

National Grid Cable Tunnel Replacement Project

Arboricultural Impact Assessment (AIA) Part 1

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Quality information

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1 Introduction

1.1 Background

- 1.1.1 AECOM has been instructed by National Grid (The Applicant) to carry out an Arboricultural Impact Assessment of the development proposals for a cable tunnel replacement at the predetermined area of land adjacent to existing electricity infrastructure at Tilbury and Gravesend, (hereafter referred to as 'the Site' and 'Proposed Development') in support of a planning application. This report identifies the likely direct and indirect impacts of the Proposed Development along with suitable mitigation measures, as appropriate. The Tree Protection Plan (included within Appendix D) identifies trees to be removed and how retained trees are to be successfully protected.

1.2 Trees and the Planning Process

- 1.2.1 The National Planning Policy Framework (NPPF) (Ref 4) seeks to ensure that new development is sustainable and underlines the importance of Green Infrastructure, of which trees form an integral part. This encompasses a recognition of the importance of trees in relation to the management of air, soil and water quality along with other associated ecosystem services and climate change adaption. The NPPF also seeks to achieve the protection and enhancement of landscapes and a net gain in biodiversity. Finally, it specifically identifies veteran and ancient trees and woodland as a highly valuable and irreplaceable habitat. The NPPF defines an ancient or veteran tree as:
- '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'.*
- 1.2.2 Local Planning Authorities (LPA) in the UK have a statutory duty to consider both the protection and planting of trees when considering planning applications. The potential impact of development on all trees (including those not protected by a Tree Preservation Order or other statutory designation) is therefore a material consideration.
- 1.2.3 'BS5837:2012 Trees in relation to design demolition and construction – Recommendations (BS5837:2012)' (Ref 1) provides a framework which sets out how trees should be considered in this context and also explicitly applies to development where planning consent is not required.
- 1.2.4 BS5837:2012 (Ref 1) recommends that a tree survey is undertaken to identify the quality and benefits of trees and the spatial constraints associated with them. This is then used to produce a Tree Constraints Plan showing the above and below ground constraints associated with trees. This drawing is used to inform the design process and to allow the retention of good quality trees where appropriate.
- 1.2.5 An Arboricultural Impact Assessment is then developed to identify the likely direct and indirect impacts of the Proposed Development, and a Tree Protection Plan is subsequently prepared to identify trees to be removed or retained and to illustrate how retained trees are to be protected. An Arboricultural Method Statement is often required as a condition of planning consent to detail how sensitive operations are to be achieved in proximity to retained trees. These elements are the minimum normally required for a planning application and are intended to ensure both a sustainable and harmonious relationship between trees and new development.

Local Policy Context

- 1.2.6 The Site is situated within the operating boundaries of Thurrock Council (to the north of the River Thames), and Gravesham Borough Council (to the south of the river).
- 1.2.7 Thurrock Council's current development plan comprises of a Core Strategy Local Plan¹ (adopted December 2011, updated January 2015) and a number of automatically saved policies from the expired Borough Local Plan². They have also published a Design Strategy SPD³, which is not part of the development plan, but still holds material weight in the planning process. Below are excerpts from these documents with relevance to trees:

Core Strategy Local Plan-

Policy PMD2 Design and Layout:

"All development proposals must satisfy the following criteria:

viii. Landscape – Features contributing to the natural landscape in the Borough, such as woods, hedges, specimen trees, unimproved grassland, ponds and marshes, will be protected and where appropriate enhanced to maintain their landscape and wildlife value. Provision and enhancement of landscape features will also be required to contribute to multiple uses and/or eco-system services, including amenity, recreation, flood alleviation and Sustainable Urban Drainage Systems."

Policy CSTP24 Heritage Assets and the Historic Environment:

vi. Ensure that Thurrock's historic landscapes, and the contribution made to them by ancient woodland, hedgerows and trees, are appropriately considered in all development proposals."

Borough Local Plan- Policy LN4 Establishment of Landscape Protection Belts:

"In order to reduce the impact of hard land uses, the Council will expect Landscape Protection Belts to be provided between major changes of land use, along major road and rail access routes and the River Thames, and between any sensitive ecological/landscape area and an adjoining land use. Detailed criteria are set out in the Council's Landscape Design Guidelines, published as supplementary planning guidance."

Policy LN5 Planting Within Landscape Protection Belts:

"Wherever possible existing vegetation should be retained within Landscape Protection Belts established under Policy LN4. New planting should consist essentially of indigenous trees and shrubs with more ornamental species permitted in the vicinity of residential developments where considered appropriate."

Policy LN6 Tree Preservation Orders:

"The Council will serve tree preservation orders, where appropriate, to preserve important trees, groups of trees, hedgerow trees and woodlands."

Design Strategy SPD-

"Thurrock Council will expect development proposals to: minimise the impact to the borough's biodiversity and habitats and provide net gains where possible."

¹ https://www.thurrock.gov.uk/sites/default/files/assets/documents/core_strategy_adopted_2011_amended_2015.pdf

² https://www.thurrock.gov.uk/sites/default/files/assets/documents/local_plan_complete.pdf

³ <https://www.thurrock.gov.uk/sites/default/files/assets/documents/designstrategy-planning-201703-v01.pdf>

- 1.2.8 Gravesham Borough Council's current development plan comprises of their Local Plan Core Strategy⁴ (adopted September 2014) and also a number of saved policies from their Local Plan First Review⁵ (Adopted November 1994). Below are excerpts from these documents with relevance to trees:

Local Plan Core Strategy- Policy CS12: Green Infrastructure:

"5.7.22 A multifunctional linked network of green spaces, footpaths, cycle routes and wildlife stepping stones and corridors will be created, protected, enhanced and maintained. The network will improve access within the urban area, from the urban area to the rural area and along the River Thames. The key parts of the network are identified on Figure 19: Strategic Green Infrastructure Network.

5.7.23 Sites designated for their biodiversity value will be protected, with the highest level of protection given to internationally designated Special Protection Areas, Special Areas of Conservation and Ramsar sites, followed by nationally designated Sites of Special Scientific Interest, followed by Local Wildlife Sites and then by other areas of more local importance for biodiversity.

5.7.24 There will be no net loss of biodiversity in the Borough, and opportunities to enhance, restore, re-create and maintain habitats will be sought, in particular within the Biodiversity Opportunity Areas shown on the Strategic Green Infrastructure Network map and within new development.

5.7.25 Where a negative impact on protected or priority habitats/species cannot be avoided on development sites and where the importance of the development is considered to outweigh the biodiversity impact, compensatory provision will be required either elsewhere on the site or off-site, including measures for ongoing maintenance.

5.7.26 The overall landscape character and valued landscapes will be conserved, restored and enhanced. The greatest weight will be given to the conservation and enhancement of the landscape and natural beauty of the Kent Downs Area of Outstanding Natural Beauty and its setting. Proposals will take account of the Kent Downs Area of Outstanding Natural Beauty Management Plan, the Gravesham Landscape Character Assessment, and the Cluster Studies where relevant."

Local Plan First Review- Policy CC5:

"(i) In considering proposals for development or for tree felling in the countryside existing trees and woodlands will wherever practicable be conserved when they contribute significantly to the wildlife, the landscape or the appearance of a site or its locality.

(ii) The County Council will plant trees or grant aid tree planting in the countryside, where this will significantly improve the landscape, with priority given to areas seriously affected by Dutch Elm Disease.

(iii) Tree Preservation Orders will be made to protect trees and woodlands as necessary if their loss would seriously impair wildlife or the landscape."

⁴ <https://drive.google.com/file/d/1bJTgQLmhbzjqZFibI-5WFb2tbvixXpLk/view?pli=1>

⁵ <https://selfservice.gravesham.gov.uk:1443/webdocs/Environment%20and%20Planning/LPFR-1994/LPFR-Saved-and-Deleted-Policies-Version-Sept-2014.pdf>

1.3 Methodology

- 1.3.1 The tree survey has been based on Ordnance Survey (OS) base map information and the topographical survey plan provided by the Applicant.
- 1.3.2 A number of trees were not included on the topographical survey plan and have been plotted indicatively with reference to site features and publicly available aerial photography. Such trees have been marked with an “*” on the Tree Survey Schedule included as Appendix B. As such, all positions for these trees must be considered to be indicative only and the relative distances of features must be measured out on the Site as required.
- 1.3.3 The survey was otherwise conducted in accordance with the requirements of *BS5837:2012* (Ref 1).
- 1.3.4 The initial fieldwork was undertaken on 16th, 25th and 26th October 2023 at both the Tilbury and Gravesend sites, during which dimensional data and observational information were collected. A diameter tape measure was used to measure stem diameters where feasible.
- 1.3.5 The fieldwork informing this report has comprised a preliminary, non-intrusive, visual survey undertaken from ground level with the specific intention of evaluating the quality and benefits of trees on the Site.
- 1.3.6 Where further inspection is deemed appropriate to ascertain the condition of the tree or other arboreal features, this has been identified within the preliminary management recommendations. Average dimensions or dimensional ranges have occasionally been used, where appropriate, to best describe features.
- 1.3.7 The Root Protection Area (RPA) is the notional extent of what is considered to be the key rooting area for tree health and function. This is generally depicted as a circle but can be amended to a polygon with an equivalent area in accordance with Section 4.6.2 of *BS5837:2012* (Ref 1) where the RPA is likely to have developed asymmetrically. The RPA of all surveyed trees is depicted as a circle and no RPAs have been amended, except for T139 which has been identified as veteran. In this case, the stem diameter is shown as crown spread plus an additional five metres has been used to determine the RPA.
- 1.3.8 A Tree Constraints Plan showing the position of trees and the spatial constraints associated with them is included as Appendix A of this report, which corresponds with the Tree Survey Schedule presented in Appendix B.
- 1.3.9 The tree categorisation process recommended by *BS5837:2012* (Ref 1) is summarised in the table below and corresponds with the tree canopy outline shown on the Tree Constraints Plan (Appendix A) and the information in the Tree Survey Schedule (Appendix B). It should be noted that each individual tree or tree group has been given an alpha-numeric code such as T1, or G2 as presented in the labels on the Tree Constraints Plan (Appendix) and the Tree Survey Schedule (Appendix B) and this is how trees or tree groups are referred to throughout this report.

Table 1: BS5837:2012 Tree Categorisation process

Category	Definition
A	High quality, minimum of 40+ years remaining contribution
B	Moderate quality, minimum of 20+ years remaining contribution
C	Low quality, minimum of 10+ years remaining contribution
U	Unsuitable for retention, <10 years remaining contribution
1	Arboricultural value
2	Landscape value
3	Conservation or cultural value

2 General Arboricultural Principles

2.1 General Principles

- 2.1.1 Trees are dynamic living organisms which provide essential benefits to society and the wider environment. Any Proposed Development with the potential to impact on trees must take into consideration the value of trees on the Site; the impact of any proposed activity along with any potential future conflicts on the Site. Suitable measures to safeguard retained trees or mitigate the loss of trees (to be removed) will need to be fully considered and may be subject to a condition of planning consent.
- 2.1.2 Tree branches and roots frequently grow across site boundaries and off-site trees can pose a significant constraint and should be carefully considered when assessing the developable space within a site.

2.2 Below Ground Constraints

- 2.2.1 Below ground tree roots and the soil environment in which they grow need to be protected if the tree is to be retained. Trees grow in association with fungi and other soil organisms which are of key importance to tree health. Roots are essential for anchorage, the uptake of water and nutrients, and the storage of energy (carbohydrates) for the future growth and function of the tree.
- 2.2.2 Roots can be damaged by physical severance or wounding (e.g. following excavation of the soil) which can lead to the development of decay and a decline in vitality and/or instability. Raising the soil level can bury tree roots at a depth where suitable conditions for growth are less available. Toxic materials discharged into the soil (such as cement-based aggregates, fuel and chemicals) can lead to root death and dysfunction. Soils can be compacted to levels inhospitable to tree growth with even a single pass of machinery, regular pedestrian traffic or the storage of plant and materials. Relieving compaction can be problematic and may require costly remedial works. Changes in drainage/water levels can also have significant long-term impacts for tree health.
- 2.2.3 The effects of these incursions may take many years to manifest, with a resulting decline in amenity value and potentially the death or failure of the tree. It should be noted that older trees are particularly sensitive to damage and changes in conditions.
- 2.2.4 The Root Protection Area (RPA) is a notional area considered to be the minimum zone that must be protected to avoid any adverse impacts on retained trees. This area is deemed to be particularly important for tree stability, growth, function and health. However, roots may extend far greater distances, with the distribution of the root system relating directly to the availability of suitable conditions for growth (namely oxygen, water and nutrients). It is generally accepted that tree roots are predominantly located in the upper 1000mm of soil; however, roots may develop at deeper levels where conditions allow.
- 2.2.5 RPAs are calculated as per BS5837: 2012 Annexe C, D and Section 4.6 in the BS 5837:2012 Document.
- 2.2.6 The RPA of the existing tree stock is an important material consideration when considering site constraints and planning development activities. The RPA of significant trees on the Site are shown on the Tree Constraints Plan (Appendix A).
- 2.2.7 The default position must be that all development, including any associated services will occur outside the RPAs of retained trees. Where this is unavoidable, it may be appropriate to use special measures to install structures, services or surfacing within RPAs which allow the protection of roots and soil structure which are essential for tree growth and keep any incursion to a minimum.

- 2.2.8 Further steps to improve or increase the useable rooting area available to the tree may also be required.

2.3 Soils

- 2.3.1 On shrinkable clay soil, tree growth can lead to the differential movement of structures as moisture is removed from the soil during the growing season. Soils must be carefully assessed, and any foundations must be installed following the recommendations of National House Building Council (NHBC) Standards Chapter 4.2: *Building Near Trees (2023)* to avoid potential future damage. Where trees which predate existing structures are to be removed, this can result in heave as the soils are re-wet.
- 2.3.2 The advice of a suitably qualified engineer must be obtained to inform any potential issue of heave. Specific advice in relation to this issue is beyond the scope of this report.

2.4 Above Ground Constraints

- 2.4.1 Tree stems and branches can restrict available space on a site. Damage or wounding (including excessive pruning) can significantly reduce the amenity contribution of the tree and may lead to the development of dysfunction and decay, with significant long-term implications for tree health. The future impact of existing trees should be carefully considered, including individual species characteristics (such as potential future size, fruit fall, shade etc.) and how the tree will interact with any proposed development and future land use. Annual tree growth can lead to direct damage if stems/branches (or roots) come into physical contact with structures and this must also be taken into consideration.

2.5 Trees and Risk in the Context of Development

- 2.5.1 Tree owners/managers have a legal duty to prevent foreseeable harm. It is generally accepted that this duty can be fulfilled by undertaking proactive inspections of significant trees to identify obvious defects and by taking appropriate remedial action or gaining further advice as appropriate.
- 2.5.2 AECOM can provide surveys and advice in relation to tree risk management if required. Further guidance is available from the National Tree Safety Group⁶.
- 2.5.3 The tree survey carried out as the basis of this report is primarily for planning purposes, focusing on the quality and benefits of the trees, and is not specifically designed to assess the safety of trees on the Site. However, when obvious issues have been identified recommendations have been included in the Tree Survey Schedule.
- 2.5.4 The Construction (Design and Management) Regulations (2015) (Ref 10) states that developers and contractors have responsibilities for health and safety as a result of their actions. Should trees be left in an unstable or hazardous condition the Health and Safety Executive (HSE) could seek to prosecute those responsible along with the potential for further Civil claims for damages.

2.6 Trees and Wildlife

- 2.6.1 Full consideration must be given to the presence of species protected under the Wildlife and Countryside Act (1981 - as amended), the Countryside Rights of Way Act (2000) and the Conservation of Habitats and Species Regulations (2017), in particular the presence of bats and nesting birds. It is recommended that wherever possible, significant tree/hedge works take place outside of the typical bird nesting season of March to September. The advice of a suitably qualified Ecologist is recommended in relation to any potential impacts on protected species.

⁶ National Tree Safety Group (NTSG), 2011. Common sense risk management of trees. Forestry Commission.

2.7 Tree Works

- 2.7.1 Any tree surgery recommendations contained within this report are to be undertaken in accordance with BS3998: 2010 Tree work – Recommendations (BS3998:2010 (Ref 2)) by suitably qualified and insured contractors. Significant pruning works are best undertaken when trees are dormant or outside periods of high functional activity to reduce the overall impact on energy available to the tree for growth and processes. In general, the optimum period for works is between November to February and July to August (subject to the presence of protected species) when the tree is less active and better placed to respond to wounding and a reduction in leaf area.

3 Field Work Observations

3.1 The Site

- 3.1.1 The Site boundary is shown on the Tree Constraints Plan included within Appendix A of this report.
- 3.1.2 The Site is located on National Grid land at the existing Tilbury substation, to the north of the River Thames, and Eastcourt Marshes substation to the south of the River Thames. There is a cable tunnel connecting the two sites, which crosses the river.
- 3.1.3 The Tilbury section of the Site is comprised mostly of areas of hard standing which are either disused or used as car stores, and areas which are dominated by dense bramble (*Rubus fruticosus*) and rose (*Rosa sp.*). There is also a sewage treatment plant to the west. The linear section of the Site to the east is an informal track that transects open grassland and a largely inaccessible area of quick mud. Loverose Way forms the linear section of the Site to the west.
- 3.1.4 The Gravesend section of the Site comprises mostly of scrubland, with a rifle range to the east, and an industrial estate to the west. The linear section of the Site to the west comprises of a road and footpath, parallel to the Thames and Medway Canal.

3.2 The Trees

- 3.2.1 There were 253 tree features identified within the survey, including 149 individual trees, 90 tree groups and 14 hedgerow features.
- 3.2.2 The trees on the Site are predominantly young to semi-mature and in good condition. The most frequent species across both sections of the Site were hawthorn (*Crataegus monogyna*), with Russian olive (*Elaeagnus angustifolia*) frequent in the Tilbury (northern) section.
- 3.2.3 Other species present include ash (*Fraxinus excelsior*), birch (*Betula sp.*), butterfly bush (*Buddleja davidii*), cherry plum (*Prunus cerasifera*), crack willow (*Salix fragilis*), elder (*Sambucus nigra*), goat willow (*Salix caprea*), Leyland cypress (*Cupressus x leylandii*), Lombardy poplar (*Populus nigra 'Italica'*), London plane (*Platanus x acerifolia*), white poplar (*Populus alba*), and wild cherry (*Prunus avium*).
- 3.2.4 The most significant tree included within the survey was T139 as shown on sheet 11 of the Tree Protection Plan (Appendix D), which was identified as veteran due to the presence of a number of veteran features including extensive stem decay, cavities and crown dieback.
- 3.2.5 Other significant trees included within the survey are the moderate quality (Category B) trees adjacent to the road parallel to the Thames and Medway Canal and Loverose Way, which collectively provide amenity and interest within the landscape.
- 3.2.6 Site photography can be found at Appendix C located to the rear of this report.

3.3 Statutory and Non-Statutory Designations

Statutory Designations

- 3.3.1 AECOM checked the Thurrock Council's website⁷, and also contacted Gravesham Borough Council via email on the 11th of October 2023 (with a response received on 12th October 2023) confirming there were no Tree Preservation Orders (TPO), or Conservation Area designations identified which could affect trees within or immediately adjacent to the Site.
- 3.3.2 AECOM checked Magic Map⁸ on 12th October 2023 for the presence of any statutory designations relating to trees such as Sites of Special Scientific Interest (SSSI), and the South Thames Estuary and Marshes SSSI was found to be adjacent to the Eastcourt Marshes Substation (south section of the Site), across the Thames and Medway Canal to the south, and is approximately 200m beyond the eastern boundary.
- 3.3.3 The Hedgerow Regulations (1997) protect agricultural or countryside hedgerows which meet the requirements of an 'important hedgerow'. These include a minimum length of 20m (or meets another hedge at each end) and a minimum age of at least 30 years. A wide range of other ecological and archaeological/heritage features can constitute an important hedgerow and further advice from a qualified ecologist is recommended in advance of any planned works which could impact established hedgerows on or bordering agricultural or countryside land. Prior to the removal or destruction of a protected hedgerow an application must be made to the Local Planning Authority. Full planning consent is an exemption to this requirement.
- 3.3.4 A felling licence may be required by the Forestry Commission to fell more than 5m³ in any calendar quarter (subject to relevant exceptions including trees in gardens, designated public open spaces or churchyards).
- 3.3.5 Full planning consent is an exemption from the need to apply for consent for works to trees protected by a Tree Preservation Order, the need to give notice of the intention to undertake works within a Conservation Area and the need to apply for a Felling Licence with the Forestry Commission (to fell more than 5m³ per calendar quarter). Prior to any tree works the status of trees to be removed or pruned must be verified with the LPA and the Forestry Commission as appropriate.

Non-Statutory Designations

- 3.3.6 Following a review of Magic Map for the presence of non-statutory designations such as ancient semi natural woodland, replanted ancient woodland and Priority Habitat Inventory designations, none were found to be on or adjacent to the Site.
- 3.3.7 AECOM also checked the Woodland Trust Ancient Tree Inventory⁹ for the presence of notable, veteran and ancient trees, and none were recorded on or adjacent to the Site.
- 3.3.8 However, the tree survey identified T139 as veteran. Refer to Appendix D, Sheet 11 for location. Veteran status is determined for trees that are at least mature for the species and feature extensive decayed or deadwood habitat. Veteran trees are considered to be irreplaceable habitat features which are afforded a very high priority in the planning process. Damage or loss of veteran and ancient trees should not be permitted unless there are '*wholly exceptional circumstances*' and '*a suitable compensation strategy exists*' in accordance with the NPPF (2023) (Ref 4). The RPA of this tree on the TCP has been extended to a radius equivalent to 5m from the edge of its canopy as per standing advice from the Forestry Commission and Natural England (2022).

⁷ <https://thurrock.maps.arcgis.com/apps/webappviewer/index.html?id=a20e2e4db9834b1f9066c3f0c7ac5869>

⁸ <https://magic.defra.gov.uk/MagicMap.aspx>

⁹ <https://ati.woodlandtrust.org.uk/tree-search>

4 The Proposed Development

- 4.1.1 The Proposed Development is detailed on the Tree Protection Plan included as Appendix D and includes the replacement of the existing Thames Cable Tunnel between Tilbury and Gravesham. The new cable tunnel will be 2.2km in length and will be met at either end by headhouses and supporting infrastructure, including two terminal pylons, to connect the new overhead cables to the existing electricity network.
- 4.1.2 The Proposed Development also includes the dismantling of a number of existing pylons, and the decommissioning of existing overhead cable routes.
- 4.1.3 Adjacent land will be utilised temporarily by the Proposed Development for compound areas, storage, and transport, which will largely utilise existing areas of hard standing on the Tilbury side. Some of the access road require minor alterations to facilitate the delivery and removal of the Tunnel Boring Machine.

5 Arboricultural Impact Assessment

5.1 Purpose

- 5.1.1 This impact assessment sets out the likely principal direct and indirect impacts of the Proposed Development on the trees on or immediately adjacent to the Site and suitable mitigation measures to allow for the successful retention of significant trees or to compensate for trees to be removed, where appropriate.
- 5.1.2 A brief summary of trees to be removed, tree works and incursions related to the Proposed Development are detailed within the table below.

Table 2: Summary of Removals, Incursions and Pruning to Facilitate the Proposed Development

Impact	Category A	Category B	Category C	Category U
Tree features to be removed to facilitate the Proposed Development	0	T40, T62	G33 (part), G60 (part), G68, G73 (part), G74 (part), G75, G76, G77, G78 (part), T80, G81, T82, G83, G84, T86, G87, G89, G91, G95 (part), G108 (part), T134, T140, G142, G143, H144, T145, T146, T147, T149, T150, T151, T152, T155, G158, H160, G163 (part) H170, T192, T199, T200, H223 (part), T232, T242, T243, T244 and T247	T243
Total	0	2 individual trees	21 individual trees, 8 part tree groups, 13 tree groups, 1 part hedge and 3 hedges.	1 individual trees
Tree features which may require some incursion into their construction exclusion zone to allow the Proposed Development.	0	0	0	0
Total	0	0	0	0
Tree features to be pruned to facilitate the Proposed Development	0	T26, G153 and G169	T28	0
Total	0	1 individual tree and 2 tree groups	1 individual tree	0

5.2 Trees to be Removed

- 5.2.1 The Proposed Development requires the removal or part removal of 49 tree features (24 individual trees, eight part tree groups, 13 tree groups, one part hedgerow and three hedgerows). Of the tree features to be removed, two individual trees are classed as moderate quality (Category B), 21 individual trees, eight part tree groups, 13 tree groups, one part hedge and three hedges classified as low quality (Category C) and the remaining one individual tree is classified as very low quality (Category U).
- 5.2.2 This Category U tree is arguably not suitable for long term retention and its removal is justified regardless of the Proposed Development.
- 5.2.3 All of the trees to be removed are within the red line application boundary.
- 5.2.4 Tree removals are required due to a direct conflict with the Proposed Development, to avoid inappropriate tree retention close to new structures where onerous ongoing tree management would be necessary or to achieve the landscaping objectives for the Site.
- 5.2.5 A number of the trees to be removed are within the footprint of the sealing end compounds, proposed areas of hard surfacing or within areas required for construction activities (such as storage of equipment and resources, transport) and cannot be worked around. A buffer zone of 1.5m has been allowed outside of the footprint of such areas as reasonable clearance for construction activities.
- 5.2.6 A number of the low quality (Category C) tree features have been identified for removal based on a worst case scenario due to being adjacent to pylons and overhead cable routes that are to be decommissioned and/or erected. For these trees, a 4m working zone (from the outer most cable) has been allowed either side of existing and proposed cable routes as reasonable clearance for construction activities and access. Where feasible, it could be possible to retain some of these trees where decommissioned cables can be carefully lowered and winched out. Any retained trees damaged during this process would then be assessed by an arboriculturist to determine the requirement for any safety works.
- 5.2.7 The Proposed Development requires areas of temporary hard surfacing to widen access roads and Improve site access. This will require the removal or part removal of G158, G163 and H223 and this is shown on the Tree Protection Plan (Appendix D).
- 5.2.8 Tree removals will be mitigated with a high-quality scheme of new tree planting and associated landscaping works as detailed in the Outline Landscape Masterplans (Appendix A of the Outline Landscape and Ecological Management Plan) by AECOM which will represent an opportunity to enhance the quality, benefits and resilience of trees on the Site.
- 5.2.9 All of the remaining recorded trees can be retained and protected.

5.3 Tree Works

- 5.3.1 Tree removals and tree pruning works to facilitate the Proposed Development are detailed in the Tree Survey Schedule included as Appendix B.
- 5.3.2 The Proposed Development utilises Loverose Way in Tilbury and the road adjacent to the Thames and Medway Canal in Gravesend for access. Therefore, T26, T28, G153 and G169 require minor pruning to achieve statutory clearance over the footpath and/or road. This work should be completed prior to the commencement of works to ensure the trees are not damaged. This level of pruning will not have a negative impact on the health or amenity of this tree.

- 5.3.3 No additional works to retained trees are likely to be required. All tree work is to follow the principles of *BS3998: 2010 Treework – Recommendations* (Ref 2) and must be carried out by suitably qualified and insured contractors. The Arboricultural Association provides a list of contractors who meet these requirements which can be found at www.trees.org.uk.
- 5.3.4 Should the requirement for additional tree works be identified, this will be discussed with an arboriculturist, and no works will be undertaken without the consent of the Local Planning Authority (LPA).

5.4 The Future Impact of Retained Trees

- 5.4.1 Retained trees will require periodic inspection to assess their structural condition and safety. Occasional removal of dead wood or other remedial works to address significant defects may be required in areas of frequent access. This is unlikely to be overly onerous and will be the responsibility of the tree owner. This will not represent a significant change from the current situation on the Site.
- 5.4.2 The layout of the Proposed Development has been developed so that no trees will significantly overhang structures which will reduce the potential nuisance associated with this issue. Any trees which do develop canopies which overhang structures in the future can be pruned back on an ad hoc basis as required. This will not have a negative impact on the health or amenity value of the trees and will not be overly onerous.
- 5.4.3 The Proposed Development requires installation of new overhead cables adjacent to retained trees. The ultimate height of these trees has been considered and is unlikely to result in significant future management requirements, such as damaging pruning works or felling of retained trees.

5.5 Tree Protection

- 5.5.1 Retained trees are vulnerable to damage from construction activities which can include physical damage to stems and branches following impacts with plant. Root severance following trenching, root death or dysfunction following damage to soil structure (caused by the movement of people or machinery on unsurfaced ground) or via the spillage of materials toxic to tree health. The default position is that the RPA and Canopy spread of trees to be retained will form an effective Construction Exclusion Zone, secured with robust fencing where no access will be permitted. Where access is necessary within this area special measures such as the use of ground protection and arboricultural supervision are generally required.
- 5.5.2 In particular, T139 (identified as veteran) grows within a proposed temporary working area at Gravesend and will be protected as outlined in Appendix E, with fencing remaining in place until all development operations have been completed and the prior consent of the LPA Tree Officer and/or an arboriculturist has been obtained. Outline tree protection measures are considered in Appendix E of this report. An Arboricultural Method Statement is often required as a condition of planning consent to set out the phasing of site operations, the finalised tree protection measures for the Site and to provide detail on how sensitive elements of work are to be achieved in proximity to retained trees. Issues to be addressed by the Method Statement are listed in the Conclusion of this report.

5.6 Site Organisation, Storage and Use of Materials, Plant and Machinery.

- 5.6.1 An Outline Construction Environmental Management Plan (CEMP) has been developed (ES Volume VI Appendix 3.1) which contains a mitigation register. The following measures have been added to the commitments register in the Outline CEMP.

- 5.6.2 All construction site facilities including site huts, staff and contractor parking and areas for storage will be located outside of the RPA or crown spread of retained trees, including those not specifically covered in this report. Space is likely to be constrained on the Site and will need to be carefully considered. The Construction Exclusion Zones identified on the Tree Protection Plan must be fully respected and their location and significance is to be highlighted to all site staff and contractors during the formal site briefing.
- 5.6.3 The use, mixing and washing of materials can lead to run off or inadvertent spillage into tree root zones. Many substances often used on construction sites can be toxic to tree roots (such as concrete, fuels, salts, builders' sand and herbicides) and can result in the death of tree roots and beneficial soil organisms and can have a significant impact on the future health and appearance of the tree.
- 5.6.4 The storage of materials and arising's can result in an effective raised soil level. This buries tree roots at depths where air and water are less available and can lead to the decline or death of the tree.
- 5.6.5 For these reasons the storage of materials and any washing, mixing, or refuelling will take place in agreed allocated areas at least 5m from the edge of the RPA of retained trees.
- 5.6.6 Any slope effect must be considered and where there is a potential for run off, heavy duty polythene sheeting and sandbags must be in place as bunding to prevent toxic materials reaching RPAs.
- 5.6.7 Particular care is required where high sided vehicles, long reach machinery and plant with jibs, booms and counterweights are to operate with in proximity to retained trees. A banksman will be used where the movement of plant or long reach machinery occurs within 5m of any part of a retained tree to ensure no damage is sustained.

5.7 Tree Planting

- 5.7.1 Existing areas of unsurfaced ground must be protected during the construction phase if they are to be re-used for new plantings. Protection can be achieved using fit for purpose ground protection measures as set out in BS5837:2012 (Ref) Section 6.2.3 or by creating a fenced exclusion zone. Where protection is not feasible, soil amelioration or replacement works will be required to ensure suitable growing conditions for new trees to fully establish.
- 5.7.2 Where new trees are to be planted, the minimum planting distances detailed in Annex A, Table A.1 of BS5837:2012 (Ref 1) must be adhered to, to prevent direct damage to services and structures from future tree growth.
- 5.7.3 New tree planting should be implemented in accordance with the guidance set out in BS8545: 2014 Trees: from nursery to establishment in the landscape – Recommendations (Ref 3).

5.8 Services

- 5.8.1 No further information in relation to services has been made available at this stage.
- 5.8.2 Where existing services become redundant within the RPA of a retained tree, the default position must be that they be decommissioned and left in situ. Where this is not feasible the following principles are to be observed.
- 5.8.3 Existing services are to be removed by winching out from an access/inspection chamber located outside of an RPA. It may be acceptable to fill redundant pipe work with an inert material or undertake pipe bursting where necessary within the RPA of retained trees.

- 5.8.4 Excavation to install services has the potential to result in unacceptable root severance which could result in instability, dysfunction, or the death of trees. Repeated incursions are particularly damaging and must be avoided by bundling services wherever possible.
- 5.8.5 The default position will therefore be that all services be routed outside of the RPA of retained trees. The following general principles will apply and where services must be routed within the RPA of a retained tree this process will be subject to a detailed method statement with approval from the Planning Authority. The principles of the National Joint Utilities Group (NJUG) Volume 4 guidance must be adhered to.
- 5.8.6 All services must be bundled as far as possible and installed within RPAs using hand/compressed air excavation (e.g. for shallow service runs) or trenchless techniques such as impact moling (thrust boring) with all access pits and inspection chambers being located outside of the RPA. The route must run as far from the main stem of a retained tree as possible and must be at a minimum depth so that the upper 1m of the soil profile is undisturbed. The depth of the run may need to be adjusted to account for soil type and species variation and this must be determined subject to the advice of an arboriculturist.
- 5.8.7 This operation must take place as specified in a Method Statement. Any water pipes must be constructed so as to be resistant to ingress by tree roots (both existing trees, and newly planted trees) which could include the use of root barriers where appropriate.

6 Conclusions

- 6.1.1 The Proposed Development will require the removal or part removal of 49 tree features; this includes two individual trees classed as moderate quality (Category B), 21 individual trees, eight part tree groups, 13 tree groups, one part hedgerow and three hedgerows classified as low quality (Category C) and the remaining one individual tree is classified as very low quality (Category U)
- 6.1.2 In addition, a number of tree features are classified as very low quality and are considered to be unsuitable for retention regardless of the Proposed Development and are recommended to be removed.
- 6.1.3 All trees to be removed are positioned within the red line application boundary. Tree removals are required due to a direct conflict with the Proposed Development and National Grid clearance requirements, to avoid inappropriate tree retention close to new structures.
- 6.1.4 A number of trees require minor pruning to achieve statutory clearance over the footpath and/or road. This work should be completed prior to the commencement of works to ensure the trees are not damaged. This level of pruning will not have a negative impact on the health or amenity of this tree.
- 6.1.5 A number of preliminary management recommendations are detailed within the Tree Survey Schedule (Appendix B) and it is recommended that these are actioned within the recommended timescales. Tree loss will be mitigated with a robust and high-quality scheme of new tree planting as detailed in the landscape masterplan by AECOM which represents an opportunity to increase the quality, impact, diversity, and resilience of the local tree stock.
- 6.1.6 Soil structure for areas of new tree planting where the ground is currently unsurfaced will either be protected using ground protection or fenced exclusion zones; or the soil structure will be ameliorated or replaced following the completion of construction works on the Site. In particular, T139 (identified as veteran) grows within a proposed temporary working area and will be protected as outlined in Appendix E, with fencing remaining in place until all construction is completed and the prior consent of the LPA Tree Officer and/or an arboriculturist has been obtained.

6.2 Issues to be addressed by an Arboricultural Method Statement:

- Conditions of planning consent;
- Pre commencement meeting and site briefing;
- Order and phasing of operations;
- Tree works;
- Tree protection fencing;
- Site storage and facilities;
- Movement of people, plant and materials ;
- Demolition;
- Enabling works;
- Installation of new surfacing;
- Installation of new structures;
- Installation of new services and/or diversion of existing services;
- Hard landscaping;
- Soft Landscaping; and

- Removal of tree protection measures.

7 References

Ref 1 British Standards Institution (BSI), BS5837:2012. Trees in relation to design, demolition and construction – Recommendations. BSI

Ref 2 British Standards Institution (BSI), BS3998:2010. Tree work – Recommendations. BSI

Ref 3 British Standards Institution (BSI) BS8545: 2014 Trees: from the nursery to independence in the landscape – Recommendations. BSI

Ref 4 Department for Levelling Up, Housing and Communities (DLUHC), 2023. National Planning Policy Framework (NPPF). Available at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1182995/NPPF_Sept_23.pdf

Ref 5 National House Building Council (NHBC) Standards, (2023). Chapter 4.2: Building Near Trees

Ref 6 National Joint Utilities Group (NJUG) Volume 4, Issue 2, (2007). NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees.

Ref 7 National Tree Safety Group (NTSG), 2011. Common sense risk management of trees. Forestry Commission.

Ref 8 Forestry Commission and Natural England 2022. Ancient woodland, ancient trees and veteran trees: advice for making planning decisions.

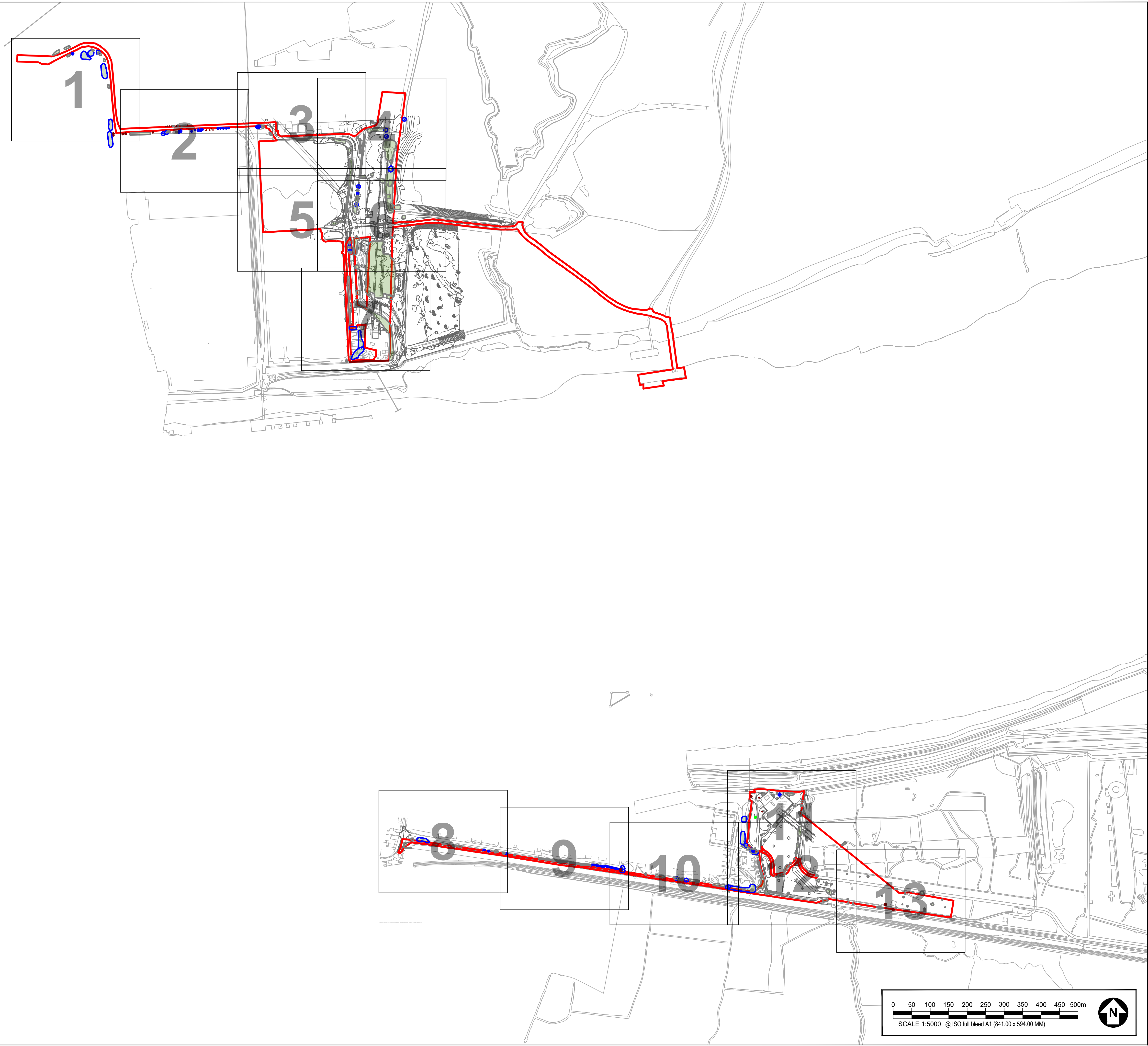
Ref 9 HM Government 1997. The Hedgerow Regulations (1997). Available at:

<https://www.legislation.gov.uk/uksi/1997/1160/contents/made>

Ref 10 HM Government 2015. Construction (Design and Management) Regulations (2015).

Available at: <https://www.legislation.gov.uk/uksi/2015/51/contents/made>

Appendix A Tree Constraints Plan



PROJECT

TKRE Cable Tunnel
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GENERAL NOTES

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108748_03_00 - Baker Hicks - National Grid Tilbury - FEATURE LAYER.dwg
CEN26906 Tilbury Fusion Plan Including RWE Utilities.dwg
CEN26907 Gravesend Fusion Plan.dwg
30003364-MSE-XX-XX-DR-Y-10001 rev P04.1.dwg

KEY

- FEATURE ID TAGS**
(A PREFIX OF 'T' DENOTES A SINGLE TREE, 'G' A GROUP, 'H' A HEDGE, 'W' A WOODLAND, AND AN ASTERISK SUFFIX '*' MEANS THE FEATURE WAS PLOTTED INDICATIVELY)
- SITE BOUNDARY**
[Red line symbol]
- A CATEGORY TREE, GROUP, HEDGE, OR WOODLAND**
(HIGH QUALITY & VALUE)
[Green circle symbol]
- B CATEGORY TREE, GROUP, HEDGE, OR WOODLAND**
(MODERATE QUALITY & VALUE)
[Blue circle symbol]
- C CATEGORY TREE, GROUP, HEDGE, OR WOODLAND**
(LOW QUALITY & VALUE)
[Grey circle symbol]
- U CATEGORY TREE, GROUP, HEDGE, OR WOODLAND**
(UNSUITABLE FOR RETENTION)
[Red circle symbol]

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TREE CONSTRAINTS PLAN
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(LOW QUALITY & VALUE)
 - U CATEGORY TREE, GROUP, HEDGE, OR WOODLAND**
(UNSUITABLE FOR RETENTION)
- ROOT PROTECTION AREAS (RPA)**
(AS DEFINED BY BS 5837:2012)
- APPROXIMATE SHADING ARC**
(AS DEFINED BY BS 5837:2012)
- VETERAN TREE BUFFER ZONE**
(15 TIMES STEM DIAMETER OR 5M FROM THE EDGE OF CANOPY (WHATEVER IS GREATEST) AS PER ADVICE FROM FORESTRY COMMISSION AND NATURAL ENGLAND (2020))
- VETERAN TREE**
(TREE IDENTIFIED IN THE SITE SURVEY)

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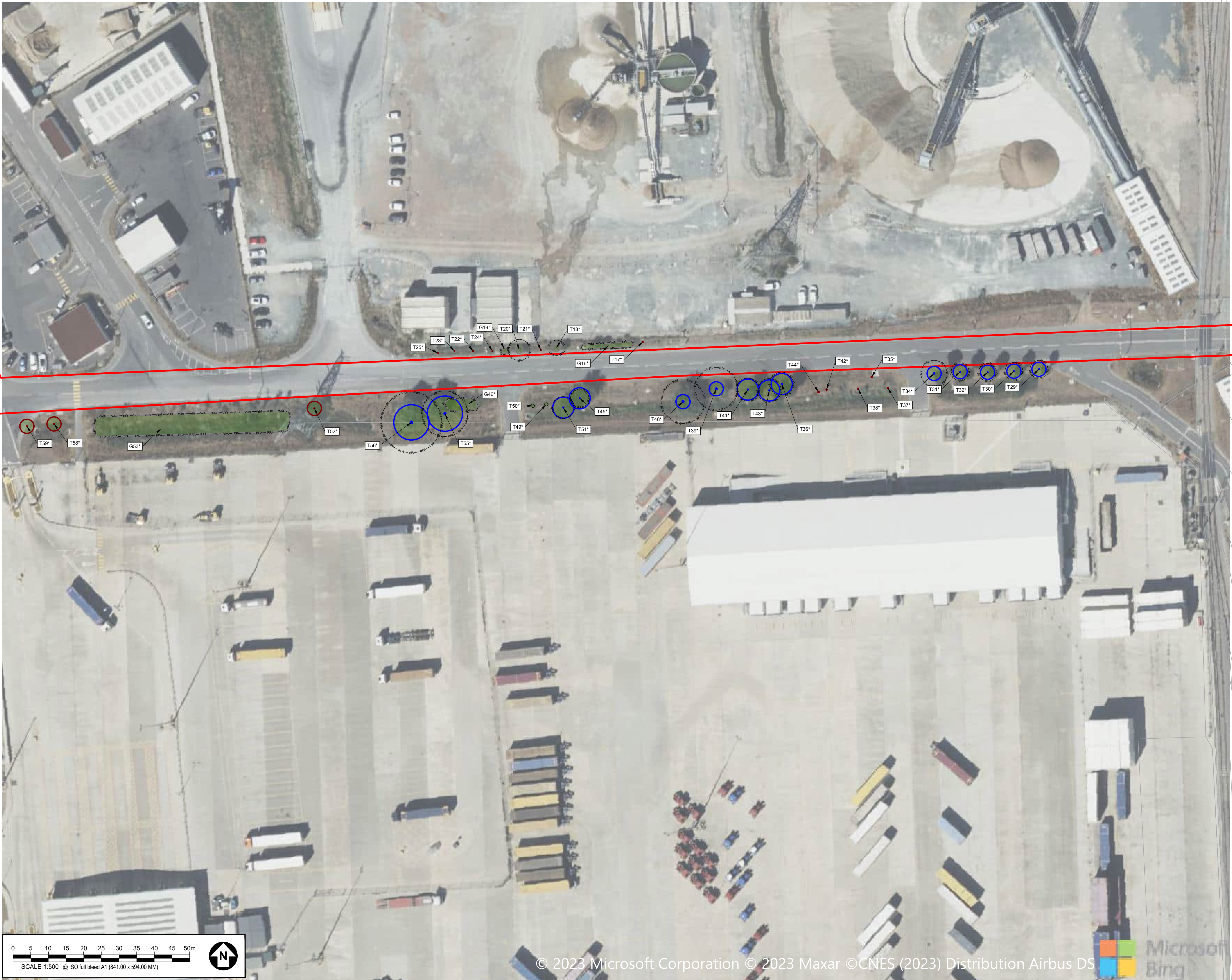
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KEY PLAN



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- ROOT PROTECTION AREAS (RPA)**
(AS DEFINED BY BS 5837:2012)
- APPROXIMATE SHADING ARC**
(AS DEFINED BY BS 5837:2012)
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(15 TIMES STEM DIAMETER OR 5M FROM THE EDGE OF CANOPY (WHATEVER IS GREATEST) AS PER ADVICE FROM FORESTRY COMMISSION AND NATURAL ENGLAND (2020))
- VETERAN TREE**
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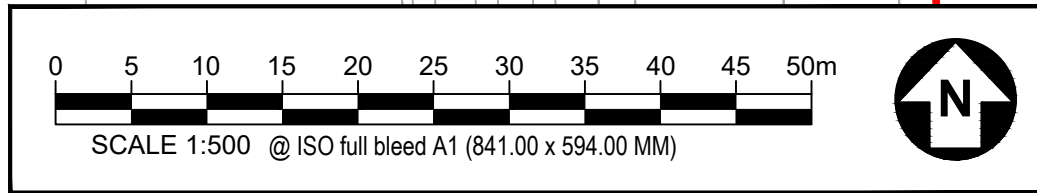
TREE CONSTRAINTS PLAN
(SHEET 02)

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PROJECT

TKRE Cable Tunnel
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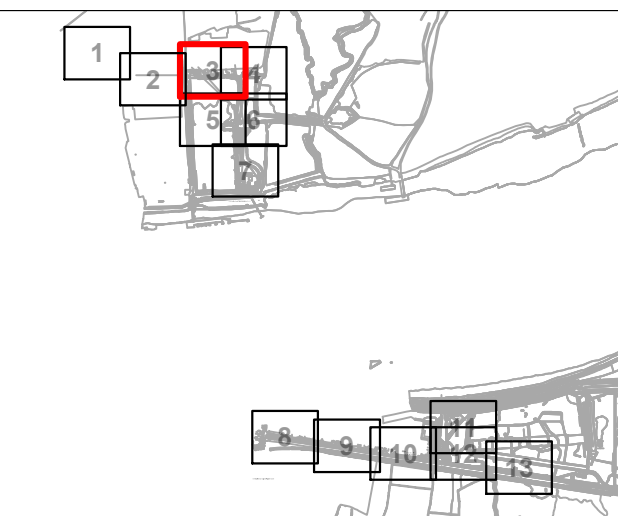
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KEY PLAN



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(AS DEFINED BY BS 5837:2012)
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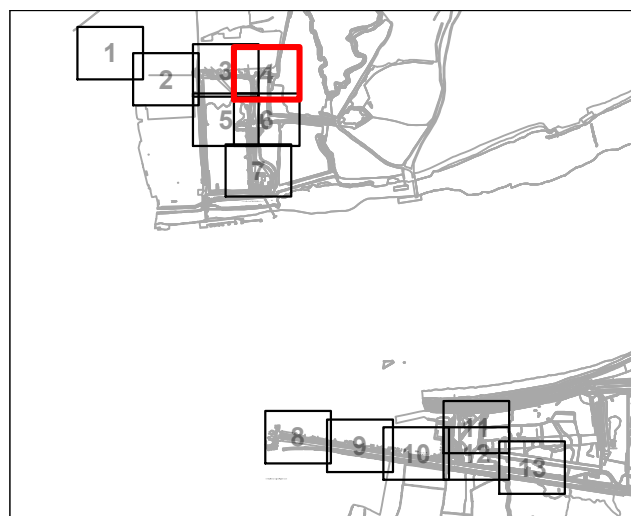
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 - U** CATEGORY TREE, GROUP, HEDGE, OR WOODLAND (UNUSABLE FOR RETENTION)

ROOF PROTECTION AREAS (RPA)
 (AS DEFINED BY BS 5837-2012)

APPROXIMATE SHADING ARC
 (AS DEFINED BY BS 5837-2012)

VETERAN TREE BUFFER ZONE
 (ITS TREE CANOPY DIAMETER OR 5M FROM THE EDGE OF CANOPY (WHATEVER IS GREATER)) AS PER ADVICE FROM FOREstry COMMISSION AND NATURAL ENGLAND (2022)

VETERAN TREE
 (TREE IDENTIFIED IN THE SITE SURVEY)

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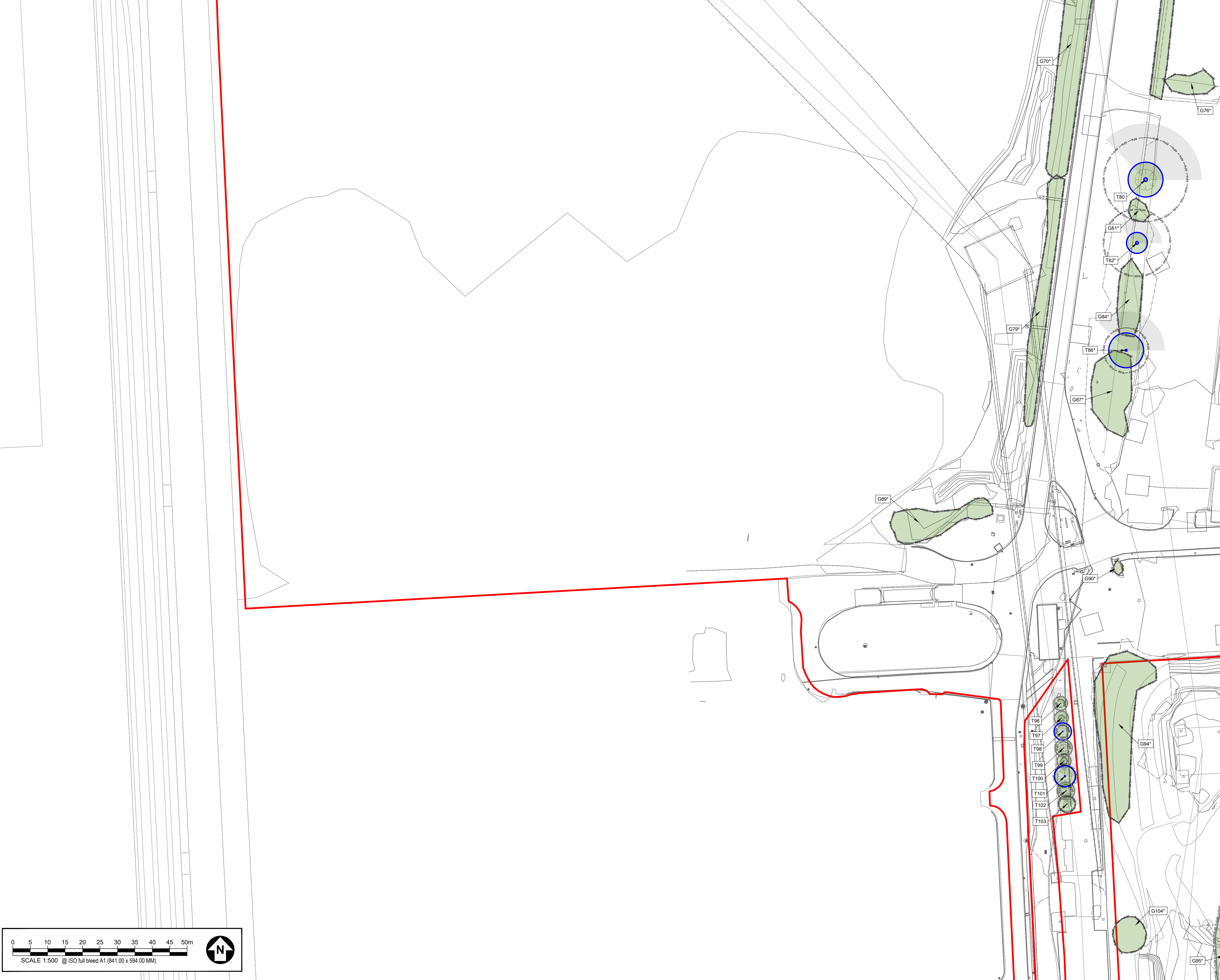
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6. DRAWING REFERENCES:
108567_03_01 - Baker Hicks - Gravesend - FEATURE LAYER.dwg
108748_03_00 - Baker Hicks - National Grid Tilbury - FEATURE LAYER.dwg
CEN26906 Tilbury Fusion Plan Including RWE Utilities.dwg
CEN26907 Gravesend Fusion Plan.dwg
30003364-MSE-XX-XX-DR-Y-10001 rev P04.1.dwg

KEY PLAN



KEY

- FEATURE ID TAGS**
A PREFIX OF 'T' DENOTES A SINGLE TREE, 'G' A GROUP, 'H' A HEDGE, 'W' A WOODLAND, AND AN ASTERISK SUFFIX '*' MEANS THE FEATURE WAS PLOTTED INDICATIVELY)
- SITE BOUNDARY**
A CATEGORY TREE, GROUP, HEDGE, OR WOODLAND (HIGH QUALITY & VALUE)
B CATEGORY TREE, GROUP, HEDGE, OR WOODLAND (MODERATE QUALITY & VALUE)
C CATEGORY TREE, GROUP, HEDGE, OR WOODLAND (LOW QUALITY & VALUE)
U CATEGORY TREE, GROUP, HEDGE, OR WOODLAND (UNSUITABLE FOR RETENTION)
- ROOT PROTECTION AREAS (RPA)**
(AS DEFINED BY BS 5837:2012)
- APPROXIMATE SHADING ARC**
(AS DEFINED BY BS 5837:2012)
- VETERAN TREE BUFFER ZONE**
(15 TIMES STEM DIAMETER OR 5M FROM THE EDGE OF CANOPY (WHATEVER IS GREATEST) AS PER ADVICE FROM FORESTRY COMMISSION AND NATURAL ENGLAND (2020))
- VETERAN TREE**
(TREE IDENTIFIED IN THE SITE SURVEY)

ISSUE/REVISION

NO	DATE	DESCRIPTION
P01	21.11.23	FIRST ISSUE
VR	DATE	DESCRIPTION

DRAWING STATUS

ISSUE

PROJECT NUMBER

60677311

SHEET TITLE

TREE CONSTRAINTS PLAN
(SHEET 06)

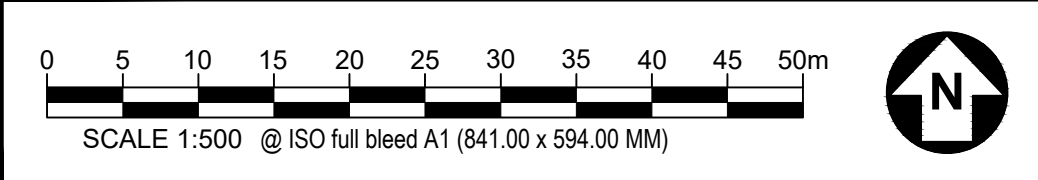
SHEET NUMBER

60677311-ACM-XX-XX-AB-TCP-006

REV.

P01

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PROJECT

TKRE Cable Tunnel
Replacement
CLIENT

National Grid

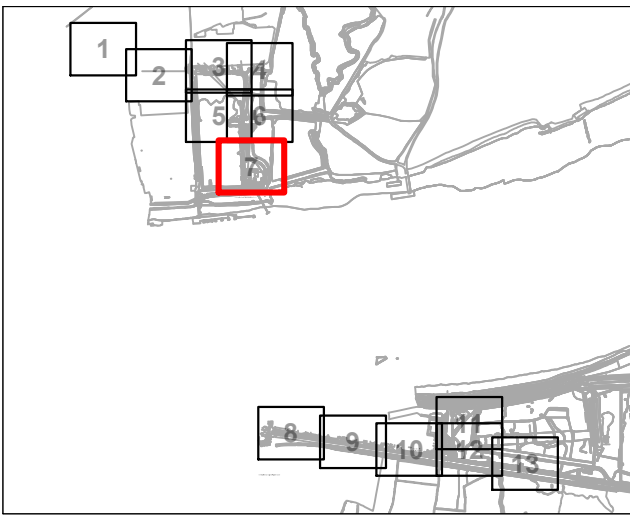
CONSULTANT

AECOM
Mid Point, Alencon Link,
Basingstoke, Hants,
RG21 7PP
Tel +44 (0) 1256 310 200
www.aecom.com

GENERAL NOTES

1. TREE CATEGORIES AS DEFINED BY BS 5837:2012
2. TREE LOCATIONS ARE BASED ON THE TOPOGRAPHICAL SURVEY, AERIAL IMAGERY, AND GPS CO-ORDINATES FROM ON SITE WALKOVER.
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6. DRAWING REFERENCES:
108567_03_01 - Baker Hicks - Gravesend - FEATURE LAYER.dwg
108748_03_00 - Baker Hicks - National Grid Tilbury - FEATURE LAYER.dwg
CEN26906 Tilbury Fusion Plan Including RWE Utilities.dwg
CEN26907 Gravesend Fusion Plan.dwg
30003364-MSE-XX-XX-DR-Y-10001 rev P04.1.dwg

KEY PLAN



KEY

- FEATURE ID TAGS**
A PREFIX OF 'T' DENOTES A SINGLE TREE, 'G' A GROUP, 'H' A HEDGE, 'W' A WOODLAND, AND AN ASTERISK SUFFIX '*' MEANS THE FEATURE WAS PLOTTED INDICATIVELY)
- SITE BOUNDARY**
A CATEGORY TREE, GROUP, HEDGE, OR WOODLAND (HIGH QUALITY & VALUE)
- B CATEGORY TREE, GROUP, HEDGE, OR WOODLAND** (MODERATE QUALITY & VALUE)
- C CATEGORY TREE, GROUP, HEDGE, OR WOODLAND** (LOW QUALITY & VALUE)
- U CATEGORY TREE, GROUP, HEDGE, OR WOODLAND** (UNSUITABLE FOR RETENTION)
- ROOT PROTECTION AREAS (RPA)** (AS DEFINED BY BS 5837:2012)
- APPROXIMATE SHADING ARC** (AS DEFINED BY BS 5837:2012)
- VETERAN TREE BUFFER ZONE** (15 TIMES STEM DIAMETER OR 5M FROM THE EDGE OF CANOPY (WHATEVER IS GREATEST) AS PER ADVICE FROM FORESTRY COMMISSION AND NATURAL ENGLAND (2020))
- VETERAN TREE** (TREE IDENTIFIED IN THE SITE SURVEY)

ISSUE/REVISION

NO	DATE	DESCRIPTION
P01	21.11.23	FIRST ISSUE
VR	DATE	DESCRIPTION

DRAWING STATUS

ISSUE

PROJECT NUMBER

60677311

SHEET TITLE

TREE CONSTRAINTS PLAN
(SHEET 07)

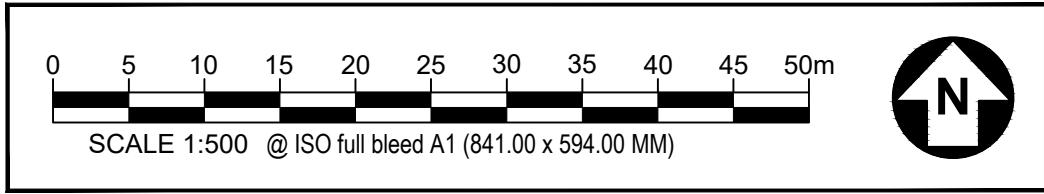
SHEET NUMBER

60677311-ACM-XX-XX-AB-TCP-007

REV.

P01

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PROJECT

TKRE Cable Tunnel
Replacement

CLIENT

National Grid

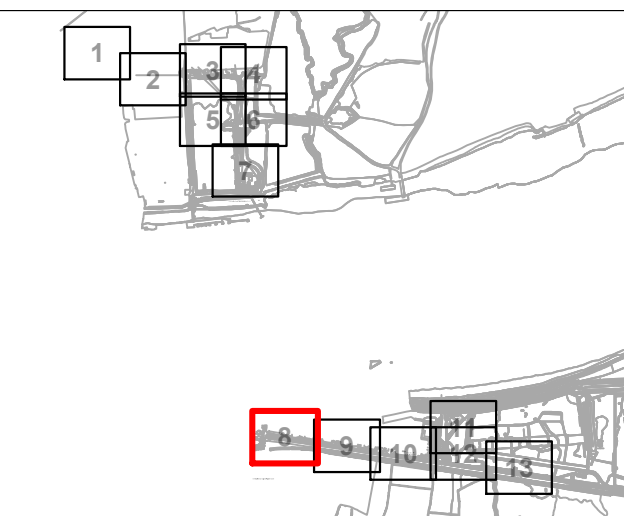
CONSULTANT

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Mid Point, Alencon Link,
Basingstoke, Hants,
RG21 7PP
Tel +44 (0) 1256 310 200
www.aecom.com

GENERAL NOTES

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6. DRAWING REFERENCES:
108567_03_01 - Baker Hicks - Gravesend - FEATURE LAYER.dwg
108746_03_00 - Baker Hicks - National Grid Tilbury - FEATURE LAYER.dwg
CEN26906 Tilbury Fusion Plan Including RWE Utilities.dwg
CEN26907 Gravesend Fusion Plan.dwg
30003364-MSE-XX-XX-DR-Y-10001 rev P04.1.dwg

KEY PLAN



KEY

FEATURE ID TAGS
A PREFIX OF 'T' DENOTES A SINGLE TREE, 'G' A GROUP, 'H' A HEDGE, 'W' A WOODLAND, AND AN ASTERISK SUFFIX '*' MEANS THE FEATURE WAS PLOTTED INDICATIVELY)

SITE BOUNDARY
A CATEGORY TREE, GROUP, HEDGE, OR WOODLAND (HIGH QUALITY & VALUE)

B CATEGORY TREE, GROUP, HEDGE, OR WOODLAND
(MODERATE QUALITY & VALUE)

C CATEGORY TREE, GROUP, HEDGE, OR WOODLAND
(LOW QUALITY & VALUE)

U CATEGORY TREE, GROUP, HEDGE, OR WOODLAND
(UNSUITABLE FOR RETENTION)

ROOT PROTECTION AREAS (RPA)
(AS DEFINED BY BS 5837:2012)

APPROXIMATE SHADING ARC
(AS DEFINED BY BS 5837:2012)

VETERAN TREE BUFFER ZONE
(15 TIMES STEM DIAMETER OR 5M FROM THE EDGE OF CANOPY (WHATEVER IS GREATEST) AS PER ADVICE FROM FORESTRY COMMISSION AND NATURAL ENGLAND (2020))

VETERAN TREE
(TREE IDENTIFIED IN THE SITE SURVEY)

ISSUE/REVISION

NO	DATE	DESCRIPTION
P01	21.11.23	FIRST ISSUE

DRAWING STATUS

ISSUE

PROJECT NUMBER

60677311

SHEET TITLE

TREE CONSTRAINTS PLAN
(SHEET 08)

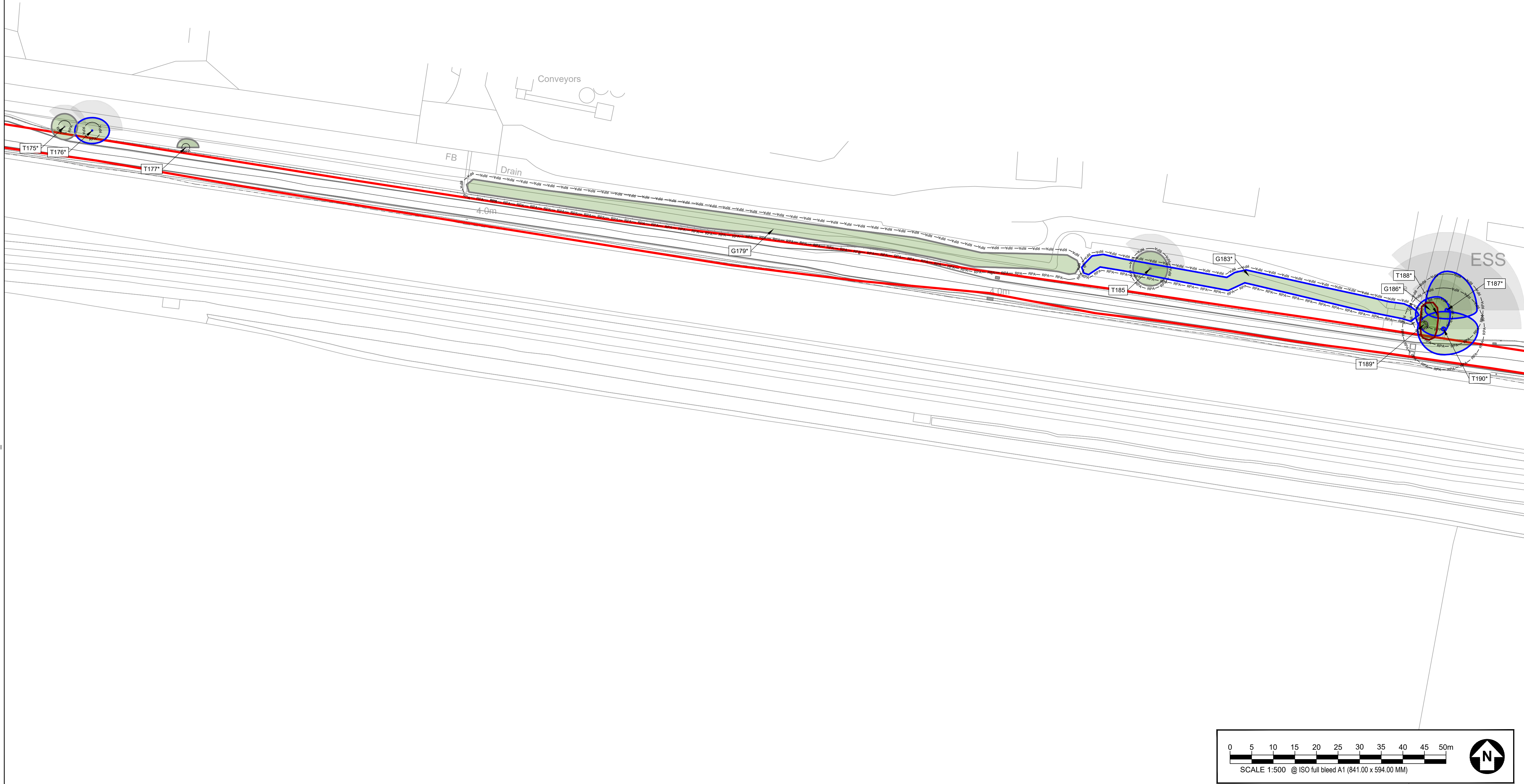
SHEET NUMBER

60677311-ACM-XX-XX-AB-TCP-008

REV.

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PROJECT

TKRE Cable Tunnel
Replacement
CLIENT

National Grid

CONSULTANT

AECOM
Mid Point, Alencon Link,
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Tel +44 (0) 1256 310 200
www.aecom.com

GENERAL NOTES

1. TREE CATEGORIES AS DEFINED BY BS 5837:2012
2. TREE LOCATIONS ARE BASED ON THE TOPOGRAPHICAL SURVEY, AERIAL IMAGERY, AND GPS CO-ORDINATES FROM ON SITE WALKOVER.
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6. DRAWING REFERENCES:
108567_03_01 - Baker Hicks - Gravesend - FEATURE LAYER.dwg
108748_03_00 - Baker Hicks - National Grid Tilbury - FEATURE LAYER.dwg
CEN26906 Tilbury Fusion Plan Including RWE Utilities.dwg
CEN26907 Gravesend Fusion Plan.dwg
30003364-MSE-XX-XX-DR-Y-10001 rev P04.1.dwg

KEY PLAN



KEY

- FEATURE ID TAGS**
(A PREFIX OF 'T' DENOTES A SINGLE TREE, 'G' A GROUP, 'H' A HEDGE, 'W' A WOODLAND, AND AN ASTERISK SUFFIX '*' MEANS THE FEATURE WAS PLOTTED INDICATIVELY)
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(MODERATE QUALITY & VALUE)
 - C CATEGORY TREE, GROUP, HEDGE, OR WOODLAND**
(LOW QUALITY & VALUE)
 - U CATEGORY TREE, GROUP, HEDGE, OR WOODLAND**
(UNSUITABLE FOR RETENTION)
- ROOT PROTECTION AREAS (RPA)**
(AS DEFINED BY BS 5837:2012)
- APPROXIMATE SHADING ARC**
(AS DEFINED BY BS 5837:2012)
- VETERAN TREE BUFFER ZONE**
(15 TIMES STEM DIAMETER OR 5M FROM THE EDGE OF CANOPY (WHATEVER IS GREATEST) AS PER ADVICE FROM FORESTRY COMMISSION AND NATURAL ENGLAND (2020))
- VETERAN TREE**
(TREE IDENTIFIED IN THE SITE SURVEY)

ISSUE/REVISION

NO	DATE	DESCRIPTION

DRAWING STATUS

ISSUE

PROJECT NUMBER

60677311

SHEET TITLE

TREE CONSTRAINTS PLAN
(SHEET 09)

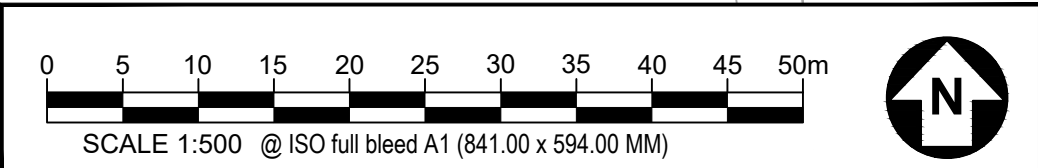
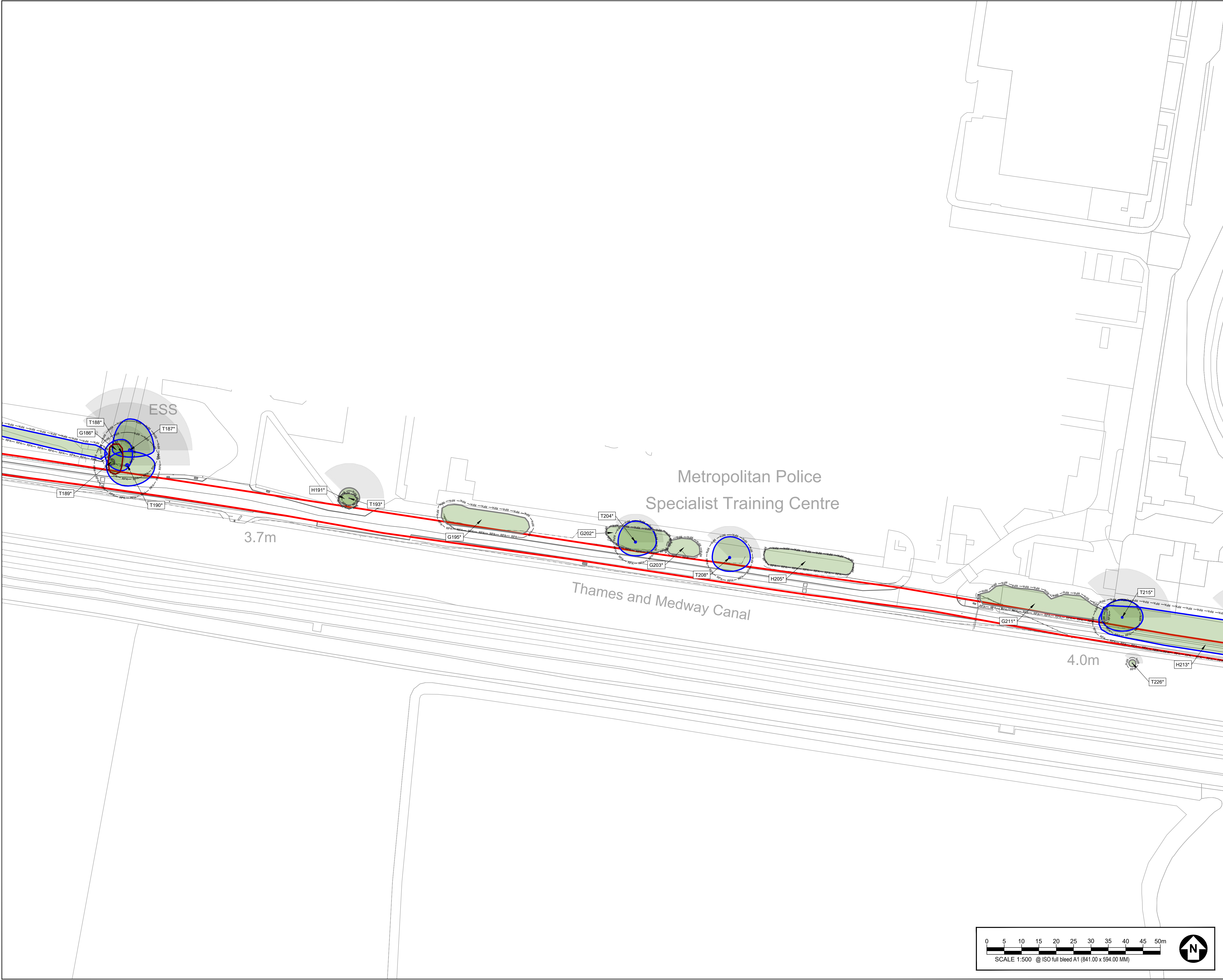
SHEET NUMBER

60677311-ACM-XX-XX-AB-TCP-009

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PROJECT

TKRE Cable Tunnel
Replacement
CLIENT

National Grid

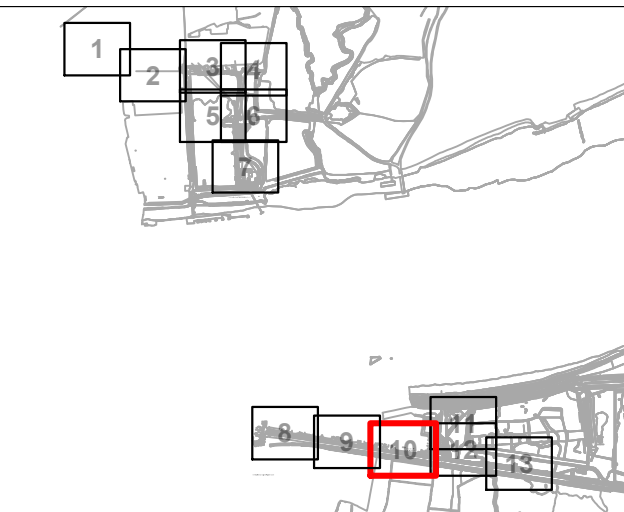
CONSULTANT

AECOM
Mid Point, Alencon Link,
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Tel +44 (0) 1256 310 200
www.aecom.com

GENERAL NOTES

1. TREE CATEGORIES AS DEFINED BY BS 5837:2012
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108748_03_00 - Baker Hicks - National Grid Tilbury - FEATURE LAYER.dwg
CEN26906 Tilbury Fusion Plan Including RWE Utilities.dwg
CEN26907 Gravesend Fusion Plan.dwg
30003364-MSE-XX-XX-DR-Y-10001 rev P04.1.dwg

KEY PLAN



KEY

- FEATURE ID TAGS**
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 - U CATEGORY TREE, GROUP, HEDGE, OR WOODLAND (UNSUITABLE FOR RETENTION)
- ROOT PROTECTION AREAS (RPA)**
(AS DEFINED BY BS 5837:2012)
- APPROXIMATE SHADING ARC**
(AS DEFINED BY BS 5837:2012)
- VETERAN TREE BUFFER ZONE**
(15 TIMES STEM DIAMETER OR 5M FROM THE EDGE OF CANOPY (WHATEVER IS GREATEST) AS PER ADVICE FROM FORESTRY COMMISSION AND NATURAL ENGLAND (2020))
- VETERAN TREE**
(TREE IDENTIFIED IN THE SITE SURVEY)

ISSUE/REVISION

NO	DATE	DESCRIPTION

DRAWING STATUS

ISSUE

PROJECT NUMBER

60677311

SHEET TITLE

TREE CONSTRAINTS PLAN
(SHEET 10)

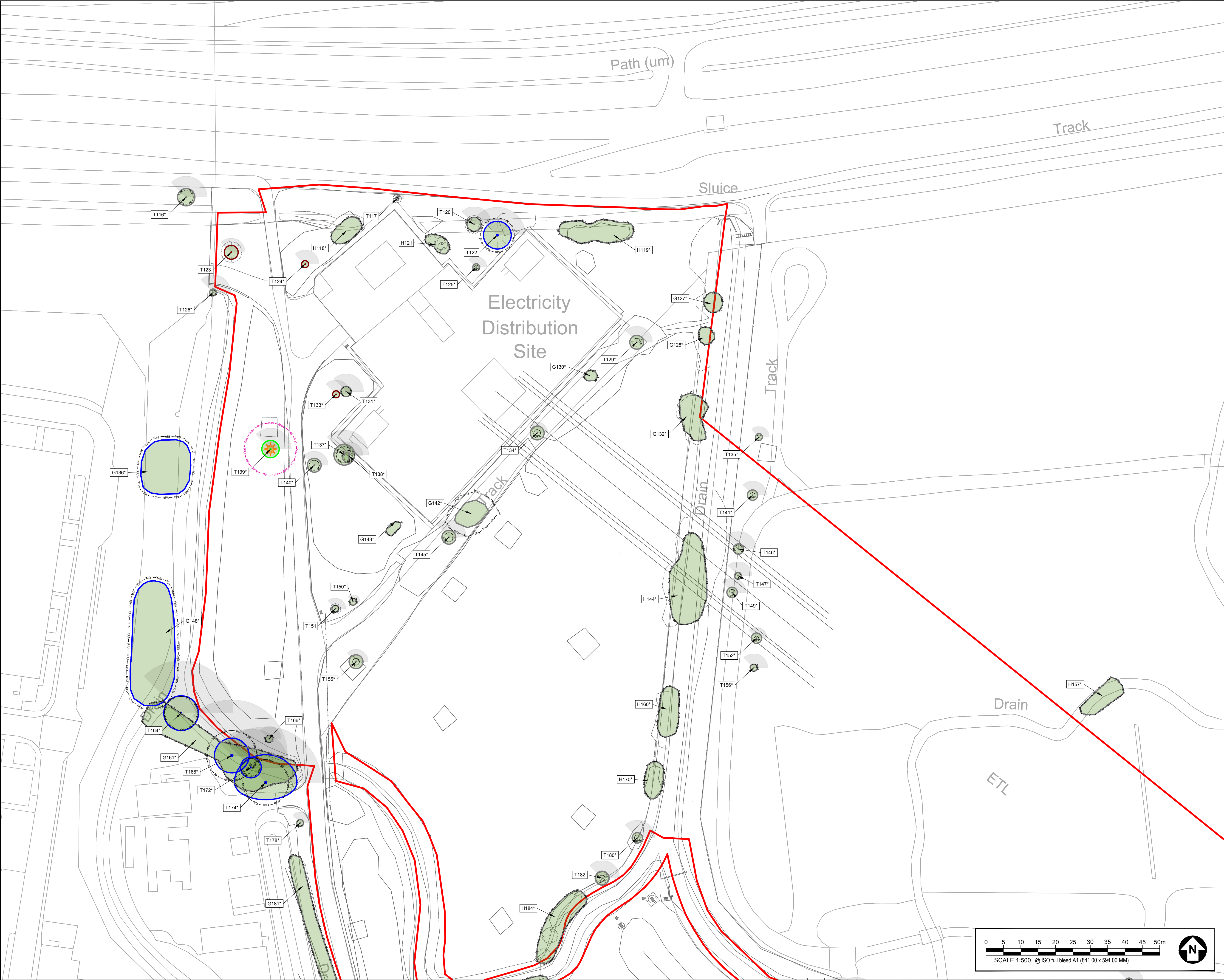
SHEET NUMBER

60677311-ACM-XX-XX-AB-TCP-010

REV.

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PROJECT

TKRE Cable Tunnel
Replacement

CLIENT

National Grid

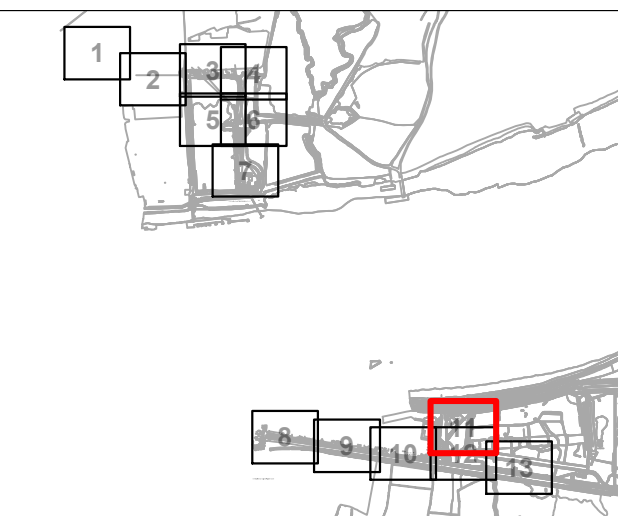
CONSULTANT

AECOM
Mid Point, Alencon Link,
Basingstoke, Hants,
RG21 7PP
Tel +44 (0) 1256 310 200
www.aecom.com

GENERAL NOTES

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108567_03_01 - Baker Hicks - Gravesend - FEATURE LAYER.dwg
108748_03_00 - Baker Hicks - National Grid Tilbury - FEATURE LAYER.dwg
CEN26906 Tilbury Fusion Plan Including RWE Utilities.dwg
CEN26907 Gravesend Fusion Plan.dwg
30003364-MSE-XX-XX-DR-Y-10001 rev P04.1.dwg

KEY PLAN



KEY

- FEATURE ID TAGS**
A PREFIX OF 'T' DENOTES A SINGLE TREE, 'G' A GROUP, 'H' A HEDGE, 'W' A WOODLAND, AND AN ASTERISK SUFFIX '*' MEANS THE FEATURE WAS PLOTTED INDICATIVELY)
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- ROOT PROTECTION AREAS (RPA)**
(AS DEFINED BY BS 5837:2012)
- APPROXIMATE SHADING ARC**
(AS DEFINED BY BS 5837:2012)
- VETERAN TREE BUFFER ZONE**
(15 TIMES STEM DIAMETER OR 5M FROM THE EDGE OF CANOPY (WHATEVER IS GREATEST) AS PER ADVICE FROM FORESTRY COMMISSION AND NATURAL ENGLAND (2020))
- VETERAN TREE**
(TREE IDENTIFIED IN THE SITE SURVEY)

ISSUE/REVISION

NO	DATE	DESCRIPTION
P01	21.11.23	FIRST ISSUE
1/R		

DRAWING STATUS

ISSUE

PROJECT NUMBER

60677311

SHEET TITLE

TREE CONSTRAINTS PLAN
(SHEET 11)

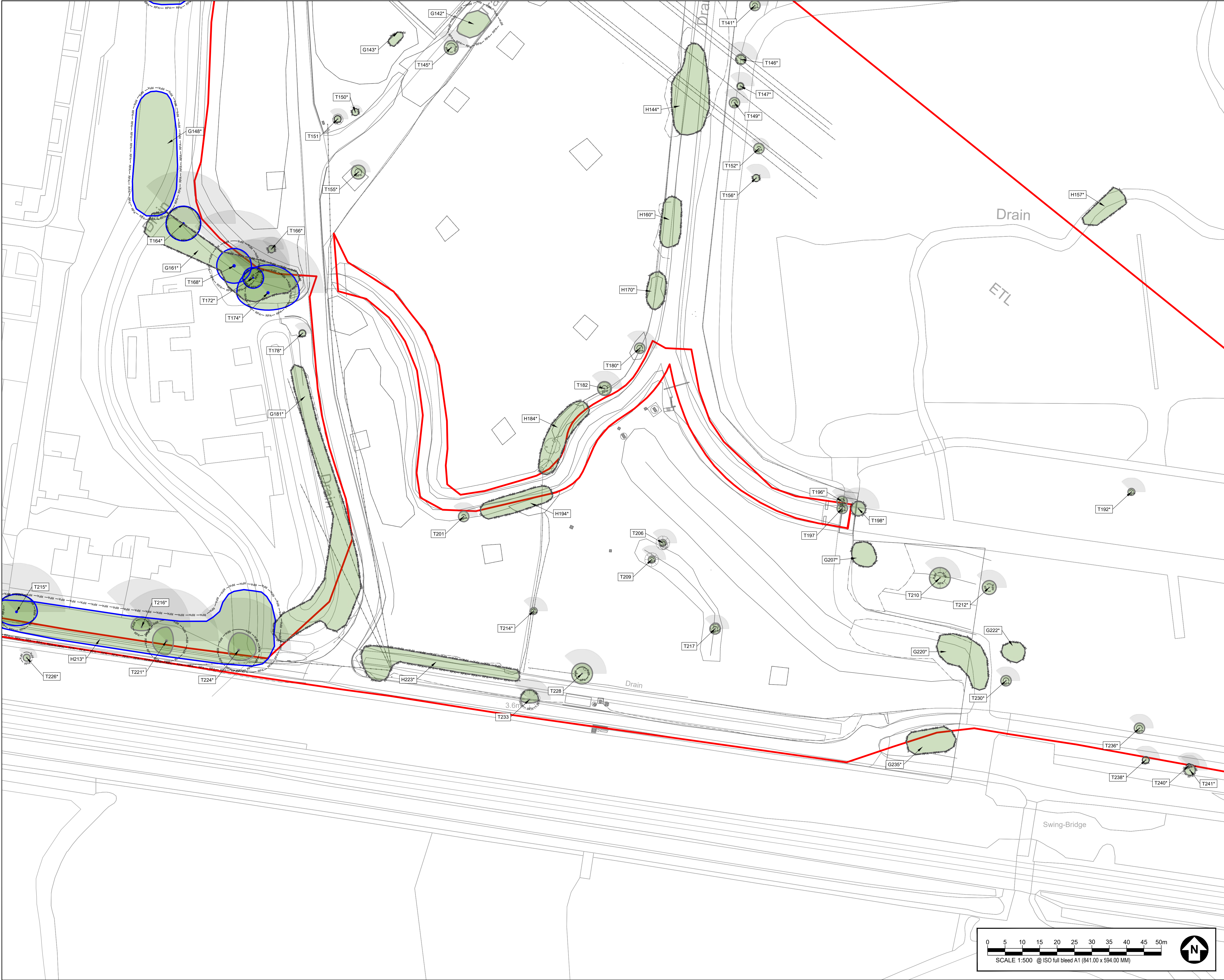
SHEET NUMBER

60677311-ACM-XX-XX-AB-TCP-011

REV.

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PROJECT

TKRE Cable Tunnel
Replacement
CLIENT

National Grid

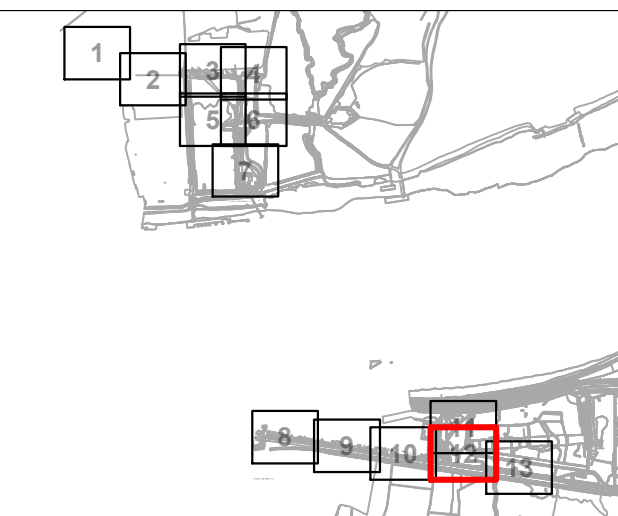
CONSULTANT

AECOM
Mid Point, Alencon Link,
Basingstoke, Hants,
RG21 7PP
Tel +44 (0) 1256 310 200
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GENERAL NOTES

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6. DRAWING REFERENCES:
108567_03_01 - Baker Hicks - Gravesend - FEATURE LAYER.dwg
108748_03_00 - Baker Hicks - National Grid Tilbury - FEATURE LAYER.dwg
CEN26906 Tilbury Fusion Plan Including RWE Utilities.dwg
CEN26907 Gravesend Fusion Plan.dwg
30003364-MSE-XX-XX-DR-Y-10001 rev P04.1.dwg

KEY PLAN



KEY

- FEATURE ID TAGS**
A PREFIX OF 'T' DENOTES A SINGLE TREE, 'G' A GROUP, 'H' A HEDGE, 'W' A WOODLAND, AND AN ASTERISK SUFFIX '*' MEANS THE FEATURE WAS PLOTTED INDICATIVELY)
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(AS DEFINED BY BS 5837:2012)
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- VETERAN TREE**
(TREE IDENTIFIED IN THE SITE SURVEY)

ISSUE/REVISION

NO	DATE	DESCRIPTION
P01	21.11.23	FIRST ISSUE
1/R		

DRAWING STATUS

ISSUE

PROJECT NUMBER

60677311

SHEET TITLE

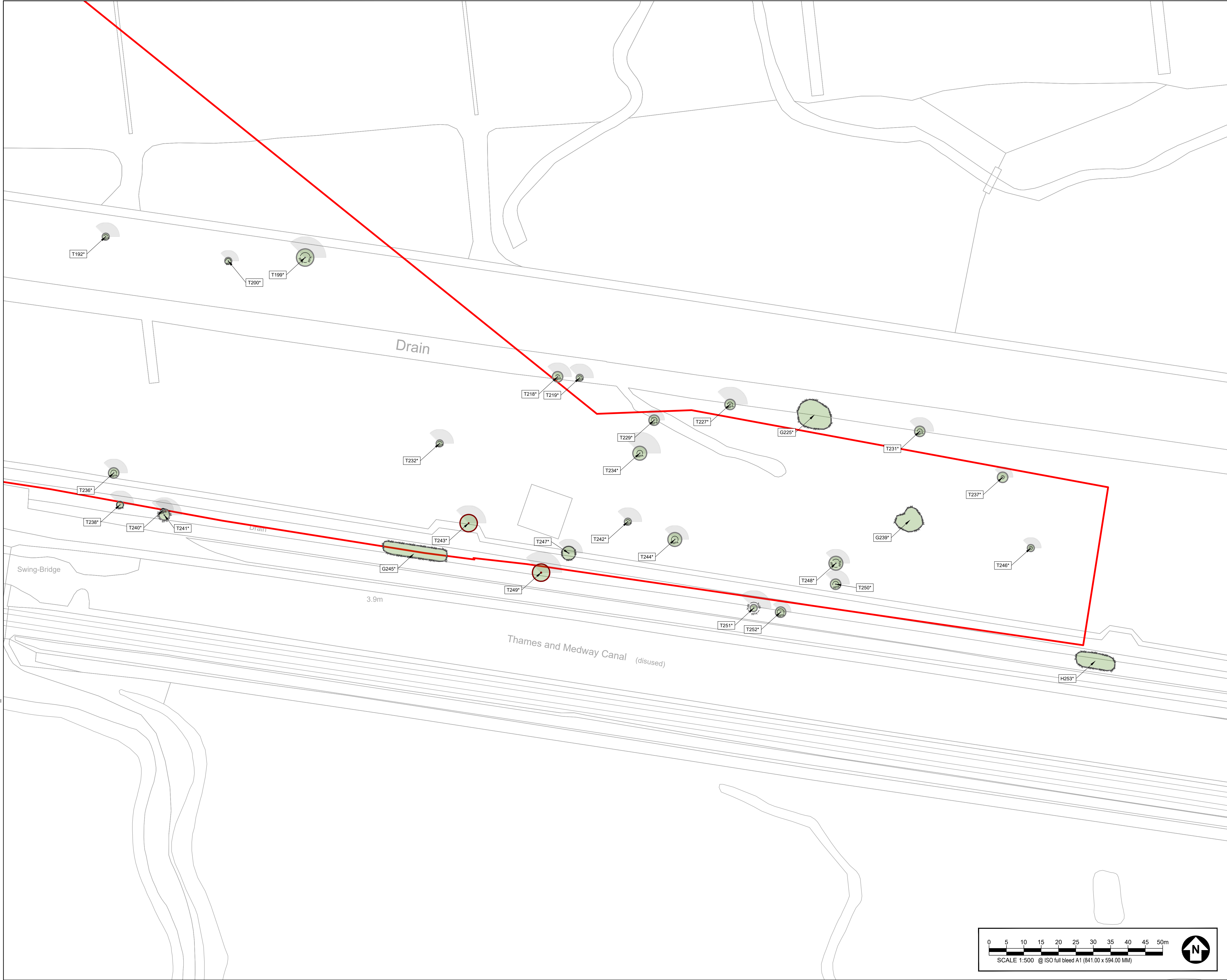
TREE CONSTRAINTS PLAN
(SHEET 12)

SHEET NUMBER

60677311-ACM-XX-XX-AB-TCP-012

REV.

P01



PROJECT

TKRE Cable Tunnel
Replacement

CLIENT

National Grid

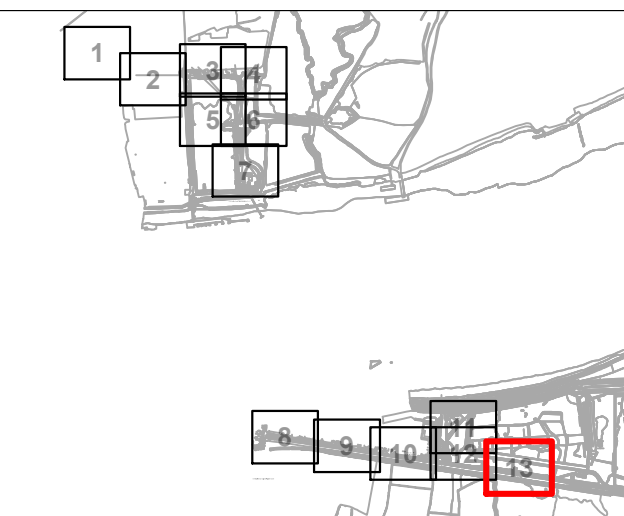
CONSULTANT

AECOM
Mid Point, Alencon Link,
Basingstoke, Hants,
RG21 7PP
Tel +44 (0) 1256 310 200
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GENERAL NOTES

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108748_03_00 - Baker Hicks - National Grid Tilbury - FEATURE LAYER.dwg
CEN26906 Tilbury Fusion Plan Including RWE Utilities.dwg
CEN26907 Gravesend Fusion Plan.dwg
30003364-MSE-XX-XX-DR-Y-10001 rev P04.1.dwg

KEY PLAN



KEY

FEATURE ID TAGS
(A PREFIX OF 'T' DENOTES A SINGLE TREE, 'G' A GROUP, 'H' A HEDGE, 'W' A WOODLAND, AND AN ASTERISK SUFFIX '*' MEANS THE FEATURE WAS PLOTTED INDICATIVELY)

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(MODERATE QUALITY & VALUE)
- C CATEGORY TREE, GROUP, HEDGE, OR WOODLAND**
(LOW QUALITY & VALUE)
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(UNSUITABLE FOR RETENTION)

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(AS DEFINED BY BS 5837:2012)

APPROXIMATE SHADING ARC
(AS DEFINED BY BS 5837:2012)

VETERAN TREE BUFFER ZONE
(15 TIMES STEM DIAMETER OR 5M FROM THE EDGE OF CANOPY (WHATEVER IS GREATEST) AS PER ADVICE FROM FORESTRY COMMISSION AND NATURAL ENGLAND (2020))

VETERAN TREE
(TREE IDENTIFIED IN THE SITE SURVEY)

ISSUE/REVISION

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ISSUE

PROJECT NUMBER

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TREE CONSTRAINTS PLAN
(SHEET 13)

SHEET NUMBER

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REV.

P01

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Appendix B Tree Survey Schedule

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy				First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Works Required to Facilitate Proposed Development	Estimated Remaining Contribution in Years	Category	Root Protection Area Radius (m)
				N	S	E	W											
G1*	Field Maple (<i>Acer campestre</i>)	6	<140#	3	3	3	3	n/a	0	Fair	SM	Good	Row of semi mature trees with dense epicormic growth restricting access to bases. Scattered minor dieback throughout row.			10+	C2	1.68m
G2*	Hawthorn (<i>Crataegus monogyna</i>)	4	<60#	1	1	1	1	n/a	0	Good	SM	Good	Two clusters of hawthorn, behind fence growing from edge of ditch with no access to bases.			10+	C2	0.72m
G3*	Blackthorn (<i>Prunus spinosa</i>)	2	<40#	1	1	1	1	n/a	0	Good	Y	Good	Thicket group.			10+	C2	0.48m
G4*	Corsican Pine (<i>Pinus nigra`maritima`</i>)	22	<800#	10	10	10	10	n/a	2	Good	EM-M	Good	Surveyed from ca. 20m to east. Behind fence and across ditch with no access to bases. Occasional minor dieback, and dead and broken branches. Prominent group. Downgraded due to close spacing and proximity to water filled ditch.			20+	B1,2	9.6m
G5*	Corsican Pine (<i>Pinus nigra`maritima`</i>), Hawthorn (<i>Crataegus monogyna</i>)	22	<700#	10	10	10	10	n/a	2	Good	SM-M	Good	Surveyed from ca. 20m to east. Behind fence and across ditch with no access to bases. Pine with occasional minor dieback, dead and broken branches. Occasional semi mature hawthorn adjacent to drip zone edges.			20+	B1,2	8.4m
G6*	Hawthorn (<i>Crataegus monogyna</i>)	4	<90#	1	1	1	1	n/a	0	Good	SM-EM	Fair	Three standard hawthorn, behind fence growing from edge of			10+	C2	1.08m

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				N	S	E	W											
													ditch with no access to bases.					
T7*	Weeping Willow (<i>Salix X chrysocoma</i>)	6	400#	5	5	10	0	n/a	0	Good	EM	Fair	Grows from west edge of ditch. Previously uprooted, with branches supporting structure and laying across ditch. Corrective growth forming new upright crown.			20+	B2	4.8m
T8	Hawthorn (<i>Crataegus monogyna</i>)	5	130, 70, 70#	3	3	3	4	n/a	0	Good	EM	Good	Grows behind fence from edge of ditch with no access to base.			20+	B2	1.96m
G9*	Hawthorn (<i>Crataegus monogyna</i>), Apple (<i>Malus sp</i>)	5	<160#	4	4	4	4	n/a	0	Good	Y-SM	Good – Fair	Group behind fence growing from edge of ditch with no access to bases. Apple with moderate east lean. Group largely swamped by undergrowth			10+	C2	1.92m
G10*	Hawthorn (<i>Crataegus monogyna</i>)	4	<70#	1	1	1	1	n/a	0	Good	Y	Fair	Two clusters of hawthorn, behind fence growing from edge of ditch with no access to bases.			10+	C2	0.84m
G11*	Corsican Pine (<i>Pinus nigra 'maritima'</i>)	17	<550#	8	8	8	8	n/a	2	Good	SM-EM	Good	Surveyed from ca. 10m to east. No access to bases, behind fence and across ditch. Limited visibility of bases due to dense undergrowth.			20+	B1,2	6.6m
G12*	Common Alder (<i>Alnus glutinosa</i>)	4	<200#	0	0	0	0	n/a	0	Stump	EM	Stump	Stump with epicormic regrowth. Clear of footpath at present. Consider removal of regrowth in 2-3 years.			10+	C2	2.4m
G13*	London plane (<i>Platanus acerifolia</i>)	15	<430	7	7	7	7	n/a	5	Good	SM-EM	Good	Row of trees, previously crown lifted, with fully occluded wounds. Well clear of road.			20+	B1,2	5.16m

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				N	S	E	W											
T14*	Russian Olive (<i>Elaeagnus angustifolia</i>)	6	180, 160#	5	5	5	5	2.0/W	1	Good	SM	Fair	No access to base, grows within dense bramble atop bank. No visibility of base assumed two stems from base.			20+	B2	2.89m
T15*	Goat Willow (<i>Salix caprea</i>)	5	80, 90#	3	3	3	3	2.0/E	2	Good	SM	Good	No access to base.			10+	C2	1.44m
G16*	Birch (<i>Betula sp</i>), Wild Cherry (<i>Prunus avium</i>), Dogwood (<i>Cornus sanguinea</i> Dogwood)	2	<75#	1	1	1	1	n/a	0	Good	Y-SM	Fair	Row of trees adjacent to and not overhanging footpath. Singular birch and cherry within group previously topped at ca. 0.3m with juvenile regrowth. Basal diameters ca. 160mm. Well clear of road.			10+	C2	0.9m
T17*	Birch (<i>Betula sp</i>)	0	200#	0	0	0	0	n/a	0	Stump	SM	Stump				<10	U2	2.4m
T18*	Wild Cherry (<i>Prunus avium</i>)	3	180#	1	1	1	1	n/a	0	Good	SM	Fair	0.3m stump with ca. 60mm diameter regrowth. Limited useful lifespan unless managed as shrub.			10+	C2	2.16m
G19*	Wild Cherry (<i>Prunus avium</i>)	3	<75	1	1	1	1	n/a	1	Good – Dead	Y	Good Dead –	Three young trees. Two to east are dead. Low risk due to size and location.			10+	C2	0.9m
T20*	Wild Cherry (<i>Prunus avium</i>)	3	250#	1	1	1	1	n/a	0	Good	SM	Fair	0.3m stump with ca. 60mm diameter regrowth. Limited useful lifespan unless managed as shrub. Diameter estimated at base.			10+	C2	3m
T21*	Birch (<i>Betula sp</i>)	0	200#	0	0	0	0	n/a	0	Stump	SM	Stump				<10	U2	2.4m
T22*	Cherry (<i>Prunus sp</i>)	0	150#	0	0	0	0	n/a	0	Stump	SM	Stump				<10	U3	1.8m
T23*	Birch (<i>Betula sp</i>)	0	150#	0	0	0	0	n/a	0	Stump	SM	Stump				<10	U3	1.8m
T24*	Birch (<i>Betula sp</i>)	0	150#	0	0	0	0	n/a	0	Stump	SM	Stump				<10	U3	1.8m

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T25*	Cherry (<i>Prunus sp</i>)	0	150#	0	0	0	0	n/a	0	Stump	SM	Stump				<10	U3	1.8m
T26*	Ash (<i>Fraxinus excelsior</i>)	9	330#	4	4	4	4	5.0/N	2	Good	SM	Fair	No access to base, fenced off. Previously topped at circa 5m, with up to circa 40mm regrowth. Previously crown lifted. Well clear of road. Wound at base with good wound wood development. No visual signs of decay.	Crown lift to clear road by 5.2m (< 12 months)	Crown lift to clear road by 5.2m	20+	B2	3.96m
T27*	Ash (<i>Fraxinus excelsior</i>)	9	340	4	4	4	4	5.0/N	2	Good	SM	Fair	No access to base, fenced off. Previously topped at circa 5m, with up to circa 30mm regrowth. Previously crown lifted. Well clear of road. Bark wound at base with good wound wood development, sounds normal.			20+	B2	4.08m
T28*	Ash (<i>Fraxinus excelsior</i>)	10	380#	4	4	4	4	5.0/N	2	Good	SM	Fair	No access to base, amongst brambles. Previously topped at circa 5m, with up to circa 70mm regrowth. Previously crown lifted over road. May require minor pruning to achieve statutory clearance.	Crown lift to clear road by 5.2m (< 12 months)	Crown lift to clear road by 5.2m	10+	C2	4.56m
T29*	Ash (<i>Fraxinus excelsior</i>)	5	210	2	2	2	2	3.0/N	3	Good	SM	Good	Roadside tree. Managed as a pollard. Well clear of road.			20+	B2	2.52m
T30*	Ash (<i>Fraxinus excelsior</i>)	5	210	2	2	2	2	3.0/N	3	Good	SM	Good	Roadside tree. Managed as a pollard. Well clear of road.			20+	B2	2.52m
T31*	Ash (<i>Fraxinus excelsior</i>)	6	210	2	2	2	2	3.0/N	3	Good	SM	Good	Roadside tree. Managed as a pollard. Well clear of road.			20+	B2	2.52m

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				N	S	E	W											
T32*	Ash (<i>Fraxinus excelsior</i>)	5	210	2	2	2	2	2.0/N	3	Good	SM	Good	Roadside tree. Managed as a pollard. Well clear of road.			20+	B2	2.52m
G33*	Blackthorn (<i>Prunus spinosa</i>)	4	<70#	1	1	1	1	n/a	0	Good	Y	Good	Linear thicket group. Poor visibility towards south edge of group, therefore indicative plotting could be inaccurate at this point.		Remove in part as per TPP	10+	C2	0.84m
T34*	Ash (<i>Fraxinus excelsior</i>)	7	310	2	2	2	2	3.0/N	3	Good	SM	Good	Roadside tree. Managed as a pollard. Well clear of road. Bark damage on base, likely mechanical with good wound wood development, sounds normal when hit with nylon mallet.			20+	B2	3.72m
T35*	White Poplar (<i>Populus alba</i>)	0	270#	0	0	0	0	n/a	0	Stump	SM	Stump				<10	U3	3.24m
T36*	Common Alder (<i>Alnus glutinosa</i>)	10	280	3	3	3	3	4.0/N	0	Good	SM	Good	Roadside tree, managed as a pollard. Epicormic from base. Well clear of road.			20+	B2	3.36m
T37*	White Poplar (<i>Populus alba</i>)	0	270#	0	0	0	0	n/a	0	Stump	SM	Stump				<10	U3	3.24m
T38*	White Poplar (<i>Populus alba</i>)	0	270#	0	0	0	0	n/a	0	Stump	SM	Stump				<10	U3	3.24m
T39*	Crack Willow (<i>Salix fragilis</i>)	3	270, 220, 230, 230, 170	2	2	2	2	n/a	0	Fair	EM	Good	On grass verge parallel with road. Previously pollarded to 2m. Juvenile regrowth at present. Crown well clear of road.			20+	B2	6.07m
T40*	Russian Olive (<i>Elaeagnus angustifolia</i>)	6	180#	5	5	5	5	3.0/W	1	Good	SM	Fair	No access to base, grows within dense undergrowth. No visibility of base.		Remove	20+	B2	2.16m
T41*	Common Alder (<i>Alnus glutinosa</i>)	9	270	3	3	3	3	4.0/N	0	Good	SM	Good	Roadside tree, managed as a pollard. Epicormic from base. Well clear of road.			20+	B2	3.24m

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				N	S	E	W											
T42*	White Poplar (<i>Populus alba</i>)	0	270#	0	0	0	0	n/a	0	Stump	SM	Stump				<10	U3	3.24m
T43*	Common Alder (<i>Alnus glutinosa</i>)	5	280	3	3	3	3	3.0/N	0	Good	SM	Fair	Grows from edge of ditch with no access to base, previously topped to 4m with north lean. Epicormic from base. Well clear of road.			20+	B2	3.36m
T44*	White Poplar (<i>Populus alba</i>)	1	360#	0	0	0	0	n/a	0	Stump	SM	Stump				<10	U3	4.32m
T45*	Crack Willow (<i>Salix fragilis</i>)	5	80, 90, 80, 160	3	3	3	3	2.0/E	0	Good	SM	Fair	On verge adjacent to road. Managed as pollard with juvenile regrowth. Crown clear of road at present.			20+	B2	2.59m
G46*	Cherry (<i>Prunus sp.</i>), Other	3	<70#	1	1	1	1	n/a	0	Good	Y	Good	Self-sown thicket group			10+	C2	0.84m
G47*	Austrian Pine (<i>Pinus nigra</i>)	17	<700#	6	6	6	6	n/a	4	Good	SM-EM	Good	Row of pine along fence line, well clear of road. Predominantly leaning slightly to east.			20+	B1,2	8.4m
T48*	Crack Willow (<i>Salix fragilis</i>)	6	300, 350, 230#	2	2	2	2	n/a	0	Good	M	Good	On grass verge parallel with road. Previously pollarded to 2m. Regrowth up to ca. 60mm diameter. Crown well clear of road.			20+	B2	6.18m
T49*	Norway Maple (<i>Acer platanoides</i>)	3	40	1	1	1	1	n/a	2	Good	Y	Good	Newly planted tree.			10+	C2	0.48m
T50*	Norway Maple (<i>Acer platanoides</i>)	3	40	1	1	1	1	n/a	2	Good	Y	Good	Newly planted tree.			10+	C2	0.48m
T51*	Crack Willow (<i>Salix fragilis</i>)	5	230, 120#	3	3	3	3	2.0/E	1	Good	SM	Fair	Grows from edge of ditch with no access to base. Managed as pollard with juvenile regrowth. Crown well clear of road.			20+	B2	3.11m
T52*	London plane (<i>Platanus acerifolia</i>)	3	200#	2	2	2	2	n/a	0	Stump	SM	Stump	Stump with epicormic regrowth.			<10	U2	2.4m

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				N	S	E	W											
G53*	Crack Willow (<i>Salix fragilis</i>), Silver Birch (<i>Betula pendula</i>), Norway Maple (<i>Acer platanoides</i>), Hawthorn (<i>Crataegus monogyna</i>), London plane (<i>Platanus x acerifolia</i>), Common Alder (<i>Alnus glutinosa</i>), White Willow (<i>Salix alba</i>)	5	<90#	1	1	1	1	n/a	0	Good	Y	Good - Poor	Group of newly planted and self-sown trees on verge adjacent to road. Singular crack willow partially uprooted and leaning over road edge. Largely swamped by undergrowth.	Fell singular uprooted crack willow. (< 3 months)		10+	C2	1.08m
G54*	Cherry (<i>Prunus sp</i>)	4	<75#	1	1	1	1	n/a	0	Good	Y-SM	Good	Group grows beneath pylon platform, south of fence. Surveyed from north of fence on road.			10+	C2	0.9m
T55*	White Poplar (<i>Populus alba</i>)	9	300, 300, 330#	5	5	5	5	1.0/N	1	Good	SM	Fair	Three stems from 1m, unions visually sound when viewed from north. No access to base due to dense undergrowth. Managed as pollard with ca. 30mm regrowth. Crown well clear of road at present, in line with kerb.			20+	B2	6.45m
T56*	White Poplar (<i>Populus alba</i>)	9	570, 280, 330#	5	5	5	5	1.0/N	1	Good	EM	Fair	Two stems from 1.8m, unions visually sound when viewed from north and west. No access to base due to dense undergrowth. Managed as pollard with ca. 40mm regrowth. Crown well clear of road at present. Stem cavity to west at ca. 2m, with good wound wood.			20+	B2	8.59m
T57*	London plane (<i>Platanus x acerifolia</i>)	3	200#	2	2	2	2	n/a	0	Stump	SM	Stump	Stump with epicormic regrowth. Well clear of road. Consider removal			<10	U2	2.4m

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													of epicormic regrowth in 2 to 3 years.					
T58*	London plane x (<i>Platanus acerifolia</i>)	3	200#	2	2	2	2	n/a	0	Stump	SM	Stump	Ivy covered stump with epicormic regrowth.			<10	U2	2.4m
T59*	London plane x (<i>Platanus acerifolia</i>)	3	200#	2	2	2	2	n/a	0	Stump	SM	Stump	Stump with epicormic regrowth.			<10	U2	2.4m
G60*	Blackthorn (<i>Prunus spinosa</i>)	4	<70#	1	1	1	1	n/a	0	Good	Y	Good	Linear thicket group growing along fence line. Bramble swamped. Poor visibility of eastern edge of group, therefore indicative plotting could be slightly inaccurate.		Remove in part as per TPP	10+	C2	0.84m
T61*	London plane x (<i>Platanus acerifolia</i>)	3	200#	2	2	2	2	n/a	0	Stump	SM	Stump	Stump with epicormic regrowth. Well clear of road. Consider removal of epicormic regrowth in 2 to 3 years.			<10	U2	2.4m
T62*	Russian Olive (<i>Elaeagnus angustifolia</i>)	6	180#	5	5	5	5	3.0/W	1	Good	SM	Good	No access to base, grows within dense undergrowth. Surveyed from circa 20m to east. No visibility of lower 3m of tree.		Remove	20+	B2	2.16m
G63*	Other	6	<80#	4	4	4	4	n/a	0	Good	Y-SM	Fair	No access or visibility to bases due to dense undergrowth. Scrub group			10+	C2	0.96m
G64*	Goat Willow (<i>Salix caprea</i>), White Poplar (<i>Populus alba</i>)	4	<75#	1	1	1	1	n/a	0	Good	Y	Good	Group of suckers on edge of car park area, south of fence. Surveyed from north side of fence on road			10+	C2	0.9m
G65*	Birch (<i>Betula</i> sp), Other, Goat Willow (<i>Salix caprea</i>)	2	<75#	1	1	1	1	n/a	0	Good	Y	Good	Group of young self-sown trees, on edge of car park, south of fence. Surveyed from north of fence on road			10+	C2	0.9m

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G66*	Russian Olive (<i>Elaeagnus angustifolia</i>), Butterfly Bush (<i>Buddleja davidii</i>)	3	<75#	1	1	1	1	n/a	0	Good	Y	Good	Young self-sown scrub group, growing adjacent to fence line.			10+	C2	0.9m
G67*	Russian Olive (<i>Elaeagnus angustifolia</i>)	6	<50#	1	1	1	1	n/a	0	Good	Y	Fair	No access or visibility to bases due to dense undergrowth. Scrub group of approx. 7 young clusters.			10+	C2	0.6m
G68*	Hawthorn (<i>Crataegus monogyna</i>), Blackthorn (<i>Prunus spinosa</i>), Butterfly Bush (<i>Buddleja davidii</i>)	5	<80#	3	3	3	3	n/a	0	Good	Y-SM	Good	Thicket group within largely inaccessible area due to dense undergrowth. Mostly young species with occasional taller clusters that are likely semi mature.		Remove	10+	C2	0.96m
G69*	Russian Olive (<i>Elaeagnus angustifolia</i>)	6	<50#	1	1	1	1	n/a	0	Good	Y	Good	No access or visibility to bases due to dense undergrowth. Scrub group, likely self-sown.			10+	C2	0.6m
G70*	Russian Olive (<i>Elaeagnus angustifolia</i>), Butterfly Bush (<i>Buddleja davidii</i>)	2	<75#	1	1	1	1	n/a	0	Good	Y	Good	Young self-sown group growing along fence line, to west.			10+	C2	0.9m
T71*	Cherry (<i>Prunus sp</i>)	5	90, 70, 60#	4	4	4	4	n/a	0	Good	SM	Good	Grows within largely inaccessible area, surveyed from 10m to east. No access to base, with limited visibility. Three stems identified			10+	C2	1.55m
T72*	Crab Apple (<i>Malus sylvestris</i>)	4	60#	2	2	2	2	n/a	0	Good	Y	Good	Grows within largely inaccessible area, surveyed from 10m to east. No access to base.			10+	C2	0.72m
G73*	Russian Olive (<i>Elaeagnus angustifolia</i>)	6	<90#	4	4	4	4	n/a	0	Good	SM	Fair	Grows within largely inaccessible area, surveyed from 10m to east. No access to bases. Limited visibility of		Remove in part as per TPP	20+	B2	1.08m

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				N	S	E	W											
													lower half of group due to dense understory.					
G74*	Hawthorn (<i>Crataegus monogyna</i>), Blackthorn (<i>Prunus spinosa</i>), Butterfly Bush (<i>Buddleja davidii</i>), Ash (<i>Fraxinus excelsior</i>)	5	<80#	3	3	3	3	n/a	0	Good	Y-SM	Good	Thicket group within largely inaccessible area due to dense undergrowth. Mostly young species with occasional semi mature hawthorn clusters.		Remove in part as per TPP	10+	C2	0.96m
G75*	Russian Olive (<i>Elaeagnus angustifolia</i>), Butterfly Bush (<i>Buddleja davidii</i>)	5	<100#	4	4	4	4	n/a	0	Good	Y-SM	Fair	Grows within largely inaccessible area, surveyed from 10m to north. No access to bases. Limited visibility of lower half of group due to dense understory.		Remove	10+	C2	1.2m
G76*	Butterfly Bush (<i>Buddleja davidii</i>)	5	<80#	4	4	4	4	n/a	0	Good	Y-EM	Fair	Limited access and visibility of lower half of group due to dense understory. Grows along boundary between largely inaccessible area and disused car parking area.		Remove	10+	C2	0.96m
G77*	Russian Olive (<i>Elaeagnus angustifolia</i>)	6	<120#	4	4	4	4	n/a	0	Good	SM	Fair	Grows within largely inaccessible area, surveyed from 20m to north. No access to bases. Limited visibility of lower half of group due to dense understory.		Remove	10+	C2	1.44m
G78*	Russian Olive (<i>Elaeagnus angustifolia</i>)	6	<130#	4	4	4	4	n/a	0	Good	SM	Fair	Grows within inaccessible area, surveyed from 15m to east. No access to bases. Limited visibility of lower half of group due to dense understory.		Remove in part as per TPP	10+	C2	1.56m

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				N	S	E	W											
G79*	Russian Olive (<i>Elaeagnus angustifolia</i>), Butterfly Bush (<i>Buddleja davidii</i>), Crack Willow (<i>Salix fragilis</i>), Silver Birch (<i>Betula pendula</i>)	3	<75#	1	1	1	1	n/a	0	Good	Y	Good	Young self-sown scrub group, growing along fence line.			10+	C2	0.9m
T80	Crack Willow (<i>Salix fragilis</i>)	16	480, 880#	5	5	5	5	4.0/E	0	Good	M	Fair	No access to base due to dense understory and epicormic growth. Two stems from base, with limited visibility of union. North and east stems previously pollarded at 5m with ca. 60mm regrowth. Scattered minor dieback of upper crown.		Remove	20+	B1,2	12.03m
G81*	Crack Willow (<i>Salix fragilis</i>)	5	<80#	2	2	2	2	n/a	0	Good	Y-SM	Fair	No access or visibility to bases due to dense undergrowth. Seemingly coppice regen and/or sucker growth.		Remove	10+	C2	0.96m
T82*	Crack Willow (<i>Salix fragilis</i>)	7	800#	3	3	3	3	2.0/E	1	Good	M	Good	No access to base due to dense undergrowth. Previously pollarded at 3m, with ca. 170mm regrowth.		Remove	20+	B2	9.6m
G83*	Russian Olive (<i>Elaeagnus angustifolia</i>)	6	<100#	4	4	4	4	n/a	0	Good	SM	Fair	Grows within inaccessible area, surveyed from 15m to east. No access to bases. Limited visibility of lower half of group due to dense understory.		Remove	10+	C2	1.2m
G84*	Russian Olive (<i>Elaeagnus angustifolia</i>)	4	<90#	1	1	1	1	n/a	0	Good	Y-SM	Fair	Growing amongst dense undergrowth, largely bramble swamped. No visibility of access to bases.		Remove	10+	C2	1.08m

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy				First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Works Required to Facilitate Proposed Development	Estimated Remaining Contribution in Years	Category	Root Protection Area Radius (m)
				N	S	E	W											
G85*	Russian Olive (<i>Elaeagnus angustifolia</i>)	6	<140#	4	4	4	4	n/a	0	Good	SM	Fair	Grows within largely inaccessible area, surveyed from 15m to north. No access to bases. Limited visibility of lower half of group due to dense understory.			10+	C2	1.68m
T86*	Crack Willow (<i>Salix fragilis</i>)	11	400, 360#	5	5	5	5	4.0/S	1	Good	EM	Fair	No access to base due to dense understory. Two stems from base, with limited visibility of union.		Remove	20+	B1,2	6.46m
G87*	Russian Olive (<i>Elaeagnus angustifolia</i>), Butterfly Bush (<i>Buddleja davidii</i>)	4	<60#	1	1	1	1	n/a	0	Good	Y	Fair	Growing amongst dense undergrowth, largely bramble swamped. No visibility of access to bases.		Remove	10+	C2	0.72m
G88*	Russian Olive (<i>Elaeagnus angustifolia</i>)	6	<140#	4	4	4	4	n/a	0	Good	SM	Good	Grows within largely inaccessible area. No access to bases. Limited visibility of lower half of group due to dense undergrowth.			10+	C2	1.68m
G89*	Russian Olive (<i>Elaeagnus angustifolia</i>), Ash (<i>Fraxinus excelsior</i>)	3	<75#	2	2	2	2	n/a	0	Good	Y	Good	Young self-sown scrub group.		Remove	10+	C2	0.9m
G90*	Goat Willow (<i>Salix caprea</i>)	2	<40#	2	2	2	2	n/a	0	Good	Y	Good	Young scrub group, of three goat willow.			10+	C2	0.48m
G91*	Russian Olive (<i>Elaeagnus angustifolia</i>)	6	<140#	4	4	4	4	n/a	0	Good	Y-SM	Fair	No access or visibility of bases due to dense undergrowth. Two hawthorn and cluster of Russian olive.		Remove	10+	C2	1.68m
T92*	Hawthorn (<i>Crataegus monogyna</i>)	3	30, 40, 50, 50# 30, 20, 60, 50#	2	2	2	2	n/a	0	Good	Y	Good	Young multi-stemmed shrub.			10+	C2	1.27m

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				N	S	E	W											
G93*	Hawthorn (<i>Crataegus monogyna</i>), Ash (<i>Fraxinus excelsior</i>)	3	<75#	1	1	1	1	n/a	0	Good	Y	Good	Two ash and two hawthorn with stems circa 3m apart. Largely bramble swamped, with no access to bases.			10+	C2	0.9m
G94*	Blackthorn (<i>Prunus spinosa</i>), Hawthorn (<i>Crataegus monogyna</i>), Goat Willow (<i>Salix caprea</i>), Butterfly Bush (<i>Buddleja davidii</i>)	4	<80#	3	3	3	3	n/a	0	Good	Y-SM	Good	Scrub group growing along fence line. Largely bramble swamped. No access and limited visibility to bases.			10+	C2	0.96m
G95*	Hawthorn (<i>Crataegus monogyna</i>), Ash (<i>Fraxinus excelsior</i>), Blackthorn (<i>Prunus spinosa</i>), Cherry Plum (<i>Prunus cerasifera</i>), Cherry (<i>Prunus sp</i>), Apple (<i>Malus sp</i>), Spindle (<i>Euonymus europaeus</i>)	3	<120#	1	1	1	1	n/a	0	Good	Y-SM	Fair	Largely inaccessible area which is mostly covered in dense clusters of bramble and rose, with occasional young tree species coming up through. Less occasional are semi mature hawthorn, and a singular semi mature apple which are bramble swamped.		Remove in part as per TPP	10+	C2	1.44m
T96*	Raywood ash (<i>Fraxinus angustifolia</i> Raywood)	4	100	2	2	2	2	n/a	2	Good	SM	Good	Part of row between access track and fence.			10+	C1,2	1.2m
T97*	Raywood ash (<i>Fraxinus angustifolia</i> Raywood)	2	75	2	2	2	2	n/a	1	Fair	Y	Good	Part of row between access track and fence. Scattered minor dieback. Swamped by climber to 2m.			10+	C1,2	0.9m
T98*	Raywood ash (<i>Fraxinus angustifolia</i> Raywood)	2	150	3	3	3	3	n/a	1	Good	SM	Good	Part of row between access track and fence. Scattered minor dieback of lower branches, likely due to shading.			20+	B1,2	1.8m
T99*	Raywood ash (<i>Fraxinus</i>	2	150	3	3	3	3	n/a	1	Fair	SM	Good	Part of row between access track and fence.			10+	C1,2	1.8m

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				N	S	E	W											
	<i>angustifolia</i> Raywood)												Moderate dieback of crown.					
T100*	Raywood ash (<i>Fraxinus angustifolia</i> Raywood)	3	75	2	2	2	2	n/a	1	Good	Y	Good	Part of row between access track and fence.			10+	C1,2	0.9m
T101*	Raywood ash (<i>Fraxinus angustifolia</i> Raywood)	4	270	3	3	3	3	n/a	0	Fair	SM	Good	Part of row between access track and fence. Minorly sparse outer crown			20+	B1,2	3.24m
T102*	Raywood ash (<i>Fraxinus angustifolia</i> Raywood)	3	150	3	3	3	3	n/a	1	Good	SM	Good	Part of row between access track and fence.			10+	C1,2	1.8m
T103*	Raywood ash (<i>Fraxinus angustifolia</i> Raywood)	3	190#	3	3	3	3	2.0/E	0	Poor	SM	Fair	Part of row between access track and fence. Moderate to major dieback of whole crown area with moderate deadwood. Linear strip of missing bark from base to ca. 3m.	Remove dead wood if land use changes		10+	C1,2	2.28m
G104*	Blackthorn (<i>Prunus spinosa</i>)	4	<80#	3	3	3	3	n/a	0	Good	Y-SM	Good	Scrub group. No access and limited visibility to bases.			10+	C2	0.96m
G105*	Butterfly Bush (<i>Buddleja davidii</i>)	3	<50#	2	2	2	2	n/a	0	Good	Y-SM	Good	Group of self-sown <i>Buddleja</i> , growing along fence line. Well-spaced out amongst scrubland with clusters of bramble.			10+	C2	0.6m
G106*	Hawthorn (<i>Crataegus monogyna</i>), Elder (<i>Sambucus nigra</i>)	4	<90#	3	3	3	3	n/a	0	Good	Y-SM	Good	Scrub group growing along fence line. Bramble swamped. No access and limited visibility to bases.			10+	C2	1.08m

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				N	S	E	W											
G107*	Apple (<i>Malus sp.</i>), Crab Apple (<i>Malus sylvestris</i>)	4	<160#	4	4	4	4	n/a	0	Good	SM	Fair	Crab apple with circa 12 stems (ca. 30-70mm) from base and circa 4 apple on edge of bramble swamped area. No access to bases with limited visibility within.			10+	C2	1.9m
G108*	Hawthorn (<i>Crataegus monogyna</i>), Elder (<i>Sambucus nigra</i>), Other, Spindle (<i>Euonymus europaeus</i>), Blackthorn (<i>Prunus spinosa</i>)	4	<90#	3	3	3	3	n/a	0	Good	Y-SM	Good	Buddleja. Scrub group of mostly self-sown Buddleja growing along fence line. Bramble swamped. No access and limited visibility to bases.		Remove in part as per TPP	10+	C2	1.08m
G109*	Hawthorn (<i>Crataegus monogyna</i>)	3	<75#	1	1	1	1	n/a	0	Good	Y-SM	Fair	Cluster of hawthorn growing in largely inaccessible area covered in bramble and rose.			10+	C2	0.9m
G110*	Ash (<i>Fraxinus excelsior</i>), Elaeagnus (<i>Elaeagnus sp.</i>)	8	<280#	5	5	5	5	n/a	0	Good	SM	Good	Group of 4 ash growing north of substation fence line with <i>Elaeagnus</i> at base. No access to bases due to dense undergrowth and low canopies.			20+	B2	3.36m
G111*	Lombardy Poplar (<i>Populus nigra 'Italica'</i>)	13	<280#	1	1	1	1	n/a	0	Good	SM	Good	Within substation compound. Surveyed from distance to north and south, with no visibility of lower third of trees.			20+	B2	3.36m
G112*	Leyland Cypress (<i>X Cupressocyparis leylandii</i>)	10	<350#	1	1	1	1	n/a	0	Fair	SM-EM	Good	Row of trees within substation compound. No access to bases, surveyed from distance to south. Scattered minor dieback throughout row.			20+	B2	4.2m

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				N	S	E	W											
T113*	Small-leaved Lime (<i>Tilia cordata</i>)	6	150#	3	3	3	3	n/a	2	Good	SM	Fair	Surveyed from distance to south, no access or visibility to base. Ivy clad to ca. 5m.			10+	C2	1.8m
G114*	Butterfly Bush (<i>Buddleja davidii</i>)	3	<75#	1	1	1	1	n/a	0	Good	Y	Good	Self-set <i>Buddleja</i> group between two fence rows. Limited useful life expectancy due to location			<10	U2	0.9m
T115*	Small-leaved Lime (<i>Tilia cordata</i>)	7	160#	3	3	3	3	n/a	2	Good	SM	Fair	Surveyed from distance to south, no access or visibility to base. Ivy clad to ca. 5m.			10+	C2	1.92m
T116*	Hawthorn (<i>Crataegus monogyna</i>)	6	80, 80, 80, 70, 70#	3	3	3	3	n/a	0	Poor	EM	Good	No access to base. Moderate crown sparsity and dieback.			10+	C2	2.04m
T117*	Hawthorn (<i>Crataegus monogyna</i>)	2	30#	1	1	1	1	n/a	0	Good	Y	Good	Self-set. Squat form.			10+	C1	0.36m
H118*	Apple (<i>Malus sp</i>)	4	<80#	2	2	2	2	n/a	0	Good	Y	Good	Dense group, dense bramble growing through group.			10+	C2	0.96m
H119	Hawthorn (<i>Crataegus monogyna</i>), Elder (<i>Sambucus nigra</i>)	4	<90#	3	3	3	3	n/a	0	Good	Y-SM	Good	Self-set trees.			10+	C2	1.08m
T120	Hawthorn (<i>Crataegus monogyna</i>)	5	90, 80, 90, 70, 60#	2	2	2	2	n/a	0	Good	EM	Good				10+	C1	2.12m
H121*	Hawthorn (<i>Crataegus monogyna</i>)	5	<80#	2	2	2	2	n/a	0	Good - Fair	Y-SM	Good				10+	C2	0.96m
T122	Goat Willow (<i>Salix caprea</i>)	8	230, 230, 170, 180	4	4	4	4	1.0/S	1	Good	EM	Good	Several bark wounds to lower stem and branches. Likely grazing damage. Moderate wound wood development.			20+	B2	4.91m

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				N	S	E	W											
T123	Elder (<i>Sambucus nigra</i>)	4	90, 70, 80, 80, 80, 80#	2	2	2	2	0.7/E	0	Poor	M	Fair	Significant crown dieback and sparsity. Limited useful life expectancy. Low traffic area.			<10	U1	2.35m
T124*	Elder (<i>Sambucus nigra</i>)	4	60, 60#	1	1	1	1	0.3/NW	0	Poor	Y	Fair	Western half of crown is dead. Recent evidence of fire adjacent to tree likely to be the cause. Limited useful life expectancy.			<10	U1	1.02m
T125*	Hawthorn (<i>Crataegus monogyna</i>)	3	50#	1	1	1	1	n/a	0	Good	Y	Good	Self-set.			10+	C1	0.6m
T126*	Hawthorn (<i>Crataegus monogyna</i>)	5	30, 30, 20, 30#	1	1	1	1	n/a	0	Good	Y	Good	Self-set.			10+	C1	0.67m
G127*	Hawthorn (<i>Crataegus monogyna</i>)	4	<100#	2	2	2	2	n/a	0	Good	SM	Fair	Limited visibility and no access to bases due to dense undergrowth, bramble clad.			10+	C2	1.2m
G128*	Hawthorn (<i>Crataegus monogyna</i>)	4	<75#	2	2	2	2	n/a	0	Fair - Dead	Y	Fair	Limited visibility and no access to bases due to dense undergrowth, bramble clad. Stem to north dead and partially burnt. Adjacent to site of recently excavated ditch.			10+	C2	0.9m
T129*	Elder (<i>Sambucus nigra</i>)	4	90, 30#	2	2	2	2	n/a	0	Good	EM	Good	No access and limited visibility of base. Two stems from base. Grows amongst dense brambles.			10+	C2	1.14m
G130*	Elder (<i>Sambucus nigra</i>)	4	<60#	2	2	2	2	n/a	0	Good	SM	Fair	Group of three closely spaced elder. Growing amongst dense bramble with no access and limited visibility of base.			10+	C2	0.72m

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				N	S	E	W											
T131*	Hawthorn (<i>Crataegus monogyna</i>)	5	90, 70#	2	2	2	2	n/a	0	Fair	SM	Good	No access to base. Minor crown sparsity and dieback.			10+	C2	1.37m
G132*	Hawthorn (<i>Crataegus monogyna</i>)	4	<100#	3	3	3	3	n/a	0	Good - Fair	SM	Good	Surveyed from circa 20m to north, within horse field with no access. Bramble clad. Southern most hawthorn with minor outer crown dieback.			10+	C2	1.2m
T133*	Elder (<i>Sambucus nigra</i>)	4	60#	1	1	1	1	n/a	0	Fair	Y	Fair	Moderate crown dieback and sparsity.			<10	U1	0.72m
T134*	Dogwood (<i>Cornus sanguinea</i> Dogwood)	3	80#	2	2	2	2	n/a	0	Good	SM	Fair	Grows amongst dense bramble with no access or visibility to base.		Remove	10+	C2	0.96m
T135*	Hawthorn (<i>Crataegus monogyna</i>)	3	50#	1	1	1	1	n/a	0	Good	Y	Good	No access to base.			10+	C1	0.6m
G136*	Sycamore (<i>Acer pseudoplatanus</i>)	15	<500#	5	5	5	5	n/a	0	Good	SM-EM	Good	No access to bases, trees viewed from road to east.			20+	B2	6m
T137*	Cherry Plum (<i>Prunus cerasifera</i>)	7	160, 80, 70, 60, 70, 40, 30#	3	3	3	3	1.0/S	0	Fair	EM	Fair	Previously topped at 1m, with multi-stemmed regrowth. Dense epicormic from base and rooting area restricting basal access. Minor dieback of western crown.			10+	C2	2.31m
T138*	Elder (<i>Sambucus nigra</i>)	4	80, 80, 60, 20, 20#	1	2	0	2	1.0/S	1	Poor	EM	Fair	Multi-stemmed from ca. 0.5m with dense epicormic restricting access. Moderate dieback of upper crown, with low bud density.			10+	C2	1.57m
T139*	Elder (<i>Sambucus nigra</i>)	6	160, 190, 90	3	3	3	3	1.0/N	1	Fair	V	Fair	Moderate crown dieback and sparsity. Southern stem with major internal decay and several animal holes and cavities. Southern			40+	A3	7.5

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				N	S	E	W											
													stem in significant decline.					
T140*	Hawthorn (<i>Crataegus monogyna</i>)	4	90, 80#	2	2	2	2	n/a	0	Good	SM	Good	No access to base.		Remove	10+	C2	1.44m
T141*	Hawthorn (<i>Crataegus monogyna</i>)	4	60#	2	2	2	2	n/a	0	Good	Y	Good	No access to base.			10+	C1	0.72m
G142*	Goat Willow (<i>Salix caprea</i>)	5	<200#	4	4	4	4	n/a	0	Good	Y-EM	Fair	Group of two early mature goat willow, with occasional young species, becoming more frequent to the eastern edge. Growing amongst dense bramble with no access and limited visibility of bases.		Remove	10+	C2	2.4m
G143*	Butterfly Bush (<i>Buddleja davidii</i>)	3	<50#	1	1	1	1	n/a	1	Good	SM	Fair	Grows amongst dense bramble with no access to bases.		Remove	10+	C2	0.6m
H144*	Hawthorn (<i>Crataegus monogyna</i>), Blackthorn (<i>Prunus spinosa</i>)	6	<120#	2	2	2	2	n/a	0	Good - Fair	Y-SM	Good	No access to bases. Viewed from public footway.		Remove	10+	C1,2	1.44m
T145*	Sycamore (<i>Acer pseudoplatanus</i>)	5	80, 75#	2	2	2	2	n/a	2	Good	SM	Fair	Grows amongst dense bramble with no access to base. Two stems from base, union with no signs of active separation.		Remove	10+	C2	1.32m
T146*	Sycamore (<i>Acer pseudoplatanus</i>)	5	100#	2	2	2	2	0.4/SW	0	Good	Y	Good			Remove	10+	C1	1.2m
T147*	Hawthorn (<i>Crataegus monogyna</i>)	4	70#	1	1	1	1	n/a	0	Good	Y	Good	No access to base.		Remove	10+	C1	0.84m

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				N	S	E	W											
G148*	Hybrid black poplar (<i>Populus x canadensis</i>), Sycamore (<i>Acer pseudoplatanus</i>), White Poplar (<i>Populus alba</i>)	17	<500#	5	5	5	5	n/a	0	Good - Fair	EM	Good - Fair	No access to bases, trees viewed from road to east. Poplars have been previously topped generally with good regrowth.			20+	B2	6m
T149*	Hawthorn (<i>Crataegus monogyna</i>)	4	70#	2	2	2	2	n/a	0	Good	Y	Good	No access to base.		Remove	10+	C1	0.84m
T150*	Hawthorn (<i>Crataegus monogyna</i>)	2	80, 20, 20#	1	1	1	1	n/a	0	Good	SM	Good	Stunted form, three main stems from base. with a number of smaller stems from base forming lower crown. No access to base.		Remove	10+	C2	1.02m
T151	Hawthorn (<i>Crataegus monogyna</i>)	3	80#	1	1	1	1	n/a	0	Fair	SM	Good	Stunted form, with a number of smaller stems from base forming lower crown. No access to base. Moderate dieback of upper crown		Remove	10+	C2	0.96m
T152*	Hawthorn (<i>Crataegus monogyna</i>)	3	50#	2	2	2	2	n/a	0	Good	Y	Good	No access to base. Minor crown sparsity.		Remove	10+	C1	0.6m
G153*	Sycamore (<i>Acer pseudoplatanus</i>), Hawthorn (<i>Crataegus monogyna</i>), Willow (<i>Salix sp</i>), Butterfly Bush (<i>Buddleja davidii</i>), Privet (<i>Ligustrum vulgare</i>)	11	<280#	4	4	4	4	n/a	0	Good - Dead	Y-SM	Good - Dead	Group of self-sown trees. No access to bases behind fence. Predominantly young to semi mature shrubs with occasional semi mature sycamore. Circa 3 dead trees along fence line in group. Well clear of road, however, are encroaching footpath.	Crown lift to clear path by 2.5m. Remove dead trees along southern edge of group. (< 3 months)	Crown lift to clear path by 2.5m	20+	B2	3.36m
G154*	Russian Olive (<i>Elaeagnus angustifolia</i>)	5	<90#	3	3	3	3	n/a	0	Good	EM	Good	No access to base behind fence. Bramble clad. Well clear of road and footpath.			10+	C2	1.08m

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				N	S	E	W											
T155*	Ash (<i>Fraxinus excelsior</i>)	3	75, 30#	2	2	2	2	n/a	0	Good	Y	Fair	Grows in horse field with no access to base. Stunted form		Remove	10+	C2	0.97m
T156*	Hawthorn (<i>Crataegus monogyna</i>)	4	70, 50#	1	1	1	1	n/a	0	Good	Y	Good	No access to base.			10+	C1	1.03m
H157*	Hawthorn (<i>Crataegus monogyna</i>)	4	<60#	2	2	2	2	n/a	0	Good	Y	Good	No access to bases.			10+	C2	0.72m
G158*	Crab Apple (<i>Malus sylvestris</i>), Hornbeam (<i>Carpinus betulus</i>)	8	<195#	4	4	4	4	n/a	2	Good	SM	Fair	Group of semi mature crab apple. Multi-stemmed from base, previously crown lifted, with stub cuts.		Remove	10+	C2	2.3m
G159*	Hawthorn (<i>Crataegus monogyna</i>), Privet (<i>Ligustrum vulgare</i>)	7	<180#	4	4	4	4	n/a	0	Good - Fair	Y-EM	Good Fair	Row of predominantly young to semi mature privet behind fence line. Two fair condition hawthorn, with minor dieback either end of group. Southern crowns managed, well clear of footpath and road.			10+	C2	2.16m
H160*	Hawthorn (<i>Crataegus monogyna</i>)	6	<120#	2	2	2	2	n/a	0	Good - Fair	Y-SM	Good	No access to bases. Viewed from public footway.		Remove	10+	C1,2	1.44m
G161*	Hawthorn (<i>Crataegus monogyna</i>), Elder (<i>Sambucus nigra</i>), Sycamore (<i>Acer pseudoplatanus</i>)	10	<170#	3	3	3	3	n/a	0	Good - Fair	SM-EM	Good Fair	No access to bases. Trees viewed from road to east.			10+	C2	2.04m
G162*	Hawthorn (<i>Crataegus monogyna</i>), Sycamore (<i>Acer pseudoplatanus</i>), Blackthorn (<i>Prunus spinosa</i>)	7	<280#	4	4	4	4	n/a	0	Good - Poor	Y-M	Good Fair	Row of predominantly hawthorn behind fence line. Two poor condition mature hawthorn, one either end of group, with moderate deadwood. Considered low risk given height and location. Canopies			10+	C2	3.36m

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy				First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Works Required to Facilitate Proposed Development	Estimated Remaining Contribution in Years	Category	Root Protection Area Radius (m)
				N	S	E	W											
													managed to south, well clear of path and road.					
G163*	Grey Alder (<i>Alnus incana</i>), Hawthorn (<i>Crataegus monogyna</i>), Field Maple (<i>Acer campestre</i>), Dogwood (<i>Cornus sanguinea</i> Dogwood)	5	<120#	1	1	1	1	n/a	0	Good	Y-SM	Good	Group of closely spaced young to semi mature trees. Resembling un-topped hedge.		Remove in part as per TPP.	10+	C2	1.44m
T164*	Sycamore (<i>Acer pseudoplatanus</i>)	15	400#	5	5	5	5	n/a	0	Fair	EM	Good	No access to base. Tree viewed from road to east. Majority of leaves have turned brown, likely to be premature leaf loss.			20+	B1	4.8m
G165*	Common Alder (<i>Alnus glutinosa</i>), Field Maple (<i>Acer campestre</i>), Hawthorn (<i>Crataegus monogyna</i>)	7	<130#	1	1	1	1	n/a	0	Good	Y-SM	Good	Boundary row with no access to bases. Mostly hedgerow species with occasional semi mature trees.			10+	C2	1.56m
T166*	Hawthorn (<i>Crataegus monogyna</i>)	3	70, 50, 30#	1	1	1	1	n/a	0	Good	SM	Good	Surveyed from track ca. 15m to east. Grows on north edge of bank. Multi-stemmed from near base, limited visibility of stems.			10+	C2	1.09m
G167*	Hawthorn (<i>Crataegus monogyna</i>)	5	<280#	4	4	4	4	n/a	1	Good - Poor	EM-OM	Good - Fair	Group of two hawthorn with intertwined stems. Over mature specimen with moderate deadwood throughout crown, and stem cavity at site of previous limb failure. Early mature			20+	B2	3.36m

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy				First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Works Required to Facilitate Proposed Development	Estimated Remaining Contribution in Years	Category	Root Protection Area Radius (m)
				N	S	E	W											
													specimen with moderate dieback of eastern crown. Deadwood with no targets, well on verge.					
T168*	White Poplar (<i>Populus alba</i>)	16	600#	5	5	5	5	3.0/N	2	Good	M	Good	No access to base. Viewed from road to east. Large ditch to north.			20+	B1	7.2m
G169*	Sycamore (<i>Acer pseudoplatanus</i>), Hawthorn (<i>Crataegus monogyna</i>)	11	<280#	5	5	5	5	n/a	2.5	Good	SM-EM	Fair	Group of closely spaced semi to early mature sycamore, likely self-sown. Previously crown lifted over footway. Ca 2.5m canopy clearance over road. Singular hawthorn to west, well managed and clear of path and road.	Crown lift to clear road by 5.2m (When funds allow)	Crown lift to clear road by 5.2m	20+	B2	3.36m
H170*	Hawthorn (<i>Crataegus monogyna</i>)	5	<100#	2	2	2	2	n/a	0	Good - Fair	Y-SM	Good	No access to bases. Viewed from public footway.		Remove	10+	C1,2	1.2m
G171*	Butterfly Bush (<i>Buddleja davidii</i>)	2	<40#	1	1	1	1	n/a	0	Good	Y-SM	Good	Row of seemingly self-sown Buddleja behind fence.			10+	C2	0.48m
T172*	Sycamore (<i>Acer pseudoplatanus</i>)	11	220#	3	3	3	3	n/a	3	Good	SM	Good	No access to base. Tree viewed from road to east with limited visibility.			20+	B2	2.64m
T173*	Goat Willow (<i>Salix caprea</i>)	5	160, 200, 50, 40#	5	2	6	5	3.0/E	0	Good	EM	Fair	Grows atop retaining wall with strong north lean, south edge of ditch, with structural surface root growing ca. 5m east between retaining wall and wearing course. South crown managed to keep footpath clear. Limited			10+	C2	3.17m

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy				First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Works Required to Facilitate Proposed Development	Estimated Remaining Contribution in Years	Category	Root Protection Area Radius (m)
				N	S	E	W											
													useful life expectancy due to location.					
T174*	White Poplar (<i>Populus alba</i>)	16	550	8	5	9	9	3.0/E	3	Good	EM	Fair	Grows on south edge of ditch. Previous limb removal/ crown lifting to south. Wounds up to ca. 160mm diameter, with poor wound wood development. Asymmetric crown.			20+	B1,2	6.6m
T175*	Wild Cherry (<i>Prunus avium</i>)	5	120#	3	3	3	3	1.0/W	2	Good	Y	Good	No access to base, behind fence. Well clear of road and footpath.			10+	C2	1.44m
T176*	Wild Cherry (<i>Prunus avium</i>)	7	120, 80, 70#	3	3	4	4	1.0/W	2	Good	SM	Fair	No access to base, behind fence. Three stems from base, unions with no signs of active separation. Managed crown to south. Well clear of road and footpath.			20+	B2	1.92m
T177*	Hawthorn (<i>Crataegus monogyna</i>)	2	60, 30, 30, 20#	2	0	3	2	n/a	0	Good	SM	Good	Grows along fence line. Managed crown to south.			10+	C2	0.91m
T178*	Sycamore (<i>Acer pseudoplatanus</i>)	3	75#	1	1	1	1	n/a	1	Good	Y	Good	Young seemingly self-sown tree. Good potential.			10+	C2	0.9m

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy				First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Works Required to Facilitate Proposed Development	Estimated Remaining Contribution in Years	Category	Root Protection Area Radius (m)
				N	S	E	W											
G179*	Lombardy Poplar (<i>Populus nigra</i> 'Italica'), Hawthorn (<i>Crataegus monogyna</i>), Blackthorn (<i>Prunus spinosa</i>), Cherry Plum (<i>Prunus cerasifera</i>)	10	<350#	3	3	3	3	n/a	0	Good - Dead	SM-EM	Good Dead -	Row of trees behind fence with no access to base. Hawthorn dominant hedge along fence line, with occasional prunus species, growing just south of row of early mature Lombardy poplar, with occasional dead trees. Occasional moderate dieback amongst poplar with frequent moderate deadwood. Poplar previously heavily topped to ca. 8m. Deadwood and dead trees largely leaning north away from road, and well supported by dense understory.			10+	C2	4.2m
T180*	Hawthorn (<i>Crataegus monogyna</i>)	5	70#	2	2	2	2	n/a	0	Good	Y	Good	No access to base. Viewed from public footway.			10+	C1	0.84m
G181*	Hawthorn (<i>Crataegus monogyna</i>), Elder (<i>Sambucus nigra</i>)	5	<140#	3	3	3	3	n/a	0	Good - Fair	SM-EM	Good Fair -	No access to bases due to dense understory and steep bank. Row of predominantly early mature hawthorn, with occasional semi mature species.			10+	C2	1.68m
T182	Hawthorn (<i>Crataegus monogyna</i>)	5	70#	2	2	2	2	n/a	0	Good	Y	Good	No access to base. Viewed from public footway.			10+	C1	0.84m
G183*	Lombardy Poplar (<i>Populus nigra</i> 'Italica')	10	<310#	3	3	3	3	n/a	1	Fair - Dead	Y-SM	Good Dead -	Row of trees with no access to bases behind fence. Occasional dead younger species well away from road, with scattered minor dieback throughout row. Previously reduced. Collectively moderate			20+	B1,2	3.72m

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy				First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Works Required to Facilitate Proposed Development	Estimated Remaining Contribution in Years	Category	Root Protection Area Radius (m)
				N	S	E	W											
													quality, with occasional low-quality individuals.					
H184*	Hawthorn (<i>Crataegus monogyna</i>)	5	<100#	2	2	2	2	n/a	0	Good - Fair	Y-SM	Good	No access to bases. Viewed from public footway.			10+	C1,2	1.2m
T185	Ash (<i>Fraxinus excelsior</i>)	8	390#	4	4	4	4	2.0/E	1	Fair	EM	Fair	No access to base behind fence. Previous heavy reduction with juvenile regrowth, multiple poor pruning cuts.			10+	C2	4.68m
G186*	Leyland Cypress (<i>X Cupressocyparis leylandii</i>)	4	<100#	1	1	1	1	n/a	1	Poor	Y	Fair	Two multi stem Leyland. Major crown dieback. Limited useful life expectancy.	Fell (< 12 months)		<10	U1	1.2m
T187*	White Poplar (<i>Populus alba</i>)	18	700#	9	2	7	5	4.0/W	2	Good	M	Good	No access to base. In third party land. Lean north with corrective growth. Forms large crown with poplar to south. Autumnal leaf fall.			20+	B1,2	8.4m
T188*	Weeping Willow (<i>Salix X chrysocoma</i>)	8	300#	4	5	3	5	4.0/S	1	Good	SM	Fair	No access to base, behind fence, growing on edge of ditch. Previously reduced heavily with ca. 3cm diameter regrowth. Crown in line with kerb edge, with 2.5m clearance over footpath. Minorly suppressed by adjacent tree			20+	B2	3.6m
T189*	Elder (<i>Sambucus nigra</i>)	3	50, 50#	1	1	1	1	n/a	0	Good	SM	Fair	Stem diameter estimated from ca. 30cm from ground level. Previously topped at ca.			10+	C2	0.85m

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy				First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Works Required to Facilitate Proposed Development	Estimated Remaining Contribution in Years	Category	Root Protection Area Radius (m)
				N	S	E	W											
													50cm with juvenile regrowth					
T190*	White Poplar (<i>Populus alba</i>)	18	790	4	6	8	6	3.0/SW	2	Good	M	Good	No access to base. In third party land. Forms large crown with poplar to south. Autumnal leaf fall. Previous crown lifting over footway and road to south.			20+	B1,2	9.48m
H191*	Firethorn (<i>Pyracantha sp.</i>)	4	<70#	2	2	2	2	n/a	0	Good	SM	Good	Partially managed <i>Pyracantha</i> hedge.			10+	C2	0.84m
T192*	Hawthorn (<i>Crataegus monogyna</i>)	4	50#	1	1	1	1	n/a	0	Fair	Y	Good	No access to base. Minor crown sparsity.		Remove	10+	C1	0.6m
T193*	Ash (<i>Fraxinus excelsior</i>)	10	130, 120#	3	2	3	3	3.0/N	0	Good	Y	Good	No access to base.			10+	C1	2.12m
H194*	Hawthorn (<i>Crataegus monogyna</i>)	5	<100#	2	2	2	2	n/a	0	Good - Fair	Y-SM	Good	No access to bases. Viewed from public footway.			10+	C1,2	1.2m
G195*	Tamarisk (<i>Tamarix tetrandia</i>), Elder (<i>Sambucus nigra</i>), Hawthorn (<i>Crataegus monogyna</i>)	4	<180#	1	1	1	1	n/a	0	Good - Poor	SM-OM	Good - Poor	Predominantly semi mature Tamarisk with occasional semi mature hawthorn and singular over mature elder. Elder in decline with moderate deadwood (with no targets) and low apical bud density.			10+	C2	2.16m
T196*	Hawthorn (<i>Crataegus monogyna</i>)	4	60#	2	2	2	2	n/a	0	Good	Y	Good	No access to base.			10+	C1	0.72m
T197	Hawthorn (<i>Crataegus monogyna</i>)	4	60#	2	2	2	2	n/a	0	Good	Y	Good	No access to base.			10+	C1	0.72m
T198*	Sycamore (<i>Acer pseudoplatanus</i>)	6	90, 80, 90, 90, 60#	2	2	2	2	1.6/E	0	Good	Y	Good	No access to base. North of ditch. Several limbs growing through fence to west.			10+	C1	2.22m

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy				First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Works Required to Facilitate Proposed Development	Estimated Remaining Contribution in Years	Category	Root Protection Area Radius (m)
				N	S	E	W											
T199*	Field Maple (<i>Acer campestre</i>)	6	120#	3	3	3	3	0.8/E	0	Good	Y	Good			Remove	10+	C1	1.44m
T200*	Field Maple (<i>Acer campestre</i>)	3	60#	1	1	1	1	n/a	0	Good	Y	Good			Remove	10+	C1	0.72m
T201	Hawthorn (<i>Crataegus monogyna</i>)	4	50#	2	2	2	2	n/a	0	Good	Y	Good	No access to base. Viewed from public footway.			10+	C1	0.6m
G202*	Elder (<i>Sambucus nigra</i>), Cherry Plum (<i>Prunus cerasifera</i>)	6	<100#	1	1	1	1	n/a	0	Good - Fair	Y-SM	Good	Self-set trees beneath large purple plum.			10+	C2	1.2m
G203*	Tamarisk (<i>Tamarix tetrandia</i>), Elder (<i>Sambucus nigra</i>)	4	<120#	1	1	1	1	n/a	0	Good - Poor	SM-EM	Good - Poor	Predominantly early mature Tamarisk with occasional semi mature elder. Elder in decline with moderate deadwood. Several split branches amongst Tamarisk, largely supported by canopy beneath.	Remove dead wood over footpath. (< 3 months)		10+	C2	1.44m
T204*	Cherry Plum (<i>Prunus cerasifera</i>)	8	250, 300, 300, 160#	6	4	6	5	1.0/S	0	Good - Fair	M	Good	Limited access to base. Multiple stems from 0-1m. Minor outer crown dieback. Previous crown lifting over footway and road.			20+	B1	6.21m
H205*	Elder (<i>Sambucus nigra</i>)	6	<130#	3	3	3	3	n/a	0	Good - Fair	SM-EM	Good - Fair	No access to bases. Dense group with dense ivy/climber and bramble growth smothering group.			10+	C1,2	1.56m
T206	Hawthorn (<i>Crataegus monogyna</i>)	4	50#	1	1	1	1	n/a	0	Good	Y	Good	No access to base. Viewed from road to south.			10+	C1	0.6m
G207*	Elder (<i>Sambucus nigra</i>)	6	<90#	2	2	2	2	n/a	0	Good	Y-SM	Good	No access to bases. Viewed from footway north of ditch.			10+	C2	1.08m

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy				First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Works Required to Facilitate Proposed Development	Estimated Remaining Contribution in Years	Category	Root Protection Area Radius (m)
				N	S	E	W											
T208*	Cherry Plum (<i>Prunus cerasifera</i>)	9	350, 200, 200, 250, 180, 170#	6	4	6	5	2.0/S	0	Good - Fair	M	Good	Limited access to base. Multiple stems from 0-1m. Minor outer crown dieback. Previous crown lifting over footway and road.			20+	B1	6.61m
T209	Hawthorn (<i>Crataegus monogyna</i>)	4	50#	1	1	1	1	n/a	0	Good	Y	Good	No access to base. Viewed from road to south.			10+	C1	0.6m
T210*	Field Maple (<i>Acer campestre</i>)	6	130#	3	3	3	3	n/a	0	Good	SM	Good	No access to base. Viewed from footway to north of ditch.			10+	C1	1.56m
G211*	Hawthorn (<i>Crataegus monogyna</i>), Tamarisk (<i>Tamarix tetrandia</i>), Purple Plum (<i>Prunus cerasifera</i> 'Nigra')	5	<300#	3	3	3	3	n/a	0	Good - Fair	Y-EM	Good Fair	Early mature purple plum with occasional young and semi mature other species.			10+	C2	3.6m
T212*	Field Maple (<i>Acer campestre</i>)	5	90#	2	2	2	2	n/a	0	Good	Y	Good	No access to base. Viewed from footway to north of ditch.			10+	C1	1.08m
H213*	Leyland Cypress (<i>X Cupressocyparis leylandii</i>)	17	<400#	3	3	3	3	n/a	0	Good - Dead	SM-EM	Good Dead	Limited access to bases. Leyland hedge along boundary. Trees previously topped with major clearance pruning back from road to south. Majority of clearance pruning has resulted in a dead lower crown. A number of trees in decline with several dead trees.	Fell dead/dying trees (< 3 months)		20+	B2	4.8m
T214*	Hawthorn (<i>Crataegus monogyna</i>)	4	50#	1	1	1	1	n/a	0	Good	Y	Good	No access to base. Viewed from road to south.			10+	C1	0.6m

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy				First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Works Required to Facilitate Proposed Development	Estimated Remaining Contribution in Years	Category	Root Protection Area Radius (m)
				N	S	E	W											
T215*	Sycamore (<i>Acer pseudoplatanus</i>)	14	340, 280#	5	4	6	6	4.0/S	5	Good	EM	Fair	Grows amongst Leyland row, with no access to base. Twin stems from base. Union with no signs of active separation from south. Unable to view from north. Crown over 5m clearance from road, due to previous heavy crown lifting works, poor pruning cuts.			20+	B2	5.29m
T216*	Maple (<i>Acer sp</i>)	14	200#	3	1	3	3	n/a	3	Fair	SM	Fair	Grows north of Leyland row, with no access to base.			10+	C2	2.4m
T217	Goat Willow (<i>Salix caprea</i>)	4	60#	2	2	2	2	n/a	0	Fair	Y	Good	No access to base. Viewed from road to south. Moderate crown dieback.			10+	C1	0.72m
T218*	Hawthorn (<i>Crataegus monogyna</i>)	4	50#	2	2	2	2	n/a	0	Good	Y	Good	No access to base.			10+	C1	0.6m
T219*	Hawthorn (<i>Crataegus monogyna</i>)	4	50#	1	1	1	1	n/a	0	Good	Y	Good	No access to base.			10+	C1	0.6m
G220*	Goat Willow (<i>Salix caprea</i>), Sycamore (<i>Acer pseudoplatanus</i>), Field Maple (<i>Acer campestre</i>)	6	<120#	3	3	3	3	n/a	0	Good - Fair	Y-SM	Good - Fair	No access to bases. Viewed from road to south.			10+	C2	1.44m
T221*	Weeping Willow (<i>Salix X chrysocoma</i>)	15	500#	4	4	2	4	4.0/S	5	Fair	EM	Fair	No access to base. Previous major crown pruning over road to south. Moderate lower and central crown suppression due to Leyland hedge. Moderate crown sparsity and dieback.			10+	C1	6m

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy				First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Works Required to Facilitate Proposed Development	Estimated Remaining Contribution in Years	Category	Root Protection Area Radius (m)
				N	S	E	W											
G222*	Goat Willow (<i>Salix caprea</i>)	6	<100#	3	3	3	3	n/a	0	Good	SM	Good	No access to bases. Viewed from road to south.			10+	C2	1.2m
H223*	Hawthorn (<i>Crataegus monogyna</i>)	4	<100#	1	1	1	1	n/a	0	Good	Y-SM	Good	Limited access to bases. Unmanaged hedge with gaps.		Remove in part as per TPP.	10+	C2	1.2m
T224*	Weeping Willow (<i>Salix X chrysocoma</i>)	15	500#	5	3	5	3	4.0/NE	0	Fair	EM	Fair	No access to base. Previous major crown pruning over road to south. Major lower and central crown suppression due to Leyland hedge. Several large patches of missing bark on stem and limbs. Several large dead stubs.			10+	C1	6m
G225*	Blackthorn (<i>Prunus spinosa</i>)	6	<80#	2	2	2	2	n/a	0	Good	Y-SM	Good	No access to bases.			10+	C2	0.96m
T226*	Elder (<i>Sambucus nigra</i>)	3	80, 70, 60, 40, 50#	1	1	1	1	n/a	0	Fair	SM	Good	Minor to moderate crown sparsity and dieback.			10+	C1	1.65m
T227*	Hawthorn (<i>Crataegus monogyna</i>)	5	60#	2	2	2	2	n/a	0	Good	Y	Good	No access to base.			10+	C1	0.72m
T228	Hawthorn (<i>Crataegus monogyna</i>)	7	100, 120#	3	3	3	3	1.0/NE	1	Good	SM	Good				10+	C1	1.87m
T229*	Hawthorn (<i>Crataegus monogyna</i>)	3	70#	2	2	2	2	n/a	0	Good	Y	Good	No access to base.			10+	C1	0.84m
T230*	Sycamore (<i>Acer pseudoplatanus</i>)	4	70#	2	2	2	2	n/a	0	Fair	Y	Good	Moderate crown dieback.			10+	C1	0.84m
T231*	Hawthorn (<i>Crataegus monogyna</i>)	4	60#	2	2	2	2	n/a	0	Good	Y	Good	No access to base.			10+	C1	0.72m
T232*	Hawthorn (<i>Crataegus monogyna</i>)	4	50#	1	1	1	1	n/a	0	Good	Y	Good	No access to base.		Remove	10+	C1	0.6m

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy				First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Works Required to Facilitate Proposed Development	Estimated Remaining Contribution in Years	Category	Root Protection Area Radius (m)
				N	S	E	W											
T233	Goat Willow (<i>Salix caprea</i>)	6	120, 90, 80, 70, 80, 80, 60#	3	1	3	3	0.2/N	0	Good	SM	Good	Multiple stems 0-1m. Previous clearance pruning to south from road.			10+	C1	2.63m
T234*	Hawthorn (<i>Crataegus monogyna</i>)	6	70#	2	2	2	2	n/a	0	Good	Y	Good	No access to base.			10+	C1	0.84m
G235*	Goat Willow (<i>Salix caprea</i>)	7	<120#	3	3	3	3	n/a	0	Good	Y-SM	Good	Limited access to bases.			10+	C2	1.44m
T236*	Hawthorn (<i>Crataegus monogyna</i>)	4	70#	2	2	2	2	n/a	0	Fair	Y	Good	Growing in dense bramble. Minor crown sparsity.			10+	C1	0.84m
T237*	Hawthorn (<i>Crataegus monogyna</i>)	3	40#	2	2	2	2	n/a	0	Good	Y	Good	No access to base.			10+	C1	0.48m
T238*	Hawthorn (<i>Crataegus monogyna</i>)	4	80#	1	1	1	1	n/a	0	Good	Y	Good	No access to base. South of boundary fence.			10+	C1	0.96m
G239*	Hawthorn (<i>Crataegus monogyna</i>)	4	<80#	2	2	2	2	n/a	0	Good	Y	Good	No access to bases.			10+	C2	0.96m
T240*	Sycamore (<i>Acer pseudoplatanus</i>)	3	50	1	1	1	1	n/a	0	Fair	Y	Fair	Base of tree is south of boundary fence but stem grows through the fence. Self-set. Major form suppression.			10+	C2	0.6m
T241*	Hawthorn (<i>Crataegus monogyna</i>)	5	110, 100#	2	2	2	2	n/a	0	Good	SM	Good	No access to base. South of boundary fence.			10+	C1	1.78m
T242*	Hawthorn (<i>Crataegus monogyna</i>)	4	50#	1	1	1	1	n/a	0	Good	Y	Good	No access to base.		Remove	10+	C1	0.6m
T243*	Elder (<i>Sambucus nigra</i>)	5	130#	3	3	3	3	n/a	0	Poor	EM	Poor	Significant dieback. Limited useful life expectancy. Low traffic area.		Remove	<10	U1	1.56m
T244*	Hawthorn (<i>Crataegus monogyna</i>)	4	80#	2	2	2	2	n/a	0	Good	Y	Good	No access to base.		Remove	10+	C1	0.96m

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy				First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Works Required to Facilitate Proposed Development	Estimated Remaining Contribution in Years	Category	Root Protection Area Radius (m)
				N	S	E	W											
G245*	Hawthorn (<i>Crataegus monogyna</i>)	5	<100#	2	2	2	2	n/a	0	Good - Fair	Y-SM	Good	Trees growing south of boundary fence.			10+	C1	1.2m
T246*	Hawthorn (<i>Crataegus monogyna</i>)	3	40#	1	1	1	1	n/a	0	Good	Y	Good	No access to base.			10+	C1	0.48m
T247*	Hawthorn (<i>Crataegus monogyna</i>)	4	90, 70, 80, 80#	2	2	2	2	1.0/W	0	Good	EM	Good	No access to base.		Remove	10+	C1	1.93m
T248*	Hawthorn (<i>Crataegus monogyna</i>)	4	70, 70#	2	2	2	2	n/a	0	Good	Y	Good	No access to base.			10+	C1	1.19m
T249*	Blackthorn (<i>Prunus spinosa</i>)	6	140, 100, 90, 100, 90#	3	3	3	3	n/a	0	Poor	EM	Poor	Tree growing south of boundary fence. Significant dieback. Limited useful life expectancy. Low traffic area.			<10	U1	2.83m
T250*	Hawthorn (<i>Crataegus monogyna</i>)	4	70#	2	2	2	2	n/a	0	Good	Y	Good	No access to base.			10+	C1	0.84m
T251*	Hawthorn (<i>Crataegus monogyna</i>)	5	90, 80, 70#	1	1	1	1	n/a	0	Good	Y	Good	No access to base. South of boundary fence.			10+	C1	1.67m
T252*	Hawthorn (<i>Crataegus monogyna</i>)	3	80#	2	2	2	2	n/a	0	Fair	Y	Good	No access to base. South of boundary fence. Dense bramble in crown.			10+	C1	0.96m
H253*	Hawthorn (<i>Crataegus monogyna</i>), Apple (<i>Malus sp</i>)	5	<80#	2	2	2	2	n/a	0	Good - Dead	Y-SM	Good Dead -	No access to bases. South of boundary fence. Several dead trees present. Low traffic area.			10+	C2	0.96m

Key to Abbreviations Used in the Survey

Ref No	Specific identification number given to each tree or group. T=Tree/H=Hedge/G=Group/W=Woodland	
Species	Common name followed by botanical name shown in <i>italics</i>	
RPA	Root Protection Area (As defined by BS5837)	
Stem diameter	Diameter of main stem, measured in millimetres at 1.5 m above ground level. (MS = Multi-stem tree measured in accordance with BS5837 Annexe C)	Av / Average: indicates an average representative measured dimension for the group or feature
Spread	The width and breadth of the crown. Estimated on the four compass points in metres.	
Crown clearance	The estimated height (in metres) above ground level of the lowest significant branch attachments.	
#	Estimated dimensions	
*	Indicates estimated position of tree (not indicated on topographical survey).	
Category	Categorisation of the quality and benefits of trees on the Site as per Table 1 and 2 of BS5837:2012. 1=Arboricultural quality/value 2=Landscape quality/value 3=Cultural quality/value (including conservation)	
	A=High quality/value 40yrs+ (light green). B=Moderate quality/value 20yrs+ (mid blue) C=Low quality/value min 10yrs/stem diameter less than 150mm (grey). U=Unsuitable for retention (dark red).	
Life stage	Young (Y): Newly planted tree 0-10 years. Semi-Mature (SM): Tree in the first third of its normal life expectancy for the species (significant potential for future growth in size). Early Mature (EM): Tree in the second third of its normal life expectancy for the species (some potential for future growth in size) Mature (M): Tree in the final third of its normal life expectancy for the species (having typically reached its approximate ultimate size). Over Mature (OM): Tree beyond the normal life expectancy for the species. Veteran (V): Tree which is of interest biologically, aesthetically or culturally because of its condition, size or age.	
Structural condition	Good: No significant structural defects Fair: Structural defects which can be resolved via remedial works. Poor: Structural defects which cannot be resolved via remedial works. Dead: Dead.	
Physiological condition	Good: Normal vitality including leaf size, bud growth, density of crown and wound wood development. Fair: Lower than normal vitality, reduced bud development, reduced crown density, reduced response to wounds. Poor: Low vitality, low development and distribution of buds, discoloured leaves, low crown density, little extension growth for the species. Dead: Dead Fair/Good = Indicates an intermediate condition Fair – Good = Indicates a range of conditions (e.g. within a group)	

Preliminary management recommendations	Works identified during the tree survey as part of sound arboricultural management, based on the current context of the Site (where relevant reference has been made to tree management based on the potential future context of the site).
Works to facilitate the development	Tree works identified as necessary to facilitate the Proposed Development following a desk top analysis of the proposals in relation to tree constraints.

Appendix C Site Photography



Figure 1: A view looking west along Loverose Way near Tilbury

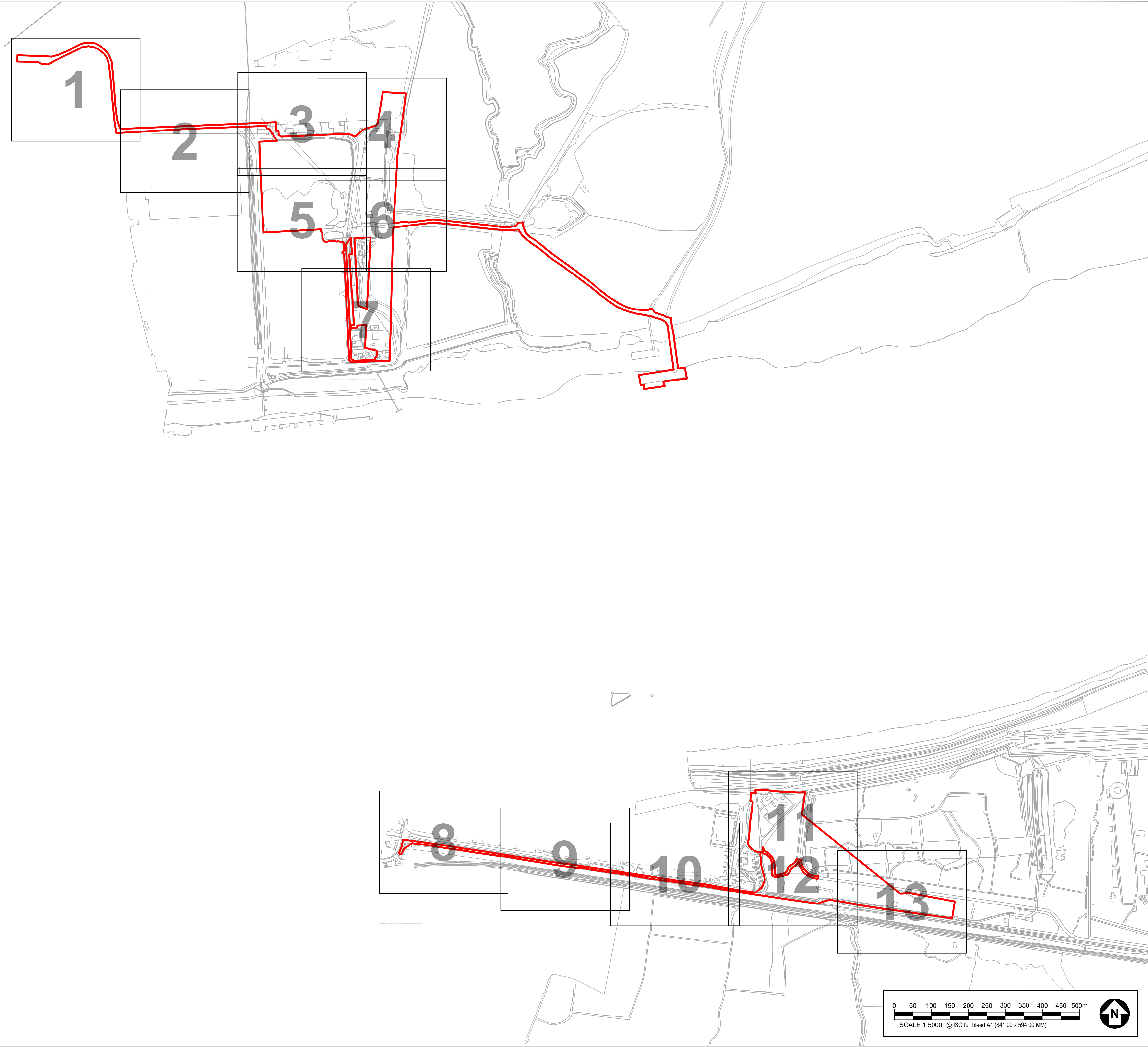


Figure 2: G213, a row of previously crown lifted Leyland cypress



Figure 3: A view within G95, a largely inaccessible area dominated by bramble and rose

Appendix D Tree Protection Plan



PROJECT

TKRE Cable Tunnel
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GENERAL NOTES

1. TREE CATEGORIES AS DEFINED BY BS 5837:2012
2. TREE LOCATIONS ARE BASED ON THE TOPOGRAPHICAL SURVEY, AERIAL IMAGERY, AND GPS CO-ORDINATES FROM ON SITE WALKOVER.
3. * INDICATES A TREE / GROUP WHOSE POSITION IS APPROXIMATE AS BASED UPON AERIAL PHOTOGRAPHY AND ON SITE OBSERVATIONS.
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108748_03_00 - Baker Hicks - National Grid Tibury - FEATURE LAYER.dwg
3000384-MSE-XX-XX-DR-Y-10087_RIVER THAMES TUNNEL EASEMENT
For Acceptance, P01.dwg EPO-6516 Tibury CSEC Layout.dwg
EPO-6500 Gravesend CSEC Layout.dwg
Gravesend Options (Option 2 Selected).dwg
New Tibury Options (Option 1 Selected).dwg

KEY

— SITE BOUNDARY

ISSUE/REVISION

VR	DATE	DESCRIPTION
P01	23.11.23	FIRST ISSUE

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GENERAL NOTES

3. TREE CATEGORIES AS DEFINED BY BS 5837:2012
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8. DRAWING REFERENCES
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- 108748_03_00 - Baker Hicks - National Grid Feature - FEATURE LAYER.dwg
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- New Tisbury Options (Option 1 Selected).dwg

KEY PLAN



KEY

- FEATURE ID TAGS**
 (A PREFIX OF "T" DENOTES A SINGLE TREE, "G" A GROUP, "Y" A HEDGE, "W" A WOOLAND, AND AN APOSTROPHED SUFFIX "MEANS THE FEATURE WAS PLOTTED INDICATIVELY)

SITE BOUNDARY

EXISTING TREE, GROUP, WOOLAND, OR HEDGE TO BE RETAINED

EXISTING TREE, GROUP, WOOLAND, OR HEDGE TO BE REMOVED

ROOT PROTECTION AREA OF RETAINED TREES
 (AS DERIVED BY BS 5837:2012)

VETERAN TREE BUFFER ZONE
 (15 TIMES STEM DIAMETER OR 5M FROM THE EDGE OF CANOPY (WHATEVER IS GREATER) AS PER ADVICE FROM FORESTRY COMMISSION AND NATURAL ENGLAND (2020))

VETERAN TREE
 (TREE IDENTIFIED IN THE SITE SURVEY)

TREE PROTECTION FENCING

CONSTRUCTION EXCLUSION ZONE
 (EXCLUSION OF PLANT MATERIALS STORAGE, EXCAVATION AND ALL OTHER CONSTRUCTION ACTIVITIES ARE EXCLUDED WITHIN THESE AREAS FOR THE PURPOSES OF PROTECTING TREES)

CONSTRUCTION WORKING ZONE
 (MANAGED CONSTRUCTION PROCESSES PERMITTED IN ACCORDANCE WITH THE PRINCIPLES SET OUT WITHIN THE ARBORICULTURAL IMPACT ASSESSMENT)

PROPOSED CRAWING REDEVELOPMENT LAYOUT
 (BASED UPON GRADING REFERENCES LISTED IN THE GENERAL NOTES SECTION)

ISSUE/REVISION

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DRAWING STATUS

ISSUE

PROJECT NUMBER

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SHEET TITLE

TREE PROTECTION PLAN
(SHEET 01)

SHEET NUMBER

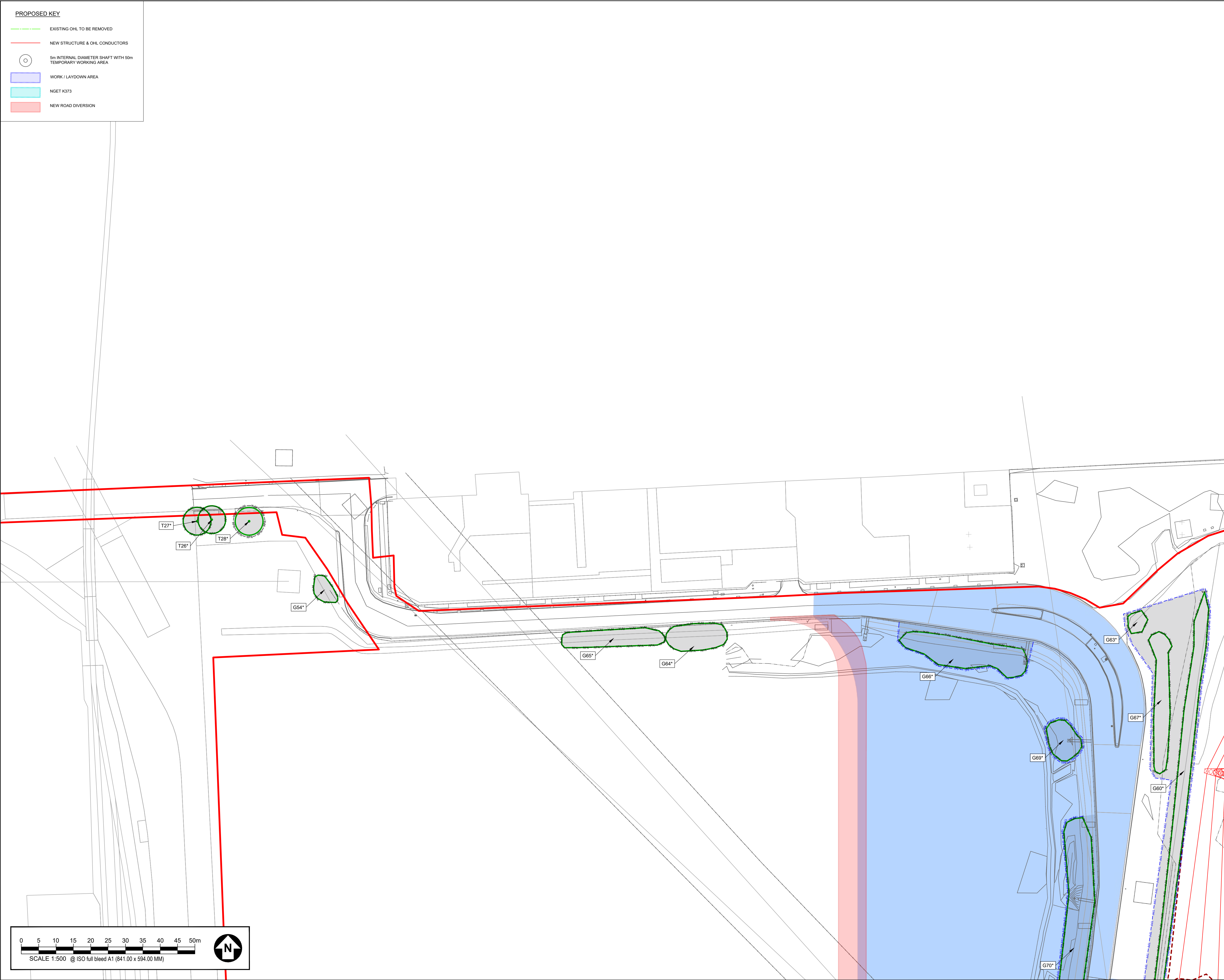
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P01



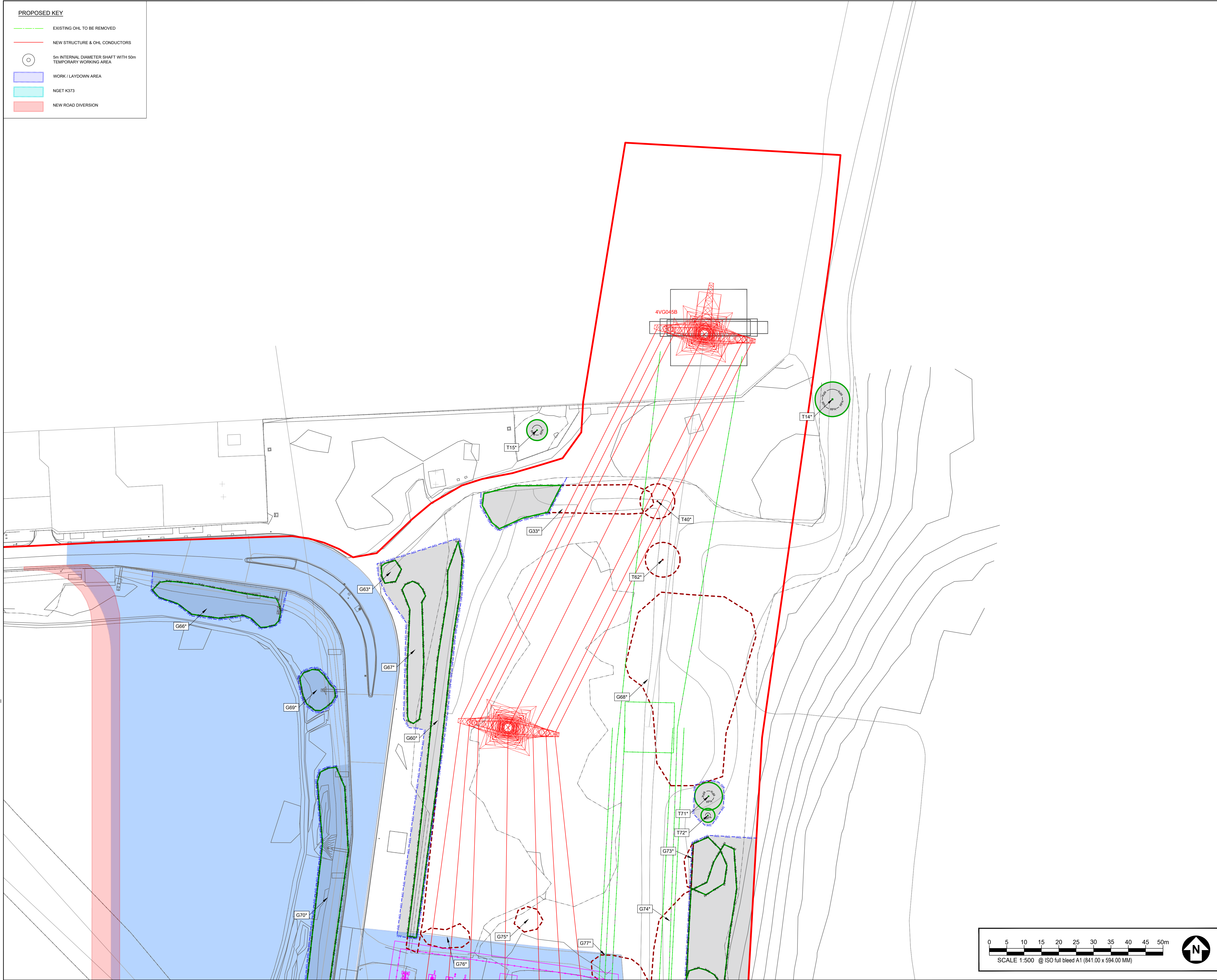
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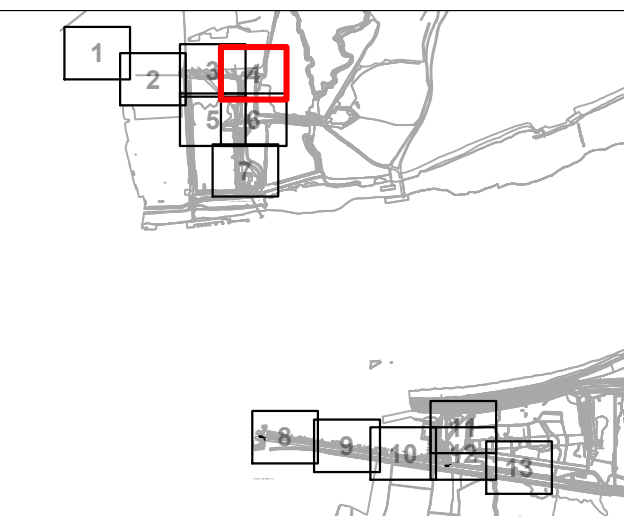
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GENERAL NOTES

- THREE CATEGORIES ARE DEFINED BY BS 5837:2012
 TREE LOCATIONS ARE BASED ON THE TOPOGRAPHICAL SURVEY,
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- DRAWING REFERENCES
- 108657 (3 of 3) - Bakers - Gravelseed - Feature Layer.dwg
 - 108748 (3 of 3) - Bakers Hike - 10867 (2 of 2) - Feature Layer.dwg
 - 200433A-MSE-XX-DX-DR-Y-10867_RIVER THAMES TUNNEL ATTACHMENT
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 - New Tibury Options (Option 1 Selected).dwg

KEY PLAN



KEY

FEATURE ID TAGS
(A PREFIX OF "T" DENOTES A SINGLE TREE, "G" A GROUP, "H" A HEDGE, "W" A WOODLAND, AND AN APOSTROPHED SUFFIX "MEANS" THE FEATURE WAS PLOTTED INDICATIVELY)

SITE BOUNDARY

EXISTING TREE, GROUP, WOODLAND, OR HEDGE TO BE RETAINED

EXISTING TREE, GROUP, WOODLAND, OR HEDGE TO BE REMOVED

ROOT PROTECTION AREA OF RETAINED TREES
(AS DEFINED BY BS 5817:2012)

VETERAN TREE BUFFER ZONE
(15 TIMES STEM DIAMETER OR 3M FROM THE EDGE OF CANOPY WHATEVER IS GREATER) AS PER ADVICE FROM FORESTRY COMMISSION AND NATURAL ENGLAND (2022)

VETERAN TREE
(TREE IDENTIFIED IN THE SITE SURVEY)

TREE PROTECTION FENCING

CONSTRUCTION EXCLUSION ZONE
(TRACKING OF PLANT, MATERIALS STORAGE, EXCAVATION AND ALL OTHER CONSTRUCTION ACTIVITIES ARE EXCLUDED WITHIN THESE AREAS FOR THE PURPOSES OF PROTECTING TREE HEALTH)

CONSTRUCTION WORK ZONE
(MANAGED CONSTRUCTION OPERATIONS PERMITTED IN ACCORDANCE WITH THE PROPOSED CUT OUTLINE AND ARBoreal Impact Assessment)

PROPOSED CSEC DEVELOPMENT LAYOUT
(BASED UPON DRAWING REFERENCES LISTED IN THE GENERAL NOTES SECTION)

ISSUE/REVISION

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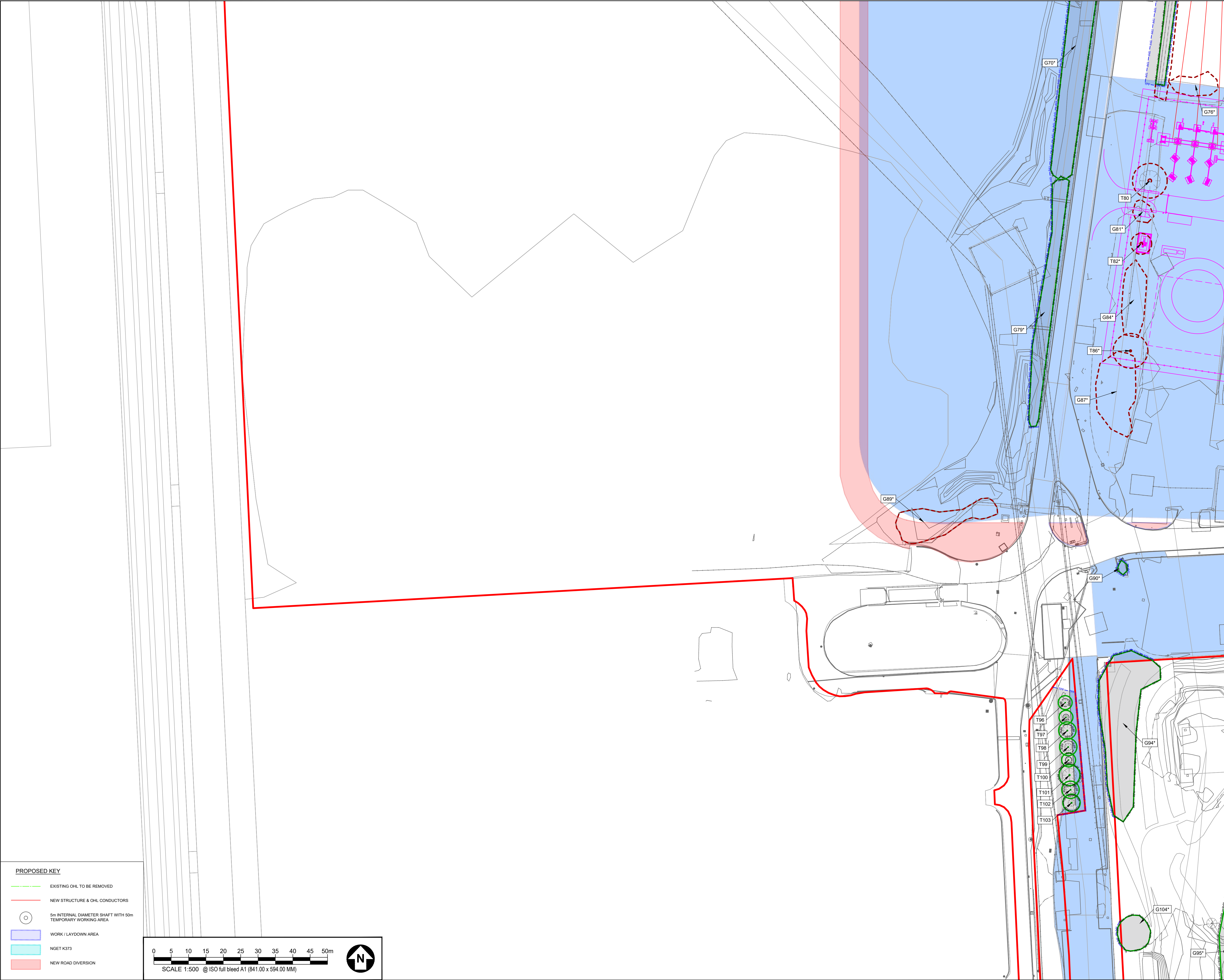
TREE PROTECTION PLAN (SHEET 04)

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60677311-ACM-XX-XX-AB-TPP-004

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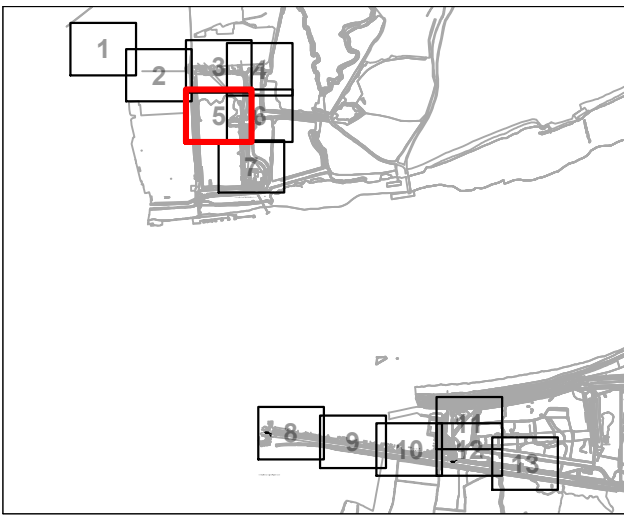
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GENERAL NOTES

1. TREE CATEGORIES AS DEFINED BY BS 5837:2012
2. TREE LOCATIONS ARE BASED ON THE TOPOGRAPHICAL SURVEY, AERIAL IMAGERY, AND GPS CO-ORDINATES FROM ON SITE WALKOVER.
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EPO-6500 Gravesend CSEC Layout.dwg
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New Tibury Options (Option 1 Selected).dwg

KEY PLAN



KEY

- FEATURE ID TAGS**
(A PREFIX OF 'T' DENOTES A SINGLE TREE, 'G' A GROUP, 'H' A HEDGE, 'W' A WOODLAND, AND AN ASTERISK SUFFIX '*' MEANS THE FEATURE WAS PLOTTED INDICATIVELY)
- SITE BOUNDARY**
— SITE BOUNDARY
- EXISTING TREE, GROUP, WOODLAND, OR HEDGE TO BE RETAINED**
— EXISTING TREE, GROUP, WOODLAND, OR HEDGE TO BE RETAINED
- EXISTING TREE, GROUP, WOODLAND, OR HEDGE TO BE REMOVED**
— EXISTING TREE, GROUP, WOODLAND, OR HEDGE TO BE REMOVED
- ROOT PROTECTION AREA OF RETAINED TREES**
(AS DEFINED BY BS 5837:2012)
- VETERAN TREE BUFFER ZONE**
(15 TIMES STEM DIAMETER OR 5M FROM THE EDGE OF CANOPY WHATEVER IS GREATEST) AS PER ADVICE FROM FORESTRY COMMISSION AND NATURAL ENGLAND (2022)
- VETERAN TREE**
(TREE IDENTIFIED IN THE SITE SURVEY)
- TREE PROTECTION FENCING**
— TREE PROTECTION FENCING
- CONSTRUCTION EXCLUSION ZONE**
(TRACKING OF PLANT, MATERIALS STORAGE, EXCAVATION AND ALL OTHER CONSTRUCTION ACTIVITIES ARE EXCLUDED WITHIN THESE AREAS FOR THE PURPOSES OF PROTECTING TREE HEALTH)
- CONSTRUCTION WORKING ZONE**
(DAMAGED CONSTRUCTION PROCESSES PERMITTED IN ACCORDANCE WITH THE PRINCIPLES SET OUT WITHIN THE ARBORICULTURAL IMPACT ASSESSMENT)
- PROPOSED CSEC DEVELOPMENT LAYOUT**
(BASED UPON DRAWING REFERENCES LISTED IN THE GENERAL NOTES SECTION)

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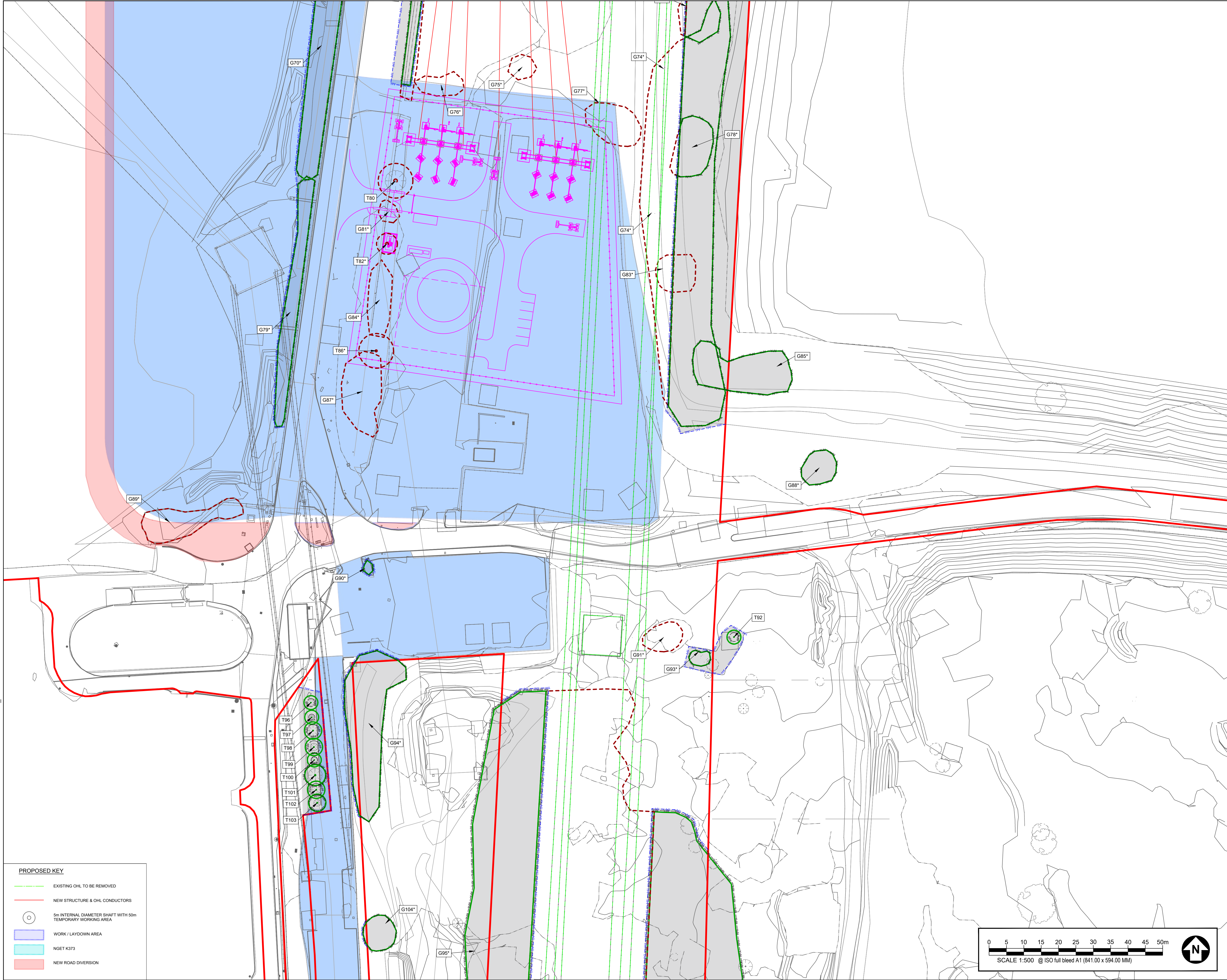
TREE PROTECTION PLAN
(SHEET 05)

SHEET NUMBER

60677311-ACM-XX-XX-AB-TPP-005

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P01



PROPOSED KEY

EXISTING OHL TO BE REMOVED

NEW STRUCTURE & OHL CONDUCTORS

0

5

10

15

20

25

30

35

40

45

50m

SCALE 1:500 @ ISO full bleed A1 (841.00 x 594.00 MM)

N



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EPO-6500 Gravesend CSEC Layout.dwg
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New Tibury Options (Option 1 Selected).dwg

KEY PLAN



KEY

FEATURE ID TAGS
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SITE BOUNDARY

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EXISTING TREE, GROUP, WOODLAND, OR HEDGE TO BE REMOVED

ROOT PROTECTION AREA OF RETAINED TREES
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(15 TIMES STEM DIAMETER OR 5M FROM THE EDGE OF CANOPY WHATEVER IS GREATEST) AS PER ADVICE FROM FORESTRY COMMISSION AND NATURAL ENGLAND (2022)

VETERAN TREE
(TREE IDENTIFIED IN THE SITE SURVEY)

TREE PROTECTION FENCING

CONSTRUCTION EXCLUSION ZONE
(TRACKING OF PLANT, MATERIALS STORAGE, EXCAVATION AND ALL OTHER CONSTRUCTION ACTIVITIES ARE EXCLUDED WITHIN THESE AREAS FOR THE PURPOSES OF PROTECTING TREE HEALTH)

CONSTRUCTION WORKING ZONE
(MANAGED CONSTRUCTION PROCESSES PERMITTED IN ACCORDANCE WITH THE PRINCIPLES SET OUT WITHIN THE ARBORICULTURAL IMPACT ASSESSMENT)

PROPOSED CSEC DEVELOPMENT LAYOUT
(BASED UPON DRAWING REFERENCES LISTED IN THE GENERAL NOTES SECTION)

ISSUE/REVISION

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P01	23.11.23	FIRST ISSUE
VR	DATE	DESCRIPTION

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TREE PROTECTION PLAN
(SHEET 06)

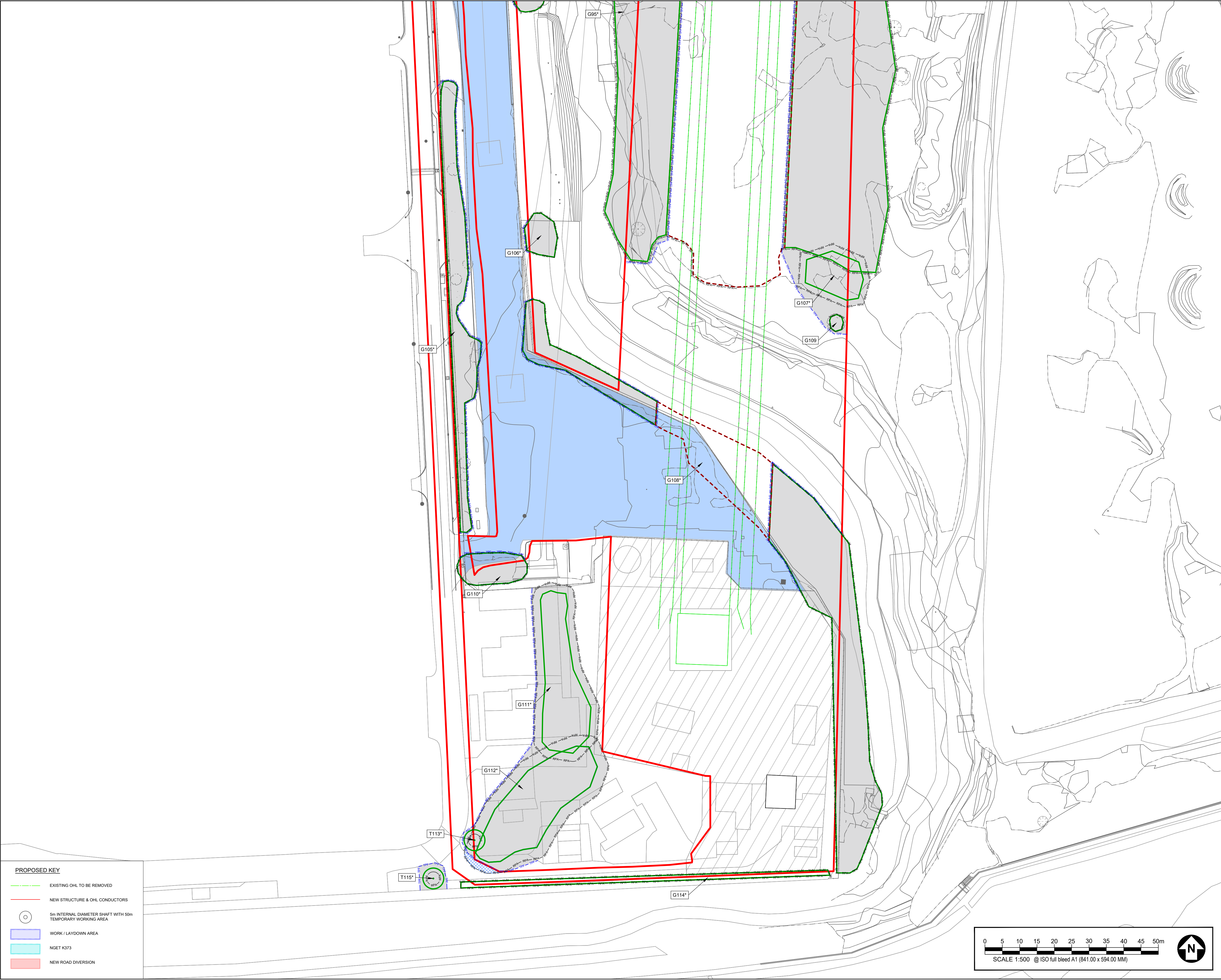
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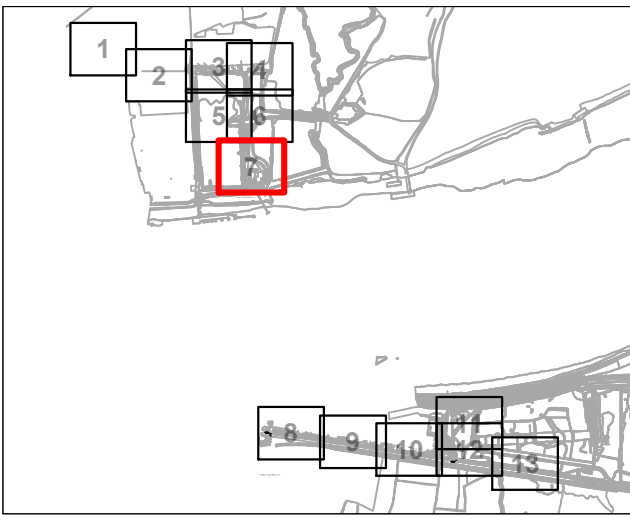
CONSULTANT

AECOM
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Basingstoke, Hants,
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Tel +44 (0) 1256 310 200
www.aecom.com

GENERAL NOTES

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108748_03_00 - Baker Hicks - National Grid Tibury - FEATURE LAYER.dwg
3000384-MSE-XX-XX-DR-Y-10087_RIVER THAMES TUNNEL EASEMENT For Acceptance_P01.dwg
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EPO-6500 Gravesend CSEC Layout.dwg
Gravesend Options (Option 2 Selected).dwg
New Tibury Options (Option 1 Selected).dwg

KEY PLAN



KEY

- FEATURE ID TAGS**
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- SITE BOUNDARY**
EXISTING TREE, GROUP, WOODLAND, OR HEDGE TO BE RETAINED
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PROPOSED CSEC DEVELOPMENT LAYOUT (BASED UPON DRAWING REFERENCES LISTED IN THE GENERAL NOTES SECTION)

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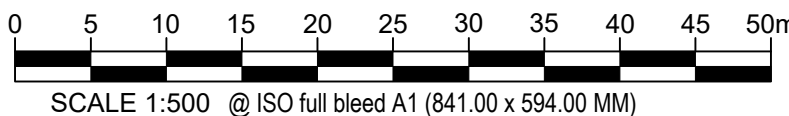
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(SHEET 07)

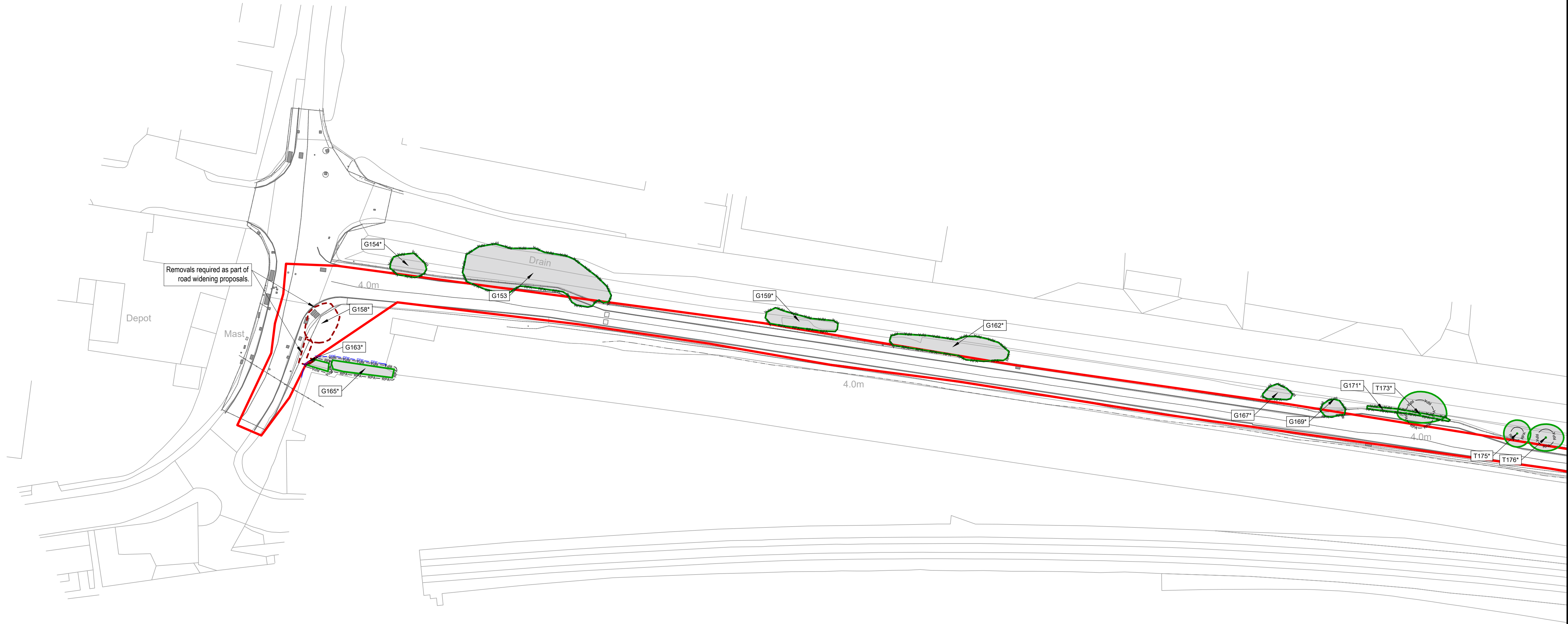
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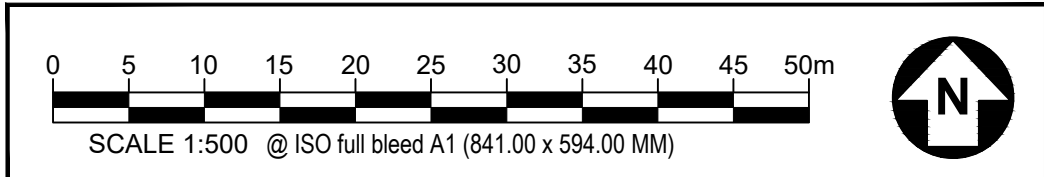
REV.

P01





PROPOSED KEY	
	EXISTING OHL TO BE REMOVED
	NEW STRUCTURE & OHL CONDUCTORS
	5m INTERNAL DIAMETER SHAFT WITH 50m TEMPORARY WORKING AREA
	WORK / LAYDOWN AREA
	NGET K373
	NEW ROAD DIVERSION



AECOM

PROJECT

TKRE Cable Tunnel
Replacement
CLIENT

National Grid

CONSULTANT

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GENERAL NOTES

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 - 108748_03_00 - Baker Hicks - National Grid Tibury - FEATURE LAYER.dwg
 - 3000384-MSE-XX-XX-DR-Y-10087_RIVER THAMES TUNNEL EASEMENT For Acceptance_P01.dwg
 - EPO-6516 Tibury CSEC Layout.dwg
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60677311

SHEET TITLE

TREE PROTECTION PLAN
(SHEET 08)

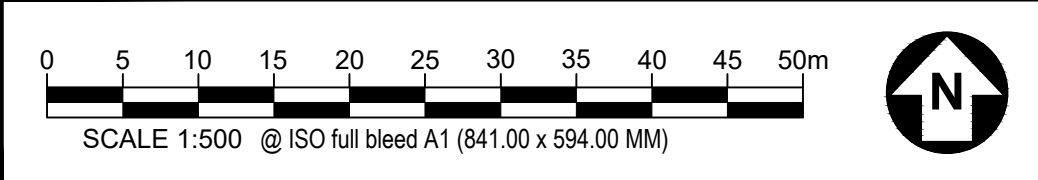
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P01

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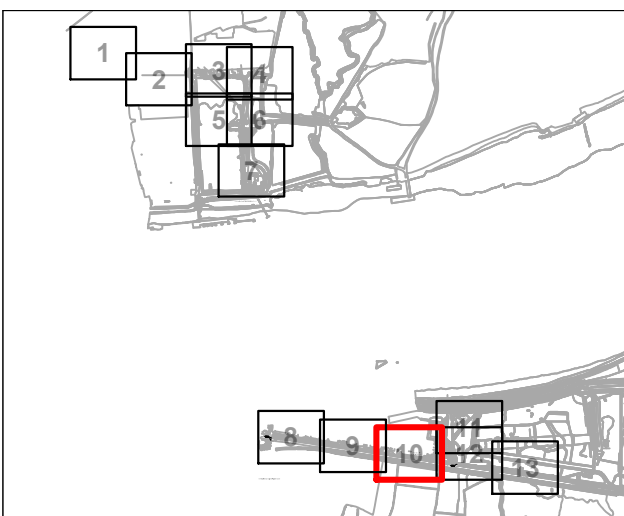
CONSULTANT

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TREE PROTECTION PLAN
(SHEET 10)

SHEET NUMBER

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PROJECT

TKRE Cable Tunnel
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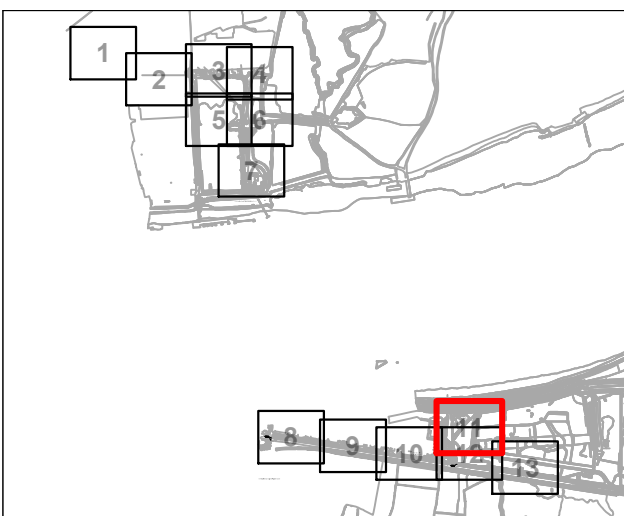
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 - EPO-6500 Gravesend CSEC Layout.dwg
 - Gravesend Options (Option 2 Selected).dwg
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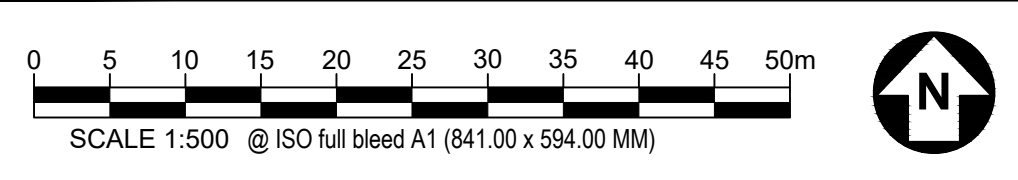
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(SHEET 11)

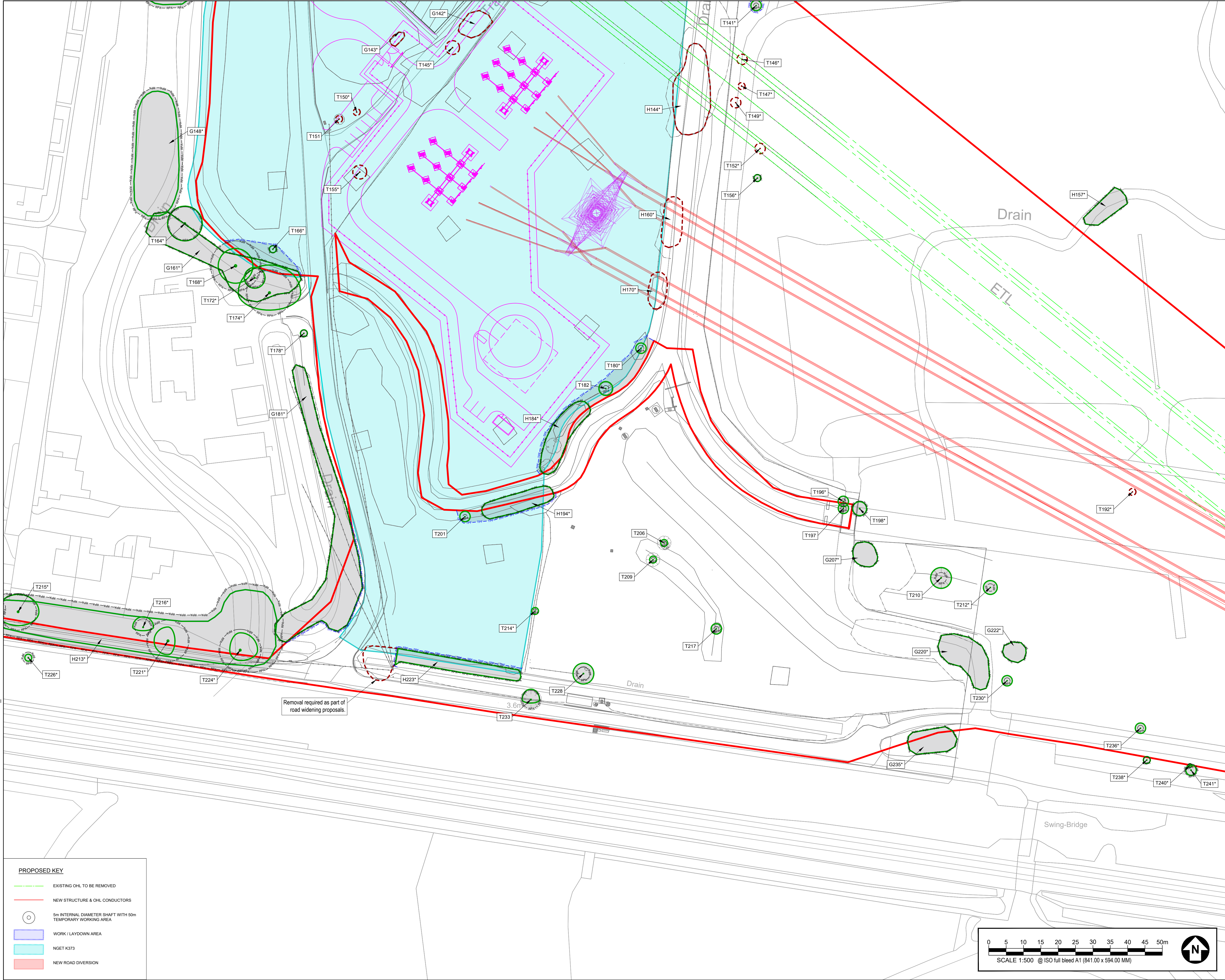
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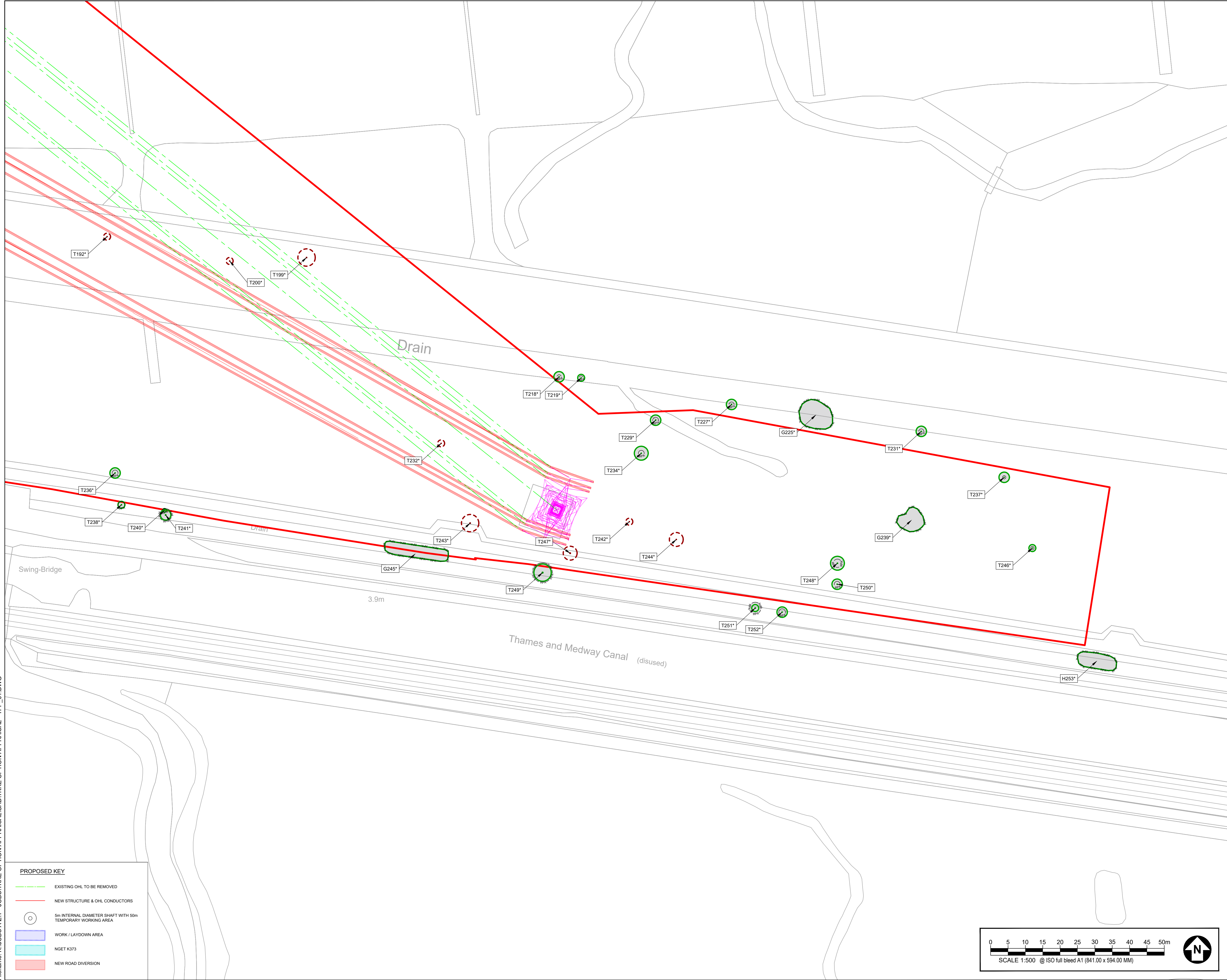
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REV.

P01







PROPOSED KEY	
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	NEW STRUCTURE & OHL CONDUCTORS
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	WORK / LAYDOWN AREA
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	NEW ROAD DIVERSION

AECOM

PROJECT

TKRE Cable Tunnel
Replacement
CLIENT

National Grid

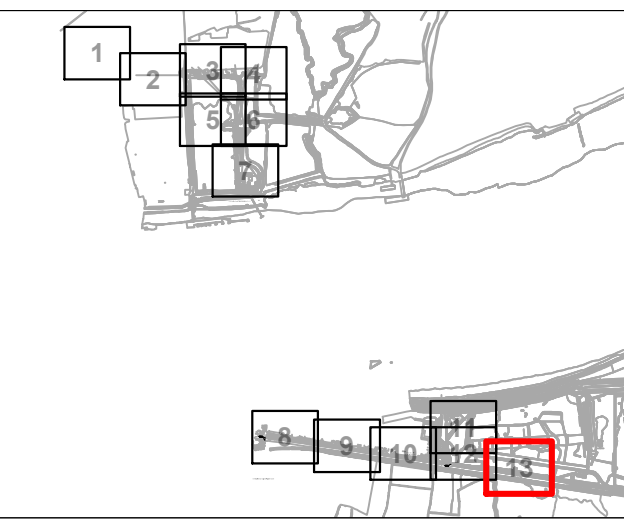
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KEY PLAN



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TREE PROTECTION PLAN
(SHEET 13)

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Appendix E Outline Tree Protection Measures

E.1 Outline Tree Protection Measures

The default position as set out by BS 5837:2012 is that retained trees must be protected from construction operations with the erection of robust protective fencing positioned on the outer edge of the RPA or crown spread (whichever is greatest). All site operations will be restricted to the area outside of tree protection fencing and this area will form a Construction Exclusion Zone (CEZ) unless agreed otherwise. Protection measures will be installed as set out in the Tree Protection Plan included as Appendix D of this report.

The area inside the fence and any additional tree protection measures will be sacrosanct and must not be removed or altered without the prior approval of the LPA Tree Officer. Any damage to tree protection measures must be reported immediately.

Fencing shall be constructed with robust vertical and horizontal scaffold framework with weldmesh panels firmly attached as per BS 5837:2012 Figure 7 (included below). Vertical support poles and bracing poles must be located with care to avoid underground utility services and will be sited to avoid the structural roots of retained trees.

Alternative equivalent robust and immovable fencing specification including site hoarding will also be appropriate.

Suitable all weather signage will be fixed to fencing to notify site staff and visitors of the construction exclusion zone and its purpose (example included as Appendix F).

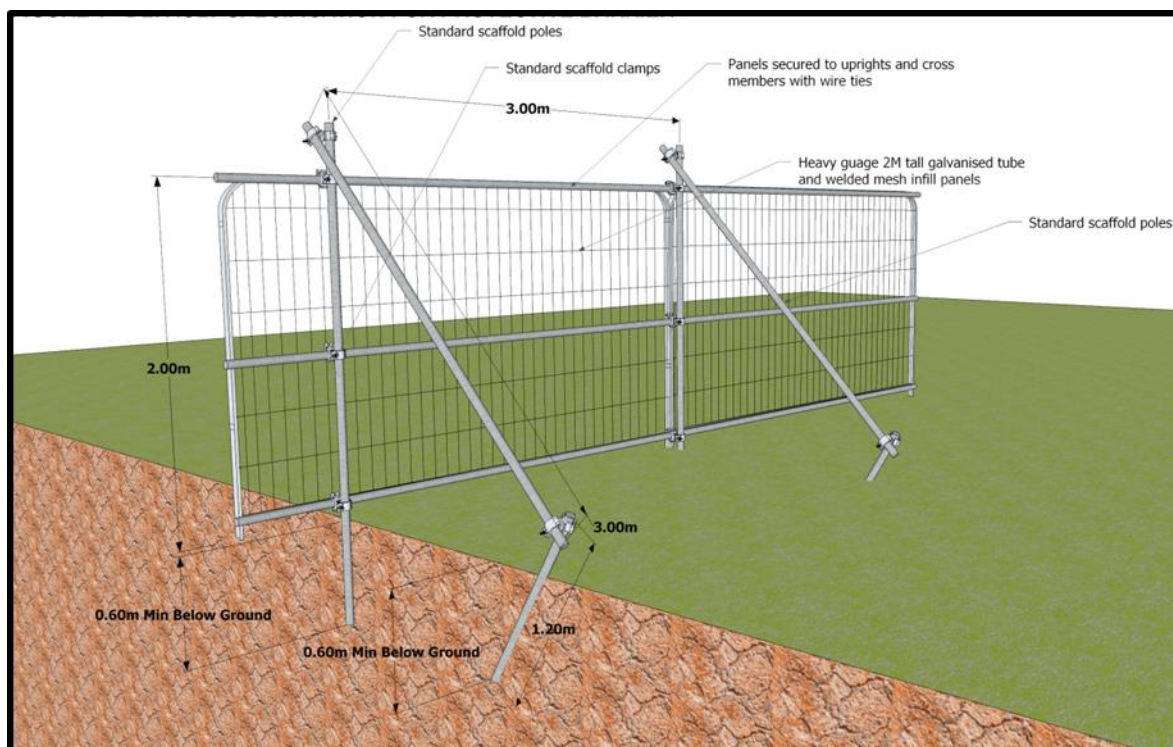


Figure 4 Default specification for protective barrier

When entering and exiting the Site the fencing contractor must avoid the production of ruts on the unprotected surface of the ground.

Protective fencing and ground protection shall stay in place until all development operations have been completed and the prior consent of the LPA Tree Officer and/or an arboriculturist has been obtained.

E.2 Ground Protection

Should access be unavoidable within the RPA of a retained tree, fit for purpose ground protection must be in place which is sufficient to protect the structure of the soil from damage based on the heaviest anticipated load.

As set out in section 6.2.3.3 of BS5837:2012 (Ref 1) the following ground protection measures will be appropriate:

- Suitable ground protection for pedestrian only access will comprise a single thickness of scaffold boards set on a compressible layer of 100mm of woodchip on a geotextile separation layer.
- Pedestrian operated plant up to two tonnes in weight would require the use of a proprietary ground protection system (such as Ground Guards or Eve Trakway or equivalent) set on a minimum depth of 150mm woodchip or sharp sand.
- Heavier loads will require ground protection to an engineering specification in conjunction with arboricultural advice.

As a guide the threshold beyond which root development is significantly affected is a bulk density ranging from 1.4g per cm³ for clay soils, to 1.75g per cm³ for sandy soils.

Tree protective measures shall stay in place until all construction operations are completed and removal is agreed with the Site arboriculturist and/or the Local Authority Tree Officer as appropriate.

E.3 General guidance for the management of exposed roots

Excavation must only take place within the RPA of a retained tree with the prior agreement of an arboriculturist and the Local Authority Tree Officer. All excavation must be undertaken using hand tools or compressed air (such as an air spade).

The following general principles will apply:

- Individual or small groups of roots less than 25mm in diameter will be retained where possible but can be severed with a sharp tool such as secateurs or pruning saws to leave a clean-cut end (ideally 100mm back from the face of the excavation to account for future regrowth) where they pose an obstruction.
- Where roots are encountered which are larger than 25mm in diameter or where significant groups of smaller roots are found, the advice of an arboriculturist must be sought to decide an appropriate course of action (following consultation with the Local Authority Tree Officer where appropriate).
- Roots must only be exposed for the minimum period possible. In the interim period any exposed roots must be completely covered with dampened hessian sacking (which may require ongoing re wetting) to avoid drying out and exposure to light (which can result in the death of roots). Backfill for excavations should utilise the parent material and must not be significantly compacted.

E.4 Storage, use and mixing of materials

The use, mixing and washing of materials can lead to run off or inadvertent spillage into tree root zones. Many substances often used on construction sites can be toxic to tree roots (such as concrete, fuels, salts, builders sand and herbicides), can result in the death of tree roots and beneficial soil organisms; and have a significant impact on the future health and appearance of trees.

The storage of materials can result in an effective raised soil level. This buries tree roots at depths where air and water are less available and can lead to the decline or death of the tree.

For these reasons the storage of materials and any washing, mixing or refuelling must take place in agreed allocated areas at least 5m from the edge of the RPA of retained trees.

Any slope effect must be taken into account and where there is a potential for run off, heavy duty polythene sheeting and sandbags must be in place as bunding to prevent toxic materials reaching RPAs.

Appendix F Tree Protection Signage (Example)

