Each of these elements will have a minimal and sustainable impact on the retained trees. The installation of each section is specified in the tree protection plan and arboricultural method statement

Tree protection measures must be employed to prevent the spread of construction-related activities into RPA's or above-ground parts of retained trees. This can be achieved by Heras fencing erected outside the RPAs in accordance with the fencing specification on page 20 of the *BS5837 (2012): Trees in Relation to Design, Demolition and Construction - Recommendations*.

Palisade security fencing

- This is within the RPA of all the retained trees.
- Access facilitation pruning is required for the installation of the 2.4m high fence panels along the boundary. An arboricultural consultant must be present, as specified in the AMS, to ensure that only the minimum/ necessary number of branches are removed to site the fencing.
- 4m interval post locations fall within the RPA of all retained trees, as marked on the tree protection plan. The first 60 cm of soil must be dug by hand with an arboricultural consultant present, as specified in the AMS. In this way, the post holes will result in a very minor, temporary and sustainable level of damage to the roots of all retained trees.



Surfacing

The proposed hardstanding and lorry turning area is a distance of 1.5m from the RPA of G8 at the closest point. The rest of the hardstanding, from the access gate down to the welfare cabin, is an average of 14m from the RPAs of the retained trees and therefore poses no impact. The existing surface is tarmac and fractured concrete over gravel and flint, as shown here.



Currently this covers the whole site and is within the RPA's of all the existing trees off site along the western boundary on land owned by Havant Borough Council.

The tree protection plan indicates the area where the surface can be removed, and enhanced conditions for the trees installed, in the form of pea gravel over the existing exposed soil.

The benefits of this are:

- This is outside of vehicle turning area.
- The old surface can be removed from outside of the RPA'S, as detailed in the AMS, and its removal will not impact the trees.
- The exposed soils below can be covered with a layer of pea gravel, which is inexpensive and will allow surface water to drain from the site.
- The gravel over existing soil area will provide an improved rooting zone for the trees, and a position on site to plant the new mitigation trees.
- The gravel surface provides positions for mitigation tree planting to take place, as well as planting space for the landscape and ecology developments.

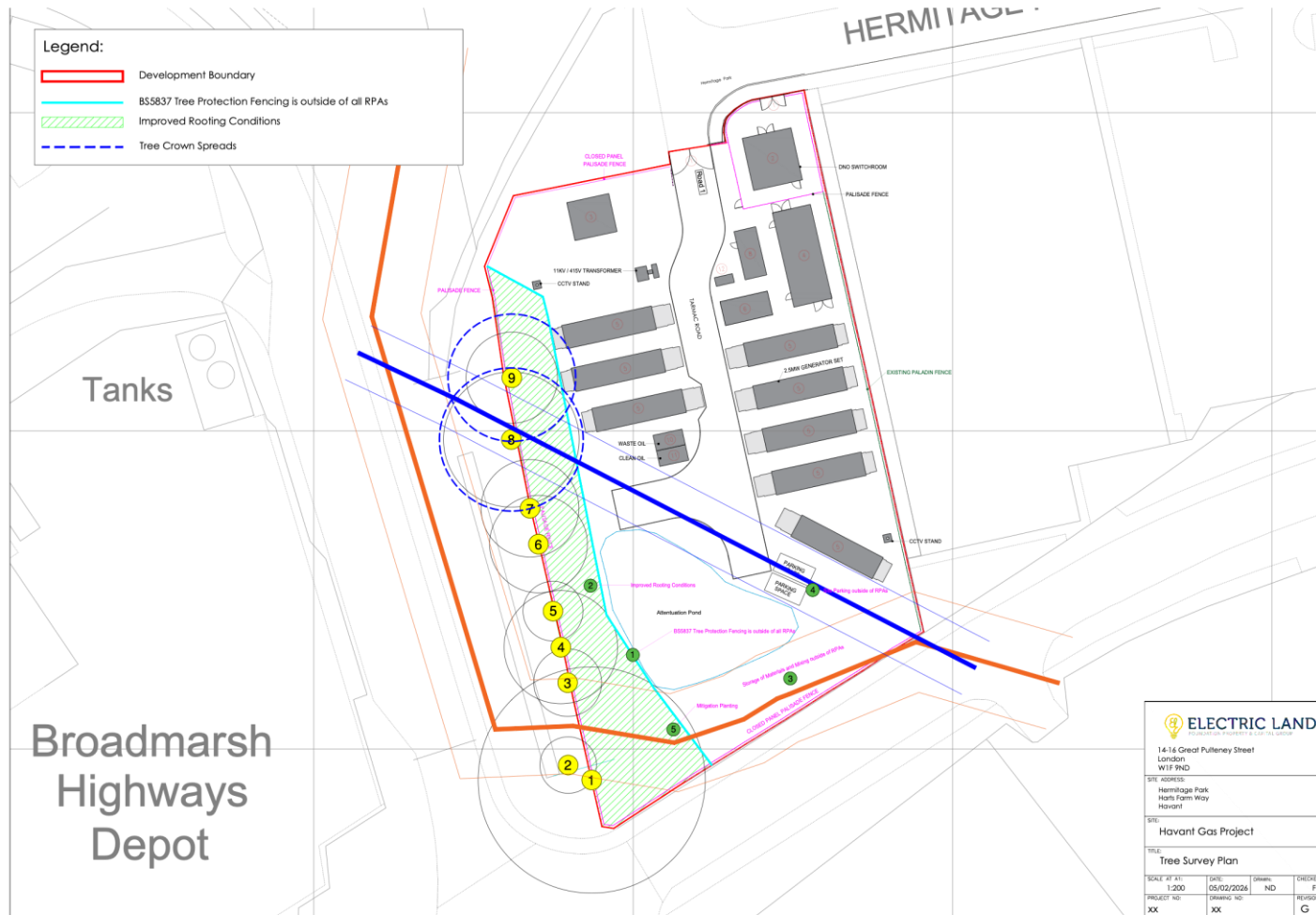
Security column



There is enough crown clearance for the security column to be erected in its specified position without the need for any pruning. Note- pruning may be required in the future to ensure the CCTV has visibility.

The foundation post of 1.2m depth falls within the RPA of T1, T3 and T4. The first 600 mm of soil must be dug by hand with an arboricultural consultant present, as specified in the AMS. This will result in a very minor, temporary and sustainable level of damage to the roots of T1, T3 and T4.

13. Tree protection plan



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14. Arboricultural Method Statement

Protective measures include:

- The erection of a protective barrier, prior to any work commencing.
- An arboricultural watching brief at specified stages during the works.
- The security column and fence post holes will be set into a non-permeable membrane to ensure that cement does not penetrate into the soil and damage the roots of any retained trees.
- Improved ground conditions (hatched green on the tree protection plan, and extended following site reconfiguration, for tree roots as part of the re-surfacing, using pea gravel in the RPA's of all retained trees.
- Mitigation tree planting .

Arboricultural monitoring.

This confirms that the arboricultural consultant will provide a certificate of compliance following each visit. The certificate will provide the following:

- Date
- Activity carried out (eg correct installation and positioning of protective fencing)
- Evidence – photographs.
- Confirmation of the requirement having been met
- Remedial – if a requirement has not been met, this will be followed up by arboricultural advice and another time-framed visit to ensure full compliance. Copy of the signed report to be forwarded to the Local Authority following each site visit. Where approved measures have not been fully complied with, all construction works shall stop until all measures have been re-implemented as approved and written confirmation of full compliance (provided by the appointed arboricultural consultant), has sent to the Local planning Authority, before works recommence. Confirmation of compliance must include clear photographic evidence.

Timings

The arboricultural consultant will make site visits:

- Pre-works /before any clearance
- During access facilitation pruning of Group 8 and 9, and those branches that need to be removed for the fence line.
- Following the installation of tree protection fencing.
- At 4-week intervals for the duration of all works on site to ensure full compliance with the approved tree protection and monitoring scheme. As well as booked visits, there will also be an ad hoc visit.

Arboricultural monitoring shall be undertaken from the start of any works on site and thereafter at maximum 4–5-week intervals for the duration of all approved works,

Monitoring shall include an initial site visit prior to the commencement of any ground or development/construction works, to confirm that all approved tree protection measures have been fully installed and thereafter to confirm they are being maintained fully in accordance with approved tree protection measures.

A signed copy of the appointed arboricultural consultant's site visit record shall be sent to the Local Authority following each site visit.

Note: Any damage to protected trees as a result of non-compliance may be subject to planning enforcement action and also separate legal action under the Tree Preservation Order Act.

The AMS is to be carried out in the order stated below:

- Prior to work, a Construction Exclusion Zone, in the form of protective fencing, as marked on the Tree Protection Plan (see page 20 of BS5837 and appendix 1)
- The removal of the existing surface concrete and tarmac can then take place, using machinery placed outside the RPA/ construction exclusion zone.
- Access facilitation pruning for the fence line and the minimal selective branch removals of G8 and G9.
- Once the fencing and security column are in place, the area marked out for gravel can be dressed.
- Mitigation planting can take place as specified.

Ground compaction and asphyxiation of roots- mitigation or elimination of this impact

- When the RPA has been located and protective fencing already exists following the agreed position, but agreed work must take place inside the RPA; the work must avoid any ground compaction and asphyxiation of roots.
- All work must take place on foot-excluding any use of vehicles and large machinery within the RPA.
- Open the fence by hand in the most logical place to minimise distance need to be traversed inside the RPA.
- By hand and on foot, extend fencing around the work area, before any ground protection is put down. This should be erected at the setback line, also known as the construction exclusion zone (CEZ).
- Ground protection. A geotextile membrane must be laid over the whole work area, and then covered by minimum of 1500mm of woodchip, barrowed and spread by hand.
- This first spread of woodchip should be not much bigger than a plyboard.
- An 18mm thick ply board must then be positioned on top of the woodchip. These will absorb the weight and resulting compaction from above.
- Secure the ply with pegs to prevent it becoming unstable, pinning the pegs in locations agreed by the supervising Arboricultural consultant.
- Once this first ply board is fixed, it can then be walked on and used to barrow in more woodchip, and then more secured ply in the same manner. This is to ensure that each section laid is utilised immediately as ground protection, importantly to ensure that the installation of ground protection measures themselves do not cause ground compaction.
- Work can take place once the ground protection is in, and it may include small plant machinery under 2 tons in weight, as the ground protection will be able to support this without causing compaction.
- Once the work is complete, the sequence must be reversed in the exact same order that it was put in, taking up the furthest boards and woodchip first, always working from boards and by hand.
- Finally, take down the temporary fencing, take away the geotextile membrane and finish by securing the RPA fencing back exactly where it was.
- Woodchip may be reused as soil ameliorant in the proposed gravel area.

Entry by contractors to a construction exclusion zone (CEZ)

- The entry by contractors into a CEZ must follow the format outlined above under the section 'ground compaction and asphyxiation of roots.
- This therefore means that the same method must be followed, allowing only for access on foot to remove fencing, erect new temporary fencing along the setback line, apply a geotextile membrane, and adding woodchip to a depth of 15cm, then board, section by section to facilitate non-compacting work.
- This process is then reversed sequentially, removing the furthest boards first, standing on the closer ones.

Fence post holes for the security column holes.

These holes are within the RPA's, that could potentially damage tree roots.

With an arboricultural consultant present, the first 60cm of ground must be dug by hand to ensure minimal damage to any roots present. Roots larger than 20mm diameter must be cut using sharp loppers. Once the hole has been dug, the roots must be kept moist by a hose and covered with wet sacking to prevent desiccation in the open air. The sacking must be kept moist.

A permanent, non-permeable membrane must line all holes to prevent any cement from soaking into the soil and root systems. Cement is toxic to roots.

Once the hole is completed, lined and the posts have been set, the backfill on the *outside* (between the membrane and the roots) must be filled with a mixture of graded topsoil and other media to the following ratio:

- 40% grit sand layer
- 45% topsoil
- 5% organic matter such as compost
- 2% carbon gold soil improver

This mixture is conducive to root growth and is the same mixture that will be used under the car parking substrate.

Once this is completed, the Construction Exclusion Zone fencing can be removed to allow the woodchip/mulch area to be completed.

Care must be taken that trucks do not drive onto the area to deposit the woodchip; it should be tipped at the edge of the area and then pushed into position manually and with wheelbarrows and rakes and compacted so that machinery moves only on the hardstanding and not on the ground either side of it.

Severance of roots for palisade fence posts and security column post- Mitigation and elimination of this impact.

- Preparation of the RPA must follow the above format before work can begin. We may therefore start from the point where the panels have been removed, the temporary fencing erected and the textile, woodchip and all the ply board is in place.
- Construction fence posts. These are fixed into minimally sized vertical holes, which are sheathed with hard plastic piping before postcrete is poured into them. The sheathing protects the soil and roots from the toxic concrete. The fence panels can then be fixed from post to post.
- Digging must all be by hand, as to minimise damage to the roots.
- Workers must work from the boards, and the boards can be used to spread the soil temporarily whilst the holes can be dug.
- The boards will be able to take the weight of the soil, and it is also as close as possible to the holes for back filling. This reduces effort and time spent in the RPA.
- Hand digging must be carried out to a depth of 600mm in order to locate and inspect roots. Roots smaller than 25mm thick can be cut with a hand saw.
- Importantly- any roots larger than 25mm thick must be not cut. The Arboricultural consultant must be told, and she/he will consult with the LPA. They will decide as to whether the location of the posthole can be moved to avoid the large root, and others.
- If larger machinery is needed to drill the holes, it must be located outside the RPA, with spreader plates for outriggers.
- Provide appropriate access facilitation if the machinery will encounter and damage branches above. If the branches are flexible, they must be tied back to protect them and untied once the work has finished. If they need to be pruned, then this permission must be organised and granted by the Arboricultural consultant prior to the work taking place. Completion of the works must involve the same, sequential reversal of the pre-work protection process as detailed above.

Use of cranes

- All crane use must be outside the RPA, accounting for the full extent of the crane.
- Use the smallest crane possible.
- Use tag lines to stop trusses hitting trees.
- Use the widest spreader plates possible in order that the cranes load is spread out as much as possible.
- Use 'set up zones' away from the RPA for each crane operation.

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Mixing of materials- elimination and mitigation of impact.

- These must be mixed as far away from the tree as possible, outside the RPA, as shown on the tree protection plan.
- The tree must not be downhill from mixing sites to ensure that run off does not seep into the RPA.
- Boards tarpaulins and impermeable wash down sheets should be used to prevent the soil from becoming saturated in chemicals or cement slurry Offsite mixing or bunded mixing areas are the most fool proof method.
- Be mindful that the mixing area may become planted with new trees in the future.
- Ensure that clean water and spill kits are nearby.

Storage of materials

- This must not happen within RPAs.
- Much like the mixing of materials, sand or cement, for example, should not be stored uphill from the RPA, as it may migrate onto it.
- Ground protection membranes could be used to stop the ground from becoming compacted from the storage of materials.
- Worth stating here- Topsoil can become anaerobic and stagnate if it is stored in a very big heap. Care should be used when using stockpiled topsoil with new planting and landscaping.

Other general and common impacts on trees are discussed here

- Cement dust, brick dust and other dust can be extensive when development occurs. This will have a direct impact on the trees ability to respire, photosynthesise and transpire. It's stomata and photosynthetic surface will be clogged by the dust.
- The mixing of materials such as cement and other construction substances such as paints, adhesives etc, is potentially harmful for trees.
- Spillages and seepage into the ground can kill roots and the area of contamination can remain for a long period of time, which may affect new planting. It is all too easy for a builder to pour away something into the soil, rather than in a proper washdown facility.
- Roots may also die back if they become asphyxiated due to tons of soil or aggregate being stored upon them. This can easily cause the existing body of roots, which thrive in the top 60 cm of soil, to become far too deep to be able to respire and function properly.
- Site fires cause leaf scorch and root scorch. Scorched leaves and branches area a direct loss of the tree's energy reserves, and the potential for dysfunction to set in, such as flaking bark. In some cases, fires may persist and burn root systems well after the fire has gone out on ground level. This will cause root systems to die back and eventually decay. There may be an ingress point for pathogens as a result. Fires also cause localised spots in the soil of increased fertility, resulting in nettle patches and other imbalances.

15. Mitigation

Work is being carried out which will result in the manageable, temporary encroachment onto the finer root systems of Trees 1, 2, 3, 4, 5, 6, 7, Group 8 and group 9. Mitigation must therefore take place. Please note, the location of mitigation planting is close to the Southern Gas Network high pressure gas pipe, and therefore must be approved and supervised by SNG. Dig safely guidance from SNG has been attached with this report.

The planting of three hawthorn (*Crataegus monogyna*) and two blackthorn (*Prunus spinosa*) within the gravel area, as a minimum. These should be sited in areas that receive full sunlight. Native trees such as these offer a wide biodiversity gain to the area, with blossom for pollinating insects and fruits for birds in the autumn. They also have brilliant autumn colour, and do not grow large enough to warrant severe pruning or shading concerns.

Proposed tree planting

'All tree-planting shall be carried out in full accordance with the approved scheme in the nearest planting season (1st October to 31st March inclusive) to the completion of the approved development, or as may be otherwise agreed in writing by the Local Planning Authority.

The quality of all approved landscape works shall be in accordance with British Standard 4428:1989 'Code Of practice For General Landscape Operations' or any subsequent revision. All trees included within the approved scheme shall be healthy, well-formed specimens with single leading shoots and shall be of a minimum quality compatible with British Standard 3936:1992 (Part 1)''

'Specifications For Trees & Shrubs' and British Standard 8545:2014 'Trees: from nursery to independence in the landscape - Recommendations' or any subsequent revisions. "

Specification for hawthorns and blackthorns are both bare-root half standards, planted in the dormant season (October- March). They will require staking with treated, cylindrical stakes and rubber ties with a spacer, as shown in the following photograph. These must be protected from rabbit, squirrel and deer damage by an 80 cm spiral tube on each tree. The trees will require regular watering and mulching for the first two years during the growing season.



Bare-rooted standard planting tree - Site preparation

It is important that bare root trees are planted during, ideally at the start or, dormant season, using the following method:

- Hammer a steel stanchion pin into the turf, where the tree is to be planted.
- Leave the pin in place for ten days. If it is rusty when removed, there is sufficient air present in the soil for root growth. If it's not rusty, the soil may be waterlogged, and additional drainage may be required.
- When the pin is in place, a 1m long string can be used as a radius, to describe a tree circle. Lift the turf within the circle. Do not heavily dig over the exposed soil, unless it is very compacted.

Planting

- On the day of planting, remove the bare root tree from its bag, holding the tree at the base of the stem, and ensuring the buds and twigs do not hit against anything.
- Place the root system in water for an hour.
- Place a board next to the tree circle to put the spoil onto.
- Remove the pin and fork open the soil centrally and locally where the tree will be.
- Allow the shape and structure of the bare root system of the tree itself describe how big the forked hole should be. The hole should have loosened sides around the edges, but not be massively larger than the root system. It may also be square in shape, which allows the roots to hit corners, and spread out, rather than circular, which can cause roots to girdle in heavier soils, as this acts almost like a container in shape.
- The depth of hole is also critical. The 'nursery line', the point of change between the roots and the bark should be ground level final planting depth.
- Water the hole prior to planting well if the soil is dry, allowing excess to drain away.
- Apply a sprinkle of bone meal into the forked planting hole. Powdered mycorrhiza may also be used and can be sprinkled over the bare roots.
- Sprinkle the topsoil spoil back over the roots, firming it back in layers with the heel of a boot, to prevent air gaps.
- Staking. For bare root trees this can be done just prior to planting, to prevent damage to the roots. Hammer a treated 60cm long 10cm round stake at an angle of 45degrees, 10cm from the centre of the planting pit, leaving only a short section protruding at a height of 40-60 cm. This will provide a low stake for a field grown 10-12cm diameter standard tree.
- Orientate the stake in the direction of the prevailing wind. This means that the wind will push the tree mostly *away* from the stake, and so prevent the stake rubbing on the bark.
- Hammer a rubber tree tie to the stake at a height of between 40-60cm for a 10-12cm standard tree. Apply the rubber 'block' between the stake and secure (not too tightly) around the tree.
- The low staking will allow the tree's crown to move, and this aids strong rooting.
- Mulch the tree circle and water well.

Aftercare

- Additional mulch periodically, to maintain a depth of 10 cm, will aid water retention and suppress weeds. Keep the base of the tree free from excessively deep mulch.
- Watering should take place every two weeks during the growing season for the first two or five years. Use a 'rose' on a hose to soften the water flow, and do not allow the tree to sit in a pool of water, if the soil is heavy and holds it. Approximately 20L of water fortnightly would suit a standard of this size.
- Sugar solution can be added periodically during the summer to watering can at a rate of 25g per Litre. This can be watered onto the roots and will aid rooting.
- Edge the tree circle with lawn edging shears to maintain the shape and keep the mower well back from the base of the tree.
- Formative pruning. The period of pruning may take place from 3-5 years after planting, once the tree is established, to remove dead, crossing or dysfunctional branches.
- Weed control must be carried out by hand, rather than using chemicals. The tree should only have a guard if rabbits are a problem, and so no guard would mean the tree is vulnerable from herbicide drift.
- Loosen or remove the strap if it gets tight. Tighten it if it gets too loose!
- Remove the stake after 3-4 years or if the tree feels windfirm.

Any trees which within a period of 5 years from the completion of all tree planting die, are removed, uprooted are significantly damaged, become diseased or malformed shall be replaced during the nearest planting season (1st October to 31st March inclusive) with others of the same size, species and quality as approved, unless the Local Planning Authority gives written consent to any variation.

Appendix 1– Protective barrier to BS5837:2012

Default specification for protective barrier

