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Cambridge Waste Water Treatment Plant Relocation Project
Anglian Water Services Limited

Appendix 8.19: Waterbeach Pipeline Arboricultural Impact Assessment

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Ecological Surveys • Habitat Management • Arboricultural Surveys • Vegetation Clearance

Arboricultural Impact Assessment & Method Statement

Waterbeach CWWTPR – WBRM

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1.0 Executive Summary

1.1 Rationale

Greenwillows Associates Limited (GWA) was commissioned to conduct an arboricultural appraisal of a proposed route for a new wastewater pipeline and wastewater treatment plant in the Waterbeach area of Cambridge. The area surveyed comprises an approximate 8.0km route and is referred to as 'the site' for the purposes of this report.

Greenwillows Associates carried out the initial survey between 25th – 28th October 2021 and produced an Arboricultural Appraisal Note (AAN) to the relevant parties to highlight potential conflicts between the proposed works and the existing vegetation. The client has provided a drawing indicating where the new pipeline will be installed both by open cut trench and directional drilling. The proposed construction method has been based on the information received from a number of surveys and has been designed to ensure minimal impact on the green environment where possible. A 30m easement area is required during the construction phase and all surveys have been carried out taking this into account; some surveys e.g., Ecological Appraisal were carried out in an extended area.

This report provides guidance on the protection measure necessary to ensure the long-term health of the retained trees/vegetation including where pruning is required to clear the work area.

1.2 Essential Evidence, Conclusions and Recommendations

1.2.1 General Route Description

23 The proposed Waterbeach scheme consists of the installation of a new section of rising main circa 8km in length.

From Waterbeach New Town the new rising main will route east/southeast crossing under the railway but avoiding the new Waterbeach railway station platform before continuing southwards through fields. It will cross to the east side of the River Cam after about 1.9km and continue southward to the east of the village of Horningsea before crossing under the A14. It will then continue southward for approximately another 400m before routing west and connecting into the existing Cambridge (Milton) Wastewater Treatment Plant (WWTP), crossing under the Horningsea Road, the River Cam, Fen Road and the railway on route (refer to Appendix One for an overview of the route).

1.2.2 Conclusions

24 With reference to drawing TPP WATERBEACH 4 2 a number of trees are shown to be impacted with losses T055 – T058 & T060. In addition, sections of hedgerow (T054, T121, T139 & T173 shown on drawings TPP WATERBEACH 3 2, TPP WATERBEACH 10 2, TPP WATERBEACH 11 2 & TPP WATERBEACH 14 2) require removal to facilitate installation of the new mains supply. There may be further areas where localised vegetation clearance may be required mainly for access and compounds, but this is likely to be minor and involving low value specimens/scrub. The majority of the areas where there are potential impacts on the tree population will utilise directional drilling at depth to eliminate the

potential for root damage. It should be noted that the method of installation can be micro-managed to a degree to help retain trees, however, in some cases tree removals may be unavoidable due to additional constraints, and replacement trees/hedges will be planted following completion of the project.

Some limited crown pruning will be required to ensure clearance over plant accessing the site and where in close proximity to proposed compounds and a section of a tree belt (T120 on drawing TPP WATERBEACH 9 2) will require cutting back to clear the access. It is likely that some root pruning may be required prior to the installation to prevent excessive damage. The Preliminary Ecological Appraisal has categorised four trees as notable or with veteran characteristics (ref: Waterbeach Pipeline) - Preliminary Ecological Appraisal (100104106-0004-E), referring to the tree schedule, one of the trees is T105 (drawing TPP WATERBEACH 7 2) categorised as B2/3 (landscape, cultural and conservation values), the remaining three trees are outside the area designated for the tree survey but fell within the scope of the Ecological Appraisal. Whilst the route passes close to tree T105, there is a drainage ditch immediately on the west side and the adjacent fields are used for arable farming with both factors likely to lead to a degree of root restriction.

Initial comments from the Planning Inspectorate, referring to this report and the Preliminary Ecological Appraisal (PEA) stated that the Root Protection Area (RPA) for T105 should be calculated as per the Woodland Trust recommendations for the protection of the RPA.

The recommendation is that an RPA is based on 15 times the trunk diameter or 5m beyond the crown extent, whichever is the greatest. Therefore, the protective fence for tree T105 will be installed at a minimum of 16m from the trunk (based on 5m beyond the crown radius) as shown on drawing TPP WATERBEACH 7 2 Rev C and in the details in Appendix 2.

1.2.3 Recommendations

Recommendations in Section 8 (Method Statement) should be followed to ensure there is minimal impact on the trees.

2.0 Introduction and Terms of Reference

2.1 GWA was instructed to provide advice on the potential impact to trees of a new wastewater main to be installed by a combination of open-cut trench and directional-drilling (trenchless) techniques. Additionally, to recommend protection/mitigation measures to ensure the long-term health of the retained trees/vegetation.

2.2 The tree survey and recommendations are made within the widely accepted framework of British Standard BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'. Advice is provided on potential impact and how that impact might be avoided or mitigated. The advice takes the form of an arboricultural impact assessment, tree survey and tree constraints plans.

2.3 The tree survey was undertaken between 25-28 October 2021.

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2.4 The proposed route has been provided to Graham Causey in various source materials:

- DWG File: Waterbeach OS with National Tree Map V1 Point Data overlain
- PDF File: CWWTPR – WBRM Arboricultural Survey Data 1 to 8 Savills
- DWG File: Geophysics Survey Scope 1 to 5 (drawing number 1185-100001WATBSC-SEW-LAY-D-0231)
- DWG file: 16619-1B 2D
- DWG File: Proposed Twin 500 Rising sewer mains
- DWG File: Red Line Boundary
- DWG File: SEW-11851-XR-Gtech Mapping
- DWG File: SEW-11851-WATBSC-ZZZ-PLN-Z-0201 plans 1-5

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3.0 Site Location & Construction Requirements

3.1 The site is situated between Waterbeach New Town and the Cambridge (Milton) WWTP Cowley Road (see Appendix One).

3.2 The new rising main is expected to comprise twin 500mm pipes to be laid below ground with the possible exception of the section within the Cambridge WWTP which may be laid above ground due to the number of existing services running through the site and in view of protected species located within the site.

3.3 The pipeline will be located at an average depth of 2-5 metres below ground level except where it passes beneath the River Cam, larger drainage ditches, the A14 and the railway, where it will be a maximum of 20 metres deep. The exact depth will be determined through further, more detailed design, including confirmation of the construction technique and agreement with the owner of the feature being crossed under as is legally required.

3.4 In order to lay the new pipeline a temporary 30-metre-wide working corridor is proposed.

34 The precise alignment of the main within the corridor will be determined by several factors including micro-siting to accommodate the environmental constraints to in order to reduce its impact, discussion with landowners and technical considerations. Further assessment will also be needed to determine the exact location crossings points under the River Cam, the railway line and the A14.

3.5 The pipeline will be installed via a combination of open cut and trenchless techniques.

35 Trenchless crossing techniques are proposed for the River Cam, A14 and railway. These will be either horizontal direction drilling (HDD) or pipe jack micro-tunnelling.

3.6 Where HDD is used a series of drill pits will be required. The final location of these will be dependent upon the length of the drill shot being undertaken. The associated access pits are expected to be circa 10 metres by 5 metres. They will be backfilled once the drill shot is complete.

36 3.7 Where pipe jack micro-tunnelling is used then a larger access pit will be required, circa 15 metres by 15 metres. At this stage it is anticipated that this technique will only be used where the pipeline crosses under the railway.

3.8 The construction technique for the remaining route is not yet determined but has been assumed to be open cut as this would represent a 'worst case' scenario in terms of potential impact.

37 3.9 A number of laydown areas will be required along the route of the new rising main. These will be located approximately every 1km and will be used to store sections of the pipe whilst the construction takes place. Each laydown area is expected to be a maximum of 20 metres by 80 metres. As a reasonable worst-case scenario, it has been assumed that each will be

topsoil stripped and covered with hardstanding. The hardstanding will be removed, and the topsoil reinstated when the use of the laydown area ceases.

3.10 A main compound area will be required. The primary compound will be located at the Waterbeach end of the rising main. This will be a maximum of 100 metres by 100 metres. It will be topsoil stripped and covered with hardstanding. The hardstanding will be removed, and the topsoil reinstated when the use of use of the compound area ceases.

3.11 Satellite welfare units will also be used. These would be mobile units (eco unit or similar) which will move with the construction gang along the pipeline and would be located within the 30-metre working corridor.

4.0 Legislation and Policy

4.1 The content of this report is valid for one year from the date shown on the title page.

4.2 The route / line of the proposed pipeline is plotted on the topographical survey which was used to undertake the tree survey.

4.3 A number of the trees were already plotted using the National Tree Map V1 Point Data. The survey used GPS capable data collection combined with a Google aerial overlay to position additional trees.

4.4 Trees

4.4.1 The tree survey has been undertaken from ground level using non-invasive methods. The presence of obstructions, undergrowth, Ivy, epicormic shoots or other climbing plants on tree trunks and branches obscures any defects that might be present that could otherwise be identified. In the presence of climbing plants etc assumptions are made based upon the general health and appearance of trees, which may differ fundamentally if Ivy etc were not present. For example, a tree that has the overall appearance of good health and vigour may have a serious structural defect hidden by climbing plants. As dynamic organisms subject to weather and other environmental factors, the condition and safety of trees can change very rapidly (refer to Appendix 2 for details on trees/hedges/groups).

4.5 Tree Legislation

4.5.1 Legal status of trees (Tree Preservation Orders and Conservation Areas) has been checked using the online mapping facility of South Cambridgeshire District Council. Part of the site is within the Fen Ditton Conservation Area and may include hedgerow T159 (drawing TPP_WATERBEACH_13_2). However, as this section is to be installed by directional drilling there will be no impact on the vegetation. There are no Tree Preservation Orders (TPOs) on the trees inspected during the survey.

4.5.2 The Local Planning Authority (LPA) can make new TPOs at any time without advanced notice. It is common for LPAs to make new TPOs on receipt of details of projects that may harm trees. Penalties for offences relating to TPO trees include, but are not exclusive to, lopping, topping, damaging or destroying trees which can be unintentionally caused by such simple means as damaging the soil structure around the trees during site preparation or building work.

4.5.3 The effect of a Tree Preservation Order (if one should be made) is that a formal application will normally need to be submitted to the LPA (subject to exceptions) for tree works. Such an application may be refused, approved or approved subject to conditions. There is a right of appeal against refusals, conditions or non-determination. In all cases, unauthorised work or wilful damage or destruction etc is a criminal offence, on summary conviction leading to fines of up to £20,000 per tree and on indictment, to an unlimited fine and / or imprisonment. All trees are a 'material consideration' in the town planning context and extra weight is normally given to those the subject of the above statutory protection. If TPOs are applied, it is imperative that the LPA is consulted with respect to any activities that affect trees whether directly or indirectly.

4.5.4 Because of the nature of the scheme, the proposed works may fall under exceptions to the strict observance of tree protection legislation (under 'Statutory Undertaker' provisions to the Planning Acts). This does not absolve any party of 'duty of care' that applies under inter alia The Occupier's Liability Acts or The Health and Safety at Work Act (as amended). Advice should be sought from a suitably qualified legal expert for further clarification regarding the 'exceptions' status under the Planning Acts if the matter arises.

4.6 *Wildlife Legislation*

4.6.1 Before carrying out tree works; it is necessary to observe laws in respect of protected species and habitats. Various habitats and species of animal in the UK are protected by the following pieces of legislation:

- Wildlife and Countryside Act 1981(as amended)
- Natural Environment and Rural Communities Act 2006 (NERC Act)
- Conservation of Habitats and Species Regulations 2010 (as amended)
- Protection of Badgers Act 1992
- The Hedgerows Regulations 1997
- Countryside and Rights of Way Act 2000

All tree work operations must comply with The Wildlife and Countryside Act 1981 as amended by the Countryside and Rights of Way Act 2000, which provide statutory protection to birds, bats and other species, all of which could inhabit trees. Where works may constitute an offence, advice will be required from a suitably qualified person before works are able to proceed. For example, it may be necessary to programme tree work outside of the bird nesting period, typically March through to August inclusive.

4.7 *Non-disclosure Notice*

4.7.1 The content and layout of this report are owned by the author. This report may not be copied or used without the author's agreement for any purpose other than the purpose indicated in this report.

4.8 *Third Party Disclaimer*

4.8.1 The report was prepared by the author on behalf of Greenwillows Associates. The author provides this advice without prejudice and bases his opinions on knowledge, experience, qualifications and published research and cannot be held responsible for the consequences of a difference of opinion held by third parties, for example the Local Planning Authority or Planning Inspector. The author does not accept liability for any loss or damage arising from reliance on the content of this report.

4.9 *Status*

4.9.1 This is not a tree safety report. This report has been prepared in respect of the potential impact upon trees of the installation of a proposed new wastewater main. The report includes recommendations for tree protection which may have implications for design, construction, materials and methods to be employed during implementation. Any such recommendations should be approved by the appropriate responsible parties.

5.0 Methodology

5.1 The trees have been assessed in accordance with British Standard BS 5837: 2012 'Trees in relation to design, demolition and construction – Recommendations'. Trees surveyed individually are given sequential numbers from 1 to 179; trees/groups/hedges are denoted in the column headed structure in the tree schedule (Appendix 2). At the time of survey, the visibility (weather) was good. The trees are identified on the tree constraints plans.

5.2 The British Standard divides trees into one of four categories (based on the cascade chart for tree quality assessment – Table 1 in the Standard). These are classed as U, A, B or C (Section 4.5 of BS5837). This gives an indication as to the tree's quality. For a tree to qualify under any given category it should fall within the scope of that category's definition (see below). Categories A, B and C cover trees that might be a material consideration in the development process, each with three further sub-categories (1, 2 or 3) which are intended to reflect arboricultural, landscape and cultural (including conservation) values. Category U trees are those which would be lost in the short term for reasons usually connected with their physiological or structural condition. In assigning trees to the A, B or C categories, the presence of any serious disease or tree-related hazards are taken into account. If the disease is considered fatal and / or irremediable, or likely to require sanitation for the protection of other trees it may be categorised as U, even if they are otherwise of considerable value.

5.2.1 Category 'U'. (Dark Red): Trees for removal are those trees in such a condition that any existing value would be lost within 10 years, and which should in the current context be removed for reasons of sound arboricultural management. Trees within this category are:

- i. Trees that have a serious irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees;
- ii. Trees that are dead or are showing signs of significant, immediate or irreversible overall decline;
- iii. Trees infected with pathogens of significance to the health and or/safety of other trees nearby trees or very low-quality trees suppressing adjacent trees of better quality.

5.2.2 Category 'A'. (Green): are trees whose retention is most desirable and are of high quality and value. These trees are considered to be in such a condition as to be able to make a lasting contribution (at least 40 years) and may comprise:

- i. Trees which are particularly good examples of their species especially rare or unusual, or essential components of groups or of formal or semi-formal arboricultural features (e.g., the dominant and/or principal trees within an avenue);
- ii. Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features;
- iii. Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g., Veteran trees or wood-pasture trees).

5.2.3 Category 'B'. (Blue): are trees whose retention is considered desirable and are of moderate quality. These trees are considered to be in such a condition as to make a significant contribution (at least 20 years) and may comprise:

- i. Trees that might be included in category A, but because of their numbers or slightly impaired condition (e.g., presence of remediable defects including unsympathetic past management and minor storm damage), are downgraded in favour of the best individuals;
- ii. Trees present in numbers such that they form distinct landscape features and attract a higher collective rating than they would as individuals or trees occurring as collectives but situated, so as to make little visual contribution to the wider locality;
- iii. Trees with material conservation or other cultural value.

5.2.4 Category 'C'. (Grey): are trees that could be retained and are considered to be of low quality. They have a life expectancy of at least 10 years or are young trees with a stem diameter below 150mm and may comprise:

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

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5.3 Crown spreads have been measured in metres and taken for the four cardinal points where necessary and where access permits. The measurements are always considered in the following sequence: north, east, south and west, and therefore appear as such within the Tree Survey Schedule. Where access is not available dimensions are estimated.

5.4 In the assessment, particular consideration has been given to the following when considering the appropriate BS Category and Sub-Category allocation:

- i. the health, vigour and condition of each tree;
- ii. the presence of any structural defects in each tree and its remaining contribution in years (i.e., future life expectancy);
- iii. the size and form of each tree and its suitability within the context of a proposed development for the land use;
- iv. the location of each tree relative to existing site features, e.g., its value as a screen or as a skyline feature.

5.5 Age class is assessed according to the age class categories referred to in BS 5837.

- Young trees
- Early-mature, trees less than 1/2 life expectancy
- Mature trees up to 2/3 life expectancy
- Over-mature, declining or moribund trees of low vigour

- Veteran trees

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5.6 Major defects or diseases and relevant observations have been recorded under General Observations within the Tree Schedule. The assessment for structural condition has included inspection of the following defects:

- The presence of fungal fruiting bodies around the base of the tree or on the stem, as they could possibly indicate the presence of possible internal decay.
- Soil cracks and any heaving of the soil around the base indicating possible root plate movement.
- Any abrupt bends in branches and limbs resulting from past pruning, as it may be an indication of internal weakness and decay.
- Tight or weak 'V' shaped forks and co-dominant stems
- Hazard beam formations and other such biomechanical related defects (as described by Claus Mattheck, Body Language of Trees HMSO Research for Amenity Trees No. 4 1994).
- Cavities as a result of limb losses or past pruning
- Broken branches

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- Storm damage
- Canker formations
- Loose bark
- Damage to roots
- Basal, stem or branch / limb cavities
- Die-back in the crown
- Abnormal foliage size and colour
- Any changes to the timing of normal leaf flush and leaf fall patterns
- Other pathological diseases affecting any part of the tree



6.0 Results

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6.1 There is a likely loss of trees (T055 – T058 and T060) as a result of the installation of the new main by open-cut. Careful selection of the route and narrowing the working width may allow for part retention of this group of trees (T055 – T058 and T060).

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In addition, four sections of hedgerow (T054, T121, T139 and T173 shown on drawings TPP WATERBEACH 3 2, TPP WATERBEACH 10 2 & TPP WATERBEACH 11 2 TPP WATERBEACH 14 2) are to be cleared to allow access. The proposed route as shown on the drawings, may require the removal of up to 30m wide sections to provide the necessary access for plant to excavate the trench for installation of the pipes. As the hedgerow sections are narrow in spread, it may be possible to reduce the length of section to be removed to the minimum necessary to allow passage of vehicles during the open cut operations.

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6.2 There are sections of the development where there are constraints imposed by the retained vegetation. With reference to drawings TPP WATERBEACH 4 2, and TPP WATERBEACH 11 2, the proposed access/work areas will require protective fencing to prevent compaction of the soil within the RPA of trees T063, T065, T143 - T144 & T146). Tree T065 is considered to be of low value and as a worst-case scenario could be removed and replaced if necessary.

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6.3 With reference to drawing TPP WATERBEACH 10 2, the proposed site access is shown adjacent to retained trees (trees T180 to T185 inclusive). This is an existing access with compacted ground, however, the trees are growing within a grass verge, with arable field to the east, and will require protective fencing both to ensure that the ground is not compacted by vehicle movements or by plant striking the crowns.

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6.4 Temporary access from Horningsea Road will be required (refer to drawing TPP WATERBEACH 12 2) and this may impact on vegetation. Ensuring access on the west side of the carriageway is north of tree T154 and its associated Root Protection Area (RPA) should allow room for the access without impacting on tree T153 (low quality Elder). On the east side of the road south of tree T150 (low quality Elder) is adequate space for access without impacting any vegetation.



7.0 Impact Assessment, Conclusions and Recommendations

7.1 Tree loss required to implement the scheme

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The pipeline installation will result in the removal of T055 – T058 & T060. Any tree losses will be mitigated by replacement planting following completion of the project.

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Where there is a loss of hedgerows (as noted in 6.1 above) the scheme should strive to ensure

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that the minimal length of hedgerow is removed in each instance. Following completion of the scheme, replanting should be undertaken to ensure there is future hedge continuity.

7.2 Consideration of other trees that could be affected

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7.2.1 There are few conflicts with the RPAs of trees in the proposed scheme as the route is set clear of the root areas or directional drilling may be possible where there is a potential conflict. Some trees within or adjacent to proposed work/compound areas may be at risk without adequate protection and in some cases tree pruning may be required to ensure

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crowns are not damaged by the movement of vehicles. There is potential within the 30m easement zone to micro-manage the installation to avoid impacts on the vegetation.

7.3 Works and operations most likely to damage trees on this scheme

- Impact damage by plant and machinery during site preparation and implementation of the scheme.
- Root severance, especially where the trench line passes through RPAs.
- Soil compaction from the movement of machinery

7.4 Conclusions

The scheme can be implemented with minimal arboricultural impact by following the advice herein. Any vegetation losses can be mitigated by replanting following completion of the scheme.

7.5 Recommendations

Avoiding tree root protection areas (RPA) with open-cut trenches and locating launch and retrieval pits for direct-drilling outside of RPAs will avoid any loss or significant harm to trees. The use of a protective zone and ground protection (where necessary) as noted in section 8 below will ensure there is no long-term damage to the retained trees from the installation of the pipeline.

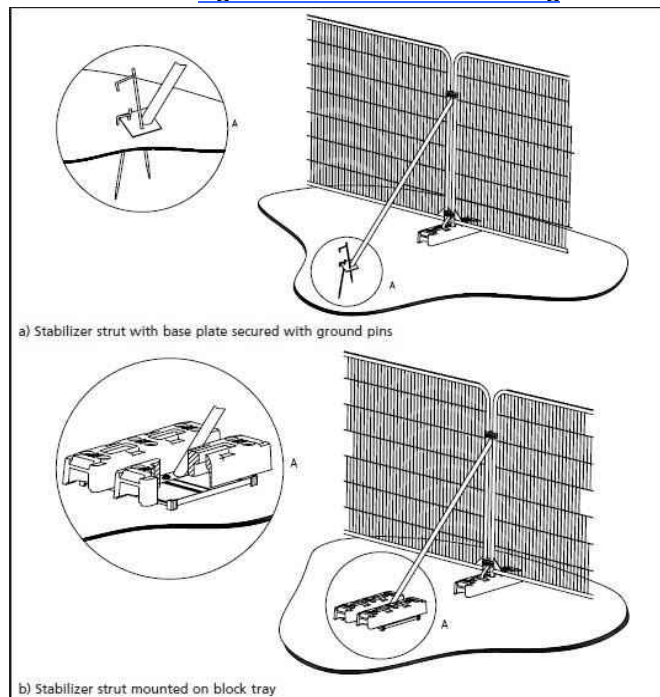
8.0 Method Statement

8.1 Tree protection

- 80 8.1.1 The extent of the root protection areas will be marked out by rope and post barriers (location as shown on drawings [TPP WATERBEACH 1 2](#) to [TPP WATERBEACH 15 2](#)). Where
- 81 access is required and the RPAs extend beyond the protective barrier, ground protection is required to prevent compaction damage to the soil. It is recommended that [Table 1 \(Appendix Three\)](#) is used to correctly place the protection zone to ensure all the RPA is enclosed to allow for any drift of the GPS signal during plotting. All measurements are to be taken from the nearest trunk of the tree/group to the work area. For example, Tree T2 will have fencing placed 11.88m from the trunk; for ease rounding up to the nearest whole number is advised.
- 82 8.1.2 The post-and-rope barriers should be in place before any materials or machinery is brought onto site. Once in place, barriers and ground protection should be considered sacrosanct and should not be altered or removed without prior recommendation by an arboriculturist and approval of the local planning authority. Barriers should be maintained to ensure that they remain rigid and complete. A banksman should be present if manoeuvring plant adjacent to the RPAs of retained trees.
- 83 8.1.3 Where works are to take place close to important trees, a higher specification of protective barrier will be installed. In this case, tree T105 will be protected by Heras fencing as shown in [Figure 1](#) installed at 16m from the trunk. In addition, those trees designated notable in the PEA should be protected by Heras fencing located at 15m from trunk centre where practicable and ensuring no disruption to farming activities.
- 8.1.4 Trees T180 – T185 (refer to drawing [TPP WATERBEACH 10 2](#)) have a reduced rooting area available due to the compacted ground within the existing field access. To ensure that there is no damage to the soil structure it is recommended that the higher specification Heras fencing (refer to [Figure 1](#) below).

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Figure 1: Tree Protective Fencing



The barrier will comprise 2m tall, welded mesh panels on rubber or concrete feet, the fence panels should be joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the fence. The distance between the fence couplers should be at least 1 m and should be uniform throughout the fence. The panels should be supported on the inner side by stabilizer struts, which should normally be attached to a base plate secured with ground pins.

8.2 Ground protection

8.2.1 Where it is agreed that vehicular or pedestrian access for construction purposes is necessary within the RPA, ground protection measures will be required to prevent damage to the soil structure within the RPA.

8.2.2 For pedestrian access within the RPA, the installation of ground protection in the form of a single thickness of scaffold boards over a compressible layer laid onto a geotextile membrane, or supported by scaffold, is likely to be acceptable.

8.2.3 For wheeled or tracked vehicles, access within the RPA the ground protection should be designed by an engineer to accommodate the likely loading and may involve the use of proprietary systems or reinforced concrete slabs. A system such as Eve Trakway or similar selected for the predicted loading is a flexible system that can be adjusted quickly to take into

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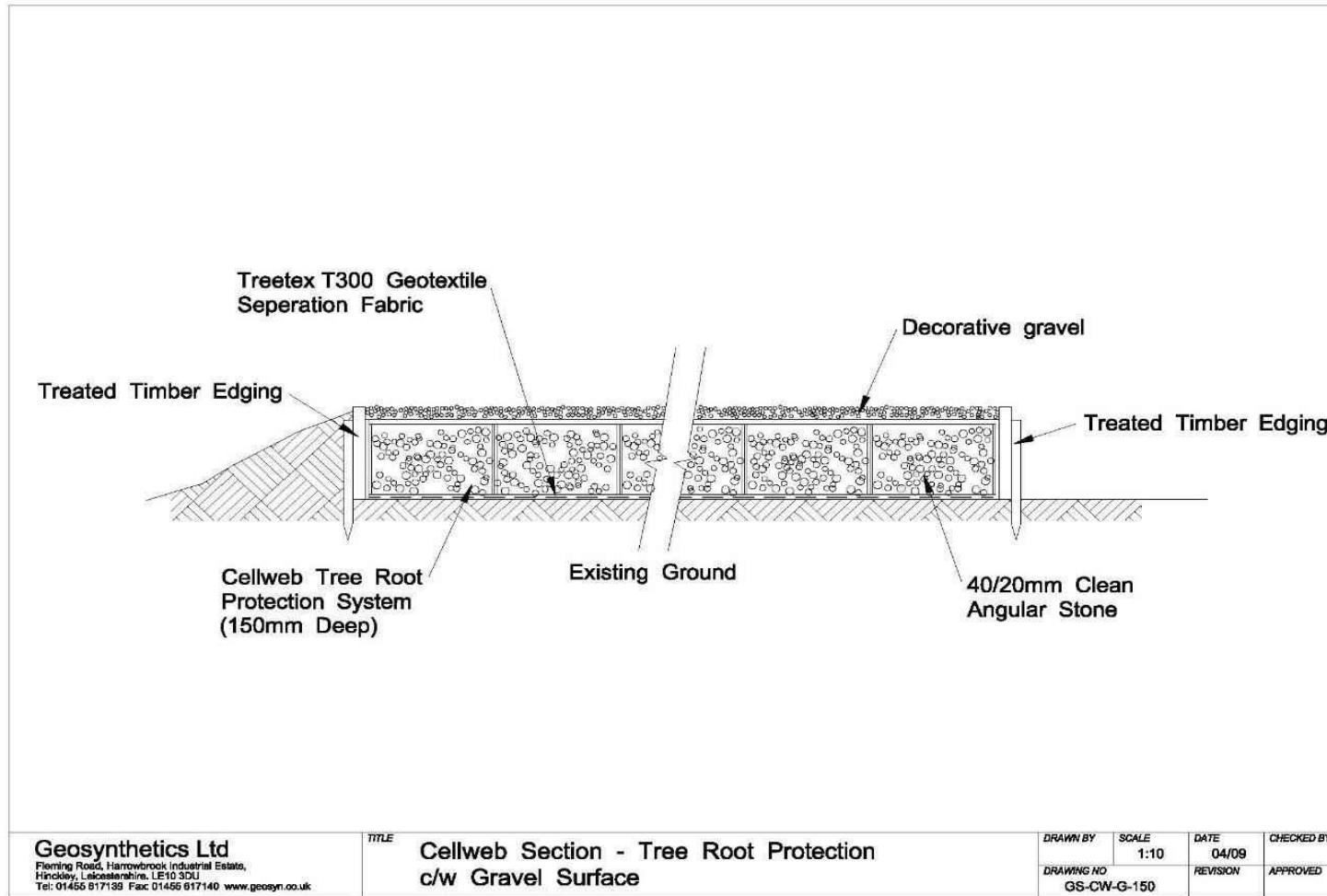
account any unexpected requirement to provide access over the RPAs. With reference to drawing TPP WATERBEACH 4 2, the access is shown to make a significant encroachment into the RPA of tree T063. Ideally, the access should be routed around the RPA of the tree but if this is not possible and access is required on a longer-term basis, then the use of a no-dig road using a cellular confinement system may be required. Refer to Figure 2 below for a general overview of a typical installation with porous tarmac (illustration courtesy of

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Geosynthetics Ltd showing a gravel surface). The depth of CellWeb will be dependent on the expected loads and should be based on the manufacturer's recommendation.

Figure 2: Cellular Confinement System



8.3 Tree Pruning

8.3.1 All tree works should be undertaken prior to any site works commencing. Motorised vehicles will be restricted to areas of existing compacted/hard surfaces, or where ground protection is in place, and should not be taken onto un-surfaced areas within the root protection areas (as shown on drawings TPP_WATERBEACH_1_2 to TPP_WATERBEACH_15_2). Refer to Table 8.3.2 below for tree works.

8.3.2. Tree Work Specification

Tree No.	Map Ref	Recommended Works
T002 -T004	TPP_WATERBEACH_1_2	Raise crowns to 5m over track
T028	TPP_WATERBEACH_1_2	Raise crown to 3.5m over proposed compound site
T052	TPP_WATERBEACH_3_2	Raise crown to 3m over work area
<u>T054</u>	<u>TPP_WATERBEACH_3_2</u>	<u>Section of hedge to be grubbed out</u>
T072 – T099	TPP_WATERBEACH_5_2 TPP_WATERBEACH_6_2	Raise crowns to 4m over track
T120	TPP_WATERBEACH_9_2	Cut back crowns on west side by 4m
T122 – T125 T134 & T135	TPP_WATERBEACH_10_2	Raise crowns to 4m over track
<u>T121</u>	<u>TPP_WATERBEACH_10_2</u>	<u>Section of hedge to be grubbed out</u>
<u>T139</u>	<u>TPP_WATERBEACH_11_2</u>	<u>Section of hedge to be grubbed out</u>
<u>T173</u>	<u>TPP_WATERBEACH_14_2</u>	<u>Section of hedge to be grubbed out</u>

It should be noted that further works may be required as the scheme progresses and requirements for access etc may change.

8.3 Root pruning

8.3.2 The position of the open cut installation is close to tree group T120 and makes an encroachment into the RPAs (refer to drawing TPP_WATERBEACH_9_2). Whilst the encroachment appears minor, the position on the ground once works have commenced may bring the trench closer to the tree belt. It is recommended that a test trench is excavated by air spade along the line of the marked-out pipe route and any roots found

severed cleanly by an arboriculturist to prevent the excavator pulling roots out of the ground. The roots should be cut at least 200mm from the outer edge of the proposed trench and covered with damp hessian to prevent desiccation.

8.4 *Storage of materials*

8.4.1 The work compounds are likely to store the materials necessary for the project and this may include fuels/chemicals/materials. All such materials must be stored away from the RPAs of the retained trees. If space is limited, measures should be in place, based on the material type, to prevent contamination of the soil in the event of an accidental spillage.



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Appendices

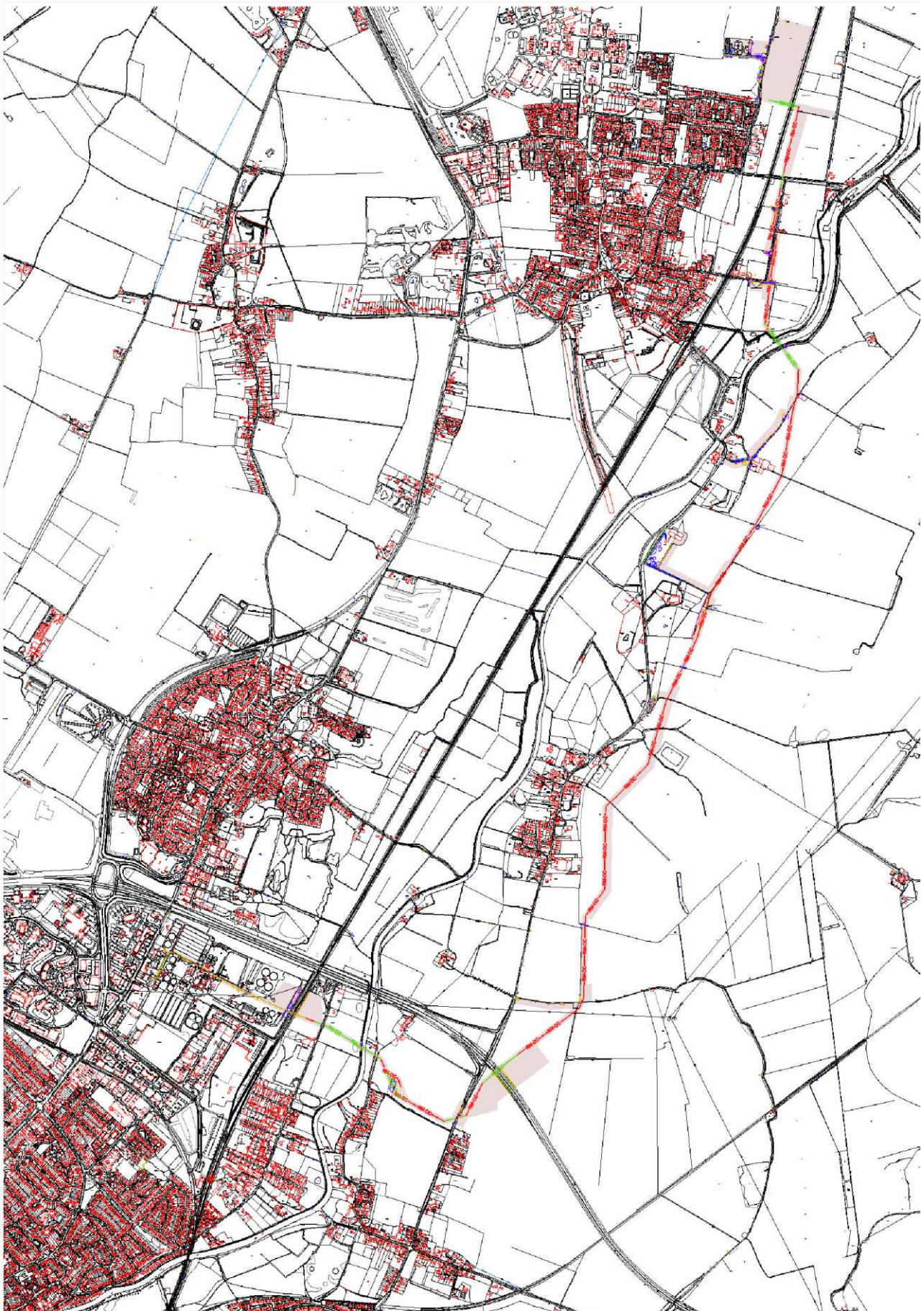
Appendix One: Site Location Plan

Appendix Two: Tree Schedule

Appendix Three: Tree Root Protection Area Distances



Appendix One: Site Location Plan









Appendix 2: Tree Schedule

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T001	Hawthorn	Group	6	100	N:2 E:5 S:2 W:4	0	1	Mature	Some maintenance farm side Includes dead elm Inclusive bark. Dead wood. Trees growing below level of track	20+ Years	B3	Area: same as Group - 138 sq m.
T002	Pedunculate Oak	Tree	16	990	N:9 E:9.5 S:10 W:10	3	4.5(E)	Mature	Light deadwood Decay pockets on trunk Decay pockets in crown Storm damaged with shed limbs Growing on ditch bank	50+ Years	A2	Radius: 11.9m. Area: 445 sq m.
T003	Pedunculate Oak	Tree	14	880	N:7 E:8 S:5 W:6	0	4(E)	Mature	Trunk snapped in past at 4m Light deadwood Decay pockets on trunk Decay pockets in crown Storm damaged with shed limbs Growing on ditch bank Stem hollow, decayed, cracked (inc. shear cracks)	40+ Years	B3	Radius: 10.6m. Area: 353 sq m.
T004	Pedunculate Oak	Tree	16	1070	N:8 E:9 S:6 W:8	1.5	5.5(E)	Mature	Epicormics on trunk Light deadwood Trunk forks at 2m Decay pockets in crown Growing on ditch bank	50+ Years	A2	Radius: 12.8m. Area: 515 sq m.
T005	Pedunculate Oak	Tree	17	820	N:10 E:10 S:7 W:85	5	6(E)	Mature	Epicormics on trunk Light deadwood Decay pockets in crown Growing on ditch bank	50+ Years	A2	Radius: 9.8m. Area: 302 sq m.



Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T006	Pedunculate Oak	Tree	12	650	N:9 E:10 S:5 W:5	7	8(E)	Mature	Flux on trunk Decay pockets on trunk Decay pockets in crown Heavy deadwood Stem/limb decay. Bark necrosis. Likely high wildlife value	10+ Years	B3	Radius: <u>7.8m.</u> Area: <u>213 sq m</u>
T007	Pedunculate Oak	Tree	16	950	N:9 E:10 S:8 W:9	5	7(E)	Mature	Heavy epicormics on trunk Decay pockets in crown Light deadwood Growing on ditch bank	50+ Years	A2	Radius: 11.4m. Area: 408 sq m.
T008	Pedunculate Oak	Tree	19	1350	N:7 E:9 S:9 W:9	10		Over Mature	Root decay (fungi) - Ganoderma sp. Stem/limb decay. Stem hollow, decayed, cracked (inc. shear cracks). Bark necrosis. Dieback - poor foliage. Heavy Dead wood. Ivy on Stem Decay pockets on trunk Decay pockets in crown	20+ Years	B2,3	Radius: 15.0m. Area: <u>707 sq m.</u>
T009	Common Ash	Tree	15	850	N:8 E:8 S:7 W:18	3		Mature	Dieback - poor foliage. Dead wood. Sub-dominant stems present Ivy on trunk Decay pockets in crown Suppressed by adjacent tree	<u>20+ Years</u>	B2	Radius: 10.2m. Area: 327 sq m.
T010	Common Ash	Tree	10	380	N:5 E:6 S:6 W:4	5		Early Mature	Prolific ivy.	40+ Years	B2	Radius: 4.6m. Area: 66 sq m.

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Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T011	Common Ash	Tree	10	380	N:5 E:4 S:5 W:3	2.5		Early Mature	Group of 2 trees closely spaced Former hedge trees Topped at 2m Trunk decay hollowing Mutually suppressed Regrown from old topping point	20+ Years	B3	Radius: 6.4m. Area: 129 sq m.
T012	Common Ash	Tree	9	350, 270, 280, 300	N:5 E:5 S:5 W:5	5		Mature	Multiple stems from ground level Enjoy Former hedge tree Light deadwood	20+ Years	B3	Radius: 7.2m. Area: 163 sq m.
T013	Common Ash	Tree	9	580, 500	N:6 E:5 S:3 W:4	4	1	Mature	Former hedge tree Light deadwood Stem hollow, decayed, cracked (inc. shear cracks). Lapsed pollard. Dead wood.	20+ Years	B3	Radius: 9.2m. Area: 266 sq m.
T014	Common Ash	Tree	9	300, 280	N:6 E:5 S:3 W:2	4		Mature	Former hedge tree Topped in the past Light deadwood	20+ Years	B3	Radius: 4.9m. Area: 75 sq m.
T015	Common Ash	Tree	12	400, 320, 330	N:6 E:7 S:4 W:5			Mature	Former hedge tree Enjoy Trunk decay Topped in the past Bark necrosis	10+ Years	B3	Radius: 7.3m. Area: 167 sq m.
T016	Common Ash	Tree	10	400, 350, 450	N:6 E:6 S:5 W:5			Mature	Former hedge tree Trunk decay Topped in the past Dead wood. Prolific ivy.	10+ Years	B3	Radius: 8.4m. Area: 222 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T017	Common Ash	Tree	10	320	N:53 E:6 S:5 W:3			Mature	Topped in the past Decay at pruning wound	20+ Years	C2	Radius: 3.8m. Area: 45 sq m.
T018	Common Ash	Tree	9	650	N:6 E:3 S:4 W:5	4		Mature	Former hedge tree Topped in the past Advanced trunk decay Section collapsed Fungi present on trunk	20+ Years	B3	Radius: 7.8m. Area: 191 sq m.
T019	Common Ash	Tree	9	350, 310	N:4 E:3 S:5 W:3	4		Mature	Former hedge tree Topped in the past Advanced trunk decay Bark necrosis Basal decay Twin-stemmed from ground level	20+ Years	B3	Radius: 5.6m. Area: 99 sq m.
T020	Common Ash	Tree	9	350, 480	N:6 E:4 S:4 W:5	5		Mature	Former hedge tree Topped in the past Advanced trunk decay Twin-stemmed from ground level	20+ Years	B3	Radius: 7.1m. Area: 158 sq m.
T021	Common Hawthorn	Hedge	7	100	N:3 E:3 S:3 W:3	0		Mature	Managed hedge Self-set trees and former hedge trees growing through Multiple stems from ground level	40+ Years	A2,3	Area: 583 sq m.
T022	Common Ash	Tree	9	230, 280	N:5 E:4 S:5 W:4	3		Early Mature	Twin-stemmed from ground level Exposed roots Light deadwood	20+ Years	C2	Radius: 4.3m. Area: 58 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T023	Ash	Tree	10	320	N:5 E:4 S:6 W:5	2		Early Mature	basal growth becoming Subdominant Light deadwood	40+ Years	B2	Radius: 3.8m. Area: 45 sq m.
T024	Elm	Tree	8	200	N:1 E:1 S:1 W:1			Dead			U	None - due to Retention Category of U.
T025	Common Hawthorn	Group	5	60	N:2 E:2 S:2 W:2	0		Early Mature	Poor gappy hedge	20+ Years	C2,3	Area: 300 sq m.
T026	Common Hawthorn	Tree	4	70, 50, 140, 50, 60, 30, 80, 80	N:0.5 E:3 S:3 W:4	0		Mature	Maintained on farm side Branches growing through fence	20+ Years	C3	Radius: 2.6m. Area: 21 sq m.
T027	Common Ash	Tree	5	80, 90	N:1 E:13 S:3.5 W:3	1		Early Mature	Multiple stems from ground level	20+ Years	C2	Radius: 1.4m. Area: 6 sq m.
T028	Common Ash x2	Group	17	250	N:8 E:8 S:8 W:8	1	2.5(SW)	Early Mature	2 multi-stemmed trees Included bark in main forks Light deadwood	20+ Years	B2	Area: 89 sq m.
T029	Common Hawthorn	Hedge	4	100	N:1 E:2 S:3 W:2		0		Section of gappy hawthorn hedge Maintained on farm side	20+ Years	C2	Area: 131 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T030	Common Hawthorn	Hedge	5	150	N:4 E:2 S:3 W:2		0	Mature	Gappy hedge with mature trees	20+ Years	C2	Area: 200 sq m.
T031	Common Ash	Tree	16	270, 290, 250	N:6 E:6 S:4 W:5	4	0	Mature	Multiple stems below 1.5m Heavy ivy Overhead cables in crown Ivy inhibits inspection Light deadwood	20+ Years	B2	Radius: 5.6m. Area: 99 sq m.
T032	Common Ash	Tree	8	160, 150	N:5 E:3 S:3 W:2	2		Early Mature	Twin-stemmed from ground level Light deadwood	10+ Years	C2	Radius: 2.6m. Area: 21 sq m.
T033	Common Ash	Tree	8	140	N:1.5 E:1.5 S:1.5 W:1.5	2.5		Semi Mature	Light deadwood Drawn form Heavy ivy	20+ Years	C2	Radius: 1.7m. Area: 9 sq m.
T034	Common Ash x7 pedunculate Oak x2	Group	17	270, 280	N:7 E:3 S:5 W:4	3		Early Mature	Line of 7 trees Mutually suppressed Drawn form Some twin stemmed Light deadwood	30+ Years	B2	Area: 52 sq m.
T035	Pedunculate Oak	Tree	16	500	N:8 E:7 S:7 W:6	4	4(SE)		Heavy epicormics on trunk Light deadwood	40+ Years	B2	Radius: 6.0m. Area: 113 sq m.
T036	Pedunculate Oak	Tree	16	50	N:7 E:5 S:6 W:18	4		Mature	Heavy epicormics on trunk Light deadwood	40+ Years	B2	Radius: 6.0m. Area: 113 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T037	Common Ash x2	Group	11	200	N:7 E:5 S:4 W:5	6		Early Mature	Dieback - poor foliage. Dead wood. Mutually suppressed Drawn form	20+ Years	B2	Radius: 2.4m. Area: 35 sq m.
T038	Common Ash	Tree	10	520	N:0 E:1 S:3 W:4			Mature	Diameters estimated Formerly 2 stems 1 split out in past Remaining stem advanced decay Bark necrosis	<10 years	B3	Radius: 6.2m. Area: 121 sq m.
T039	Common Ash	Tree	17	350	N:3 E:7 S:5 W:8	4		Mature	Diameters estimated Main stem split out in past at 3m Remaining stem advanced decay and hollowing Bark necrosis Decay pockets in crown Hung up Section of stem	<10 years	B	Radius: 4.1m. Area: 53 sq m.
T040	Common Ash	Tree	9	340	N:4 E:4 S:4 W:4	2.5		Early Mature	Sub-dominant stem decayed Moderate deadwood Dieback - poor foliage.	10+ Years	B2	Radius: 4.1m. Area: 53 sq m.
T041	Common Hawthorn	Hedge	2	30	N:0.5 E:0.5 S:0.5 W:0.5	0		Early Mature	Small section of maintained hedge on North side of ditch	30+ Years	C2,3	Area: 20 sq m.
T042	Common Ash	Tree	12	100, 120, 150, 140, 110, 110	N:6 E:6 S:5 W:5	3		Mature	Multiple stems from ground level Included bark in main forks Light deadwood Stems rubbing and causing damage	20+ Years	B2	Radius: 3.6m. Area: 41 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T044	Common Hawthorn	Group	4	80	N:3 E:3 S:3 W:3	0		Early Mature	Small, isolated group	20+ Years	C2	Area: 10 sq m.
T045	Common Hawthorn	Group	4	80	N:4 E:3 S:3 W:3	0		Early Mature	Small, isolated group	20+ Years	C2	Area: same as Group - 10 sq m.
T046	Common Hawthorn	Hedge	6	100	N:3 E:3.5 S:3 W:3	0		Mature	Section of unmanaged hedge No access	20+ Years	C2	Area: 30 sq m.
T047	Hornbeam	Group	9	270, 150	N:5 E:5 S:3 W:4	1		Early Mature	Group of 2 trees Light deadwood	40+ Years	B2	Area: 31 sq m.
T048	Willow	Stump	9	340.320.280.300.150	N:7 E:8 S:6 W:8	1.5	1	Mature	Poor shape/form. Trunk forks below 1.5m. Decay pockets on stem. <u>Light deadwood in crown</u> Stems split apart at base. Basal decay. Can be retained with management	10+ Years	B2	Radius: 7.8m. Area: 191 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T049	Cypress species Hornbeam Cherry Laurel	Group	12	400	N:5 E:5 S:5 W:5	0		Mature	Mixed group planted as a linear feature. 13 trees including cypress and occasional hornbeam and laurel. Mutually suppressed. Light deadwood. Low forks. Included bark	30+ Years	B2	Area: 211 sq m.
T050	Common Hawthorn Common Ash	Hedge	7	120	N:3 E:3 S:3 W:3	0		Mature	Gappy hedge Unmanaged Some self-set Ash	30+ Years	C2,3	Area: 356 sq m.
T051	Cherry Plum	Tree	8	90, 100, 110, 80, 130	N:6 E:5 S:6 W:6	0		Mature	Multiple stems below 1.5m Light deadwood Included bark in main forks	10+ Years	B2	Radius: 2.8m. Area: 25 sq m.
T052	Common Ash	Tree	13	350, 270, 300, 350	N:7 E:7 S:7 W:7	2.5		Mature	Multiple stems below 1.5m Light deadwood1	20+ Years	B2	Radius: 7.8m. Area: 191 sq m.
T053	Common Hawthorn Elder	Group	5	140	N:4 E:4 S:4 W:4	0		Mature	No access Diameters estimated Light deadwood	20+ Years	C2	Area: 128 sq m.
T054	Common Hawthorn Dogwood Common Ash Plum	Hedge	6	100	N:2 E:3 S:2 W:2	0		Early Mature	Mixed hedge Some dead sections taken over by brambles Overhead power lines means height regularly reduced	20+ Years	B2,3	Area: 1513 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T055	Common Ash	Tree	16	450, 480	N:6 E:5 S:6 W:6	4		Mature	Prolific ivy. Light deadwood Ivy prevents inspection	20+ Years	B2	Radius: 7.9m. Area: 196 sq m.
T056	Common Ash	Tree	16	380	N:3 E:2 S:5 W:3	2.5		Early Mature	Drawn form Mutually suppressed Light deadwood Prolific ivy Ivy prevents inspection	10+ Years	C2	Radius: 4.6m. Area: 66 sq m.
T057	Common Ash	Tree	17	300, 250, 130, 160	N:9 E:4 S:6 W:7	2.5		Mature	Multiple stems below 1.5m Ivy prevents inspection Prolific ivy. Light deadwood Mutually suppressed Drawn form	20+ Years	B2	Radius: 5.3m. Area: 88 sq m.
T058	Common Ash	Tree	16	110, 250	N:6 E:4 S:3 W:3	5		Early Mature	Drawn form Mutually suppressed Prolific ivy Ivy prevents inspection Light deadwood	20+ Years	C2	Radius: 3.3m. Area: 34 sq m.
T059	Willow	Tree	15	900	N:10 E:8 S:6 W:5	3		Mature	Prolific ivy. Ivy prevents inspection Light deadwood Decay pockets in crown	20+ Years	B2	Radius: 10.8m. Area: 366 sq m.
T060	Common Hawthorn	Hedge	6	130	N:3 E:2 S:2 W:3	0		Mature	Unmanaged section of hedge Light deadwood	40+ Years	B2,3	Area: 42 sq m.
T061	Elder	Hedge	4	80	N:2 E:2 S: 2: W2	1		Mature	Gappy hedge on South edge of ditch	10+ Years	C2	Area: 165 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T062	Common Ash	Tree	10	500	N:7 E:6 S:7 W:7	2		Mature	Heavy ivy in crown Trunk diameters estimated Sub-dominant stem Light deadwood Overhead power cables	20+ Years	B2	Radius: 6.0m. Area: 113 sq m.
T063	Common Ash	Tree	12	1000	E:6 S:7 W:7	1	1(NW)	Mature	Heavy ivy on trunk and into crown Ivy prevents inspection Trunk diameter estimated Light deadwood Overhead power cables Tree possibly topped in past	20+ Years	B2	Radius: 15.0m. Area: 707 sq m.
T064	Willow	Tree	3	50	N:3 E:3 S:3 W:3	0		Mature	Coppice regrowth from stump Prolific ivy Overhead power cable	30+ Years	C2	Radius: 0.6m. Area: 1 sq m.
T065	Willow	Tree	9	500	N:4 E:1 S:1 W:3		5	Mature	Prolific ivy. Leans West Ivy prevents inspection Light deadwood Stem lost in past	10+ Years	C2	Radius: 6.0m. Area: 113 sq m.
T066	Willow	Group	17	700	N:6 E:7 S:9 W:8	3		Mature	Ivy prevents inspection Some trees have collapsed Overhead power cable Fractured limbs - storm damage. Dead wood. Prolific ivy.	10+ Years	B2	Area: 219 sq m.
T067	Common Hawthorn Elder	Hedge	4.5	140	N:3 E:3 S:3 W:3	0		Mature	Section of gappy hedge Unmanaged Light deadwood	30+ Years	C2	Area: same as Group - 383 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T068	Sycamore x3	Group	5	380	N:3 E:3 S:3 W:3	1		Early Mature	Poor shape/form. Basal growth. Ivy on stem. Unable to access stem. Epicormics on trunk Trees topped in the past	20+ Years	C2	Area: 12 sq m.
T069	Willow	Tree	7	700	N:3.5 E:4 S:3.5 W:4	1		Mature	Unable to access stem. Pollard. Hollow trunk. Trunk decay. Growing on West Bank of water filled ditch	20+ Years	B2,3	Radius: 8.4m. Area: 222 sq m.
T070	Pear	Tree	9	230, 380	N:5 E:4 S:4 W:5	0.5	2(SW)	Mature	Trunk forks below 1.5m. Bark wound/s. Decay pockets on stem.	20+ Years	B2	Radius: 5.3m. Area: 88 sq m.
T071	Elm Field Maple Hawthorn	Group	10	130	N:3 E:1 S:3 W:3	4		Early Mature	Woodland group includes field maple, hawthorn. Growing on East Side of water filled ditch below level of road. Some dead trees	10+ Years	C2	Area: 218 sq m.
T072	Sycamore	Tree	7	200	N:2 E:2 S:2 W:2	2.5		Early Mature	Bark wound/s. Broken branches in crown. Light deadwood in crown	20+ Years	C2	Radius: 2.4m. Area: 18 sq m.
T073	Sycamore	Tree	7	190	N:2 E:2 S:1 W:13	2.5		Early Mature	Light deadwood in crown. Bark wound/s.	20+ Years	C2	Radius: 2.3m. Area: 17 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T074	Hornbeam	Tree	6	250	N:3.5 E:2.5 S:2.5 W:2.5	4		Early Mature	Light deadwood in crown. Bark wound/s.	30+ Years	B2	Radius: 3.0m. Area: 28 sq m.
T075	Norway Maple	Tree	8	280	N:3.5 E:2.5 S:4 W:4	4		Early Mature	Light deadwood in crown. Bark wound/s. Cavity developing at base. Trunk decay1	20+ Years	B2	Radius: 3.3m. Area: 34 sq m.
T076	Hornbeam	Tree	5	210, 210	N:4.5 E:3 S:3 W:3	1		Early Mature	Trunk forks below 1.5m. Bark wound/s.	30+ Years	B2	Radius: 3.5m. Area: 35 sq m.
T077	Common Ash	Tree	15	620	N:6 E:7 S:6 W:7	3		Mature	Basal growth. Bark wound/s. Decay pockets on stem. Epicormics on trunk. Moderate deadwood in crown. Branches touching overhead cables	20+ Years	B2	Radius: 7.4m. Area: 172 sq m.
T078	Sycamore	Tree	12	510	N:6 E:6 S:6 W:6	2		Mature	Decay pockets on stem. Light deadwood in crown. Multiple stems from 2m	30+ Years	B2	Radius: 6.1m. Area: 117 sq m.
T079	Hornbeam	Tree	7	330	N:4 E:2 S:2.5 W:3	2		Early Mature	Bark wound/s.	30+ Years	B2	Radius: 4.0m. Area: 50 sq m.
T080	Sycamore (variegated)	Tree	11	390	N:6 E:5 S:5 W:6	2		Early Mature	Bark wound/s. Light deadwood in crown.	30+ Years	B2	Radius: 4.7m. Area: 69 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T081	Field Maple	Tree	5	250	N:3 E:3 S:3 W:3	1	1	Early Mature	Bark wound/s. Light deadwood in crown.	20+ Years	B2	Radius: 3.0m. Area: 28 sq m.
T082	Norway Maple	Tree	10	320	N:3 E:3 S:3.5 W:3	3		Early Mature	Bark wound/s. Light deadwood in crown.	20+ Years	B2	Radius: 3.8m. Area: 45 sq m.
T083	Sycamore	Tree	12	400	N:4.5 E:5 S:6.5 W:7	2		Early Mature	Decay pockets on stem.	40+ Years	B2	Radius: 4.8m. Area: 72 sq m.
T084	Sycamore	Tree	11	530	N:5 E:5 S:5 W:5	1.5		Mature	Bark wound/s. Light deadwood in crown. Multiple stems from 1.6m	40+ Years	B2	Radius: 6.4m. Area: 129 sq m.
T085	Sycamore	Tree	11	490	N:4.5 E:5 S:6 W:6	1.5		Early Mature	Basal growth. Bark wound/s. Inclusive bark. Light deadwood in crown.	40+ Years	B2	Radius: 5.9m. Area: 109 sq m.
T086	Sycamore	Tree	10	460	N:5 E:6 S:6.5 W:6	1.5		Early Mature	Bark wound/s. Light deadwood in crown.	40+ Years	B2	Radius: 5.5m. Area: 95 sq m.
T087	Common Ash	Tree	11	340	N:4.5 E:4.5 S:5.5 W:4.5	1.5		Early Mature	Bark wound/s. Light deadwood in crown.	30+ Years	B2	Radius: 4.1m. Area: 53 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T088	Common Ash	Tree	10	300	N:5 E:3 S:4 W:5	2		Early Mature	Light deadwood in crown.	30+ Years	B2	Radius: 3.6m. Area: 41 sq m.
T089	Field Maple	Tree	11	230, 250, 320, 180, 270	N:6 E:5 S:6.5 W:6	2		Mature	Multiple stems from 0.5m. End of belt of trees Bark wound/s. Light deadwood in crown.	30+ Years	B2	Radius: 6.8m. Area: 145 sq m.
T090	Common Ash	Tree	12	470	N:7.5 E:7 S:5 W:6	3		Early Mature	Moderate deadwood in crown. Branches touching overhead cable Trunk forks above 1.5m	20+ Years	B2	Radius: 5.6m. Area: 99 sq m.
T091	Common Ash	Tree	11	190.230.320	N:3 E:6 S:4 W:7	3		Early Mature	Light deadwood in crown. Trunk forks below 1.5m.	30+ Years	B2	Radius: 5.2m. Area: 83 sq m.
T092	Common Ash	Tree	10	620	N:3 E:4 S:4 W:6	5		Over Mature	Light deadwood in crown. Low vitality. Declining. Unable to access stem. Major deadwood in crown. Crown dieback. Top lost in past. Heavy ivy on trunk. Growing within hedge	<10 years	C3	Radius: 7.4m. Area: 172 sq m.
T093	Common Hawthorn Elm	Hedge	1.5	60	N:0.5 E:0.5 S:0.5 W:0.5	0		Early Mature	Maintained hedge. Includes elm and ivy	40+ Years	B2,3	Area: 180 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T094	Common Ash	Group	13	370	N:6 E:5 S:4 W:6	2		Early Mature	Line of 5 trees. Bark wound/s. Light deadwood in crown.	40+ Years	B2	Area: 301 sq m.
T095	Pedunculate Oak	Tree	20	700	N:8 E:7 S:9 W:9	2		Mature	Unable to access stem Trunk diameter estimated Light deadwood in crown. Branches touching Overhead cables	40+ Years	A2	Radius: 8.4m. Area: 222 sq m.
T096	Common Ash	Tree	10	340	N:5 E:5 S:5 W:3	3		Early Mature	Ivy on stem. Unable to inspect stem due to ivy. Light deadwood in crown.	20+ Years	B2	Radius: 4.1m. Area: 53 sq m.
T097	Common Ash	Tree	18	630	N:8 E:6 S:7 W:8	3		Mature	Bark wound/s. Decay pockets on stem. Light deadwood in crown.	20+ Years	A2	Radius: 7.6m. Area: 181 sq m.
T098	Sycamore	Tree	10	350	N:4 E:4 S:4 W:4	2.5		Early Mature	Ivy on stem. Bark wound/s.	40+ Years	B2	Radius: 4.2m. Area: 55 sq m.
T099	Common Ash	Tree	12	420	N:7 E:6 S:6 W:7	3		Mature	Decay pockets in crown. Occluded trunk wound. Light deadwood. Branches touching Overhead cables. Some crown dieback	20+ Years	B2	Radius: 5.0m. Area: 79 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T100	Common Ash	Tree	10	400	N:6 E:5 S:5 W:4	4		Early Mature	Ivy on stem. Unable to inspect stem due to ivy. Unable to access stem. Bark wound/s. Light deadwood in crown.	20+ Years	B2	Radius: 4.8m. Area: 72 sq m.
T101	Common Ash	Tree	9	380	N:5 E:4 S:5 W:4	4		Early Mature	Unable to access stem. Decay pockets on stem. Moderate deadwood in crown due to suppression from adjacent tree on West side	20+ Years	B2	Radius: 4.8m. Area: 72 sq m.
T102	Cypress	Group	11	270, 300	N:4.5 E:4.5 S:5 W:4.5	4		Early Mature	Group of 6 cypress. Multiple stems below 1.5m. Included bark in main forks	20+ Years	B2	Area: 96 sq m.
T103	Common Ash	Tree	10	460	N:6 E:6 S:6 W:6	2		Mature	Unable to access stem. Light deadwood in crown. Occluded wounds on trunk	30+ Years	B2	Radius: 5.5m. Area: 95 sq m.
T104	Common Ash	Tree	8	80, 90, 120, 100, 100, 160, 70	N:4 E:5 S:3 W:4	1		Early Mature	Regrowth from decayed stump. Larger stem is part of decayed trunk with cavity Advanced basal decay	10+ Years	B2,3	Radius: 3.4m. Area: 36 sq m.
T105	Pedunculate Oak	Tree	15	1050	N:8 E:10 S:8 W:11	2.5		Mature	Major trunk cavity. Large area of missing bark possible fire/lightning strike Basal decay. Trunk decay. Light deadwood.	20+ Years	B2,3	Radius: 16m. Area: <u>804 sq m.</u>

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T106	Elm Cherry Plum Common Ash	Group		90, 100, 110, 80	N:4 E:3 S:4 W:3	0		Mature	Unmanaged hedge. Includes cherry plum, occasional ash. Multiple stems from ground level. Ivy on trunks. Growing on South Side of ditch.	30+ Years	B2,3	Area: 957 sq m.
T107	Norway Maple Silver Birch Horse Chestnut	Group	14	380	N:4 E:4 S:5 W:4	3		Early Mature	Group of mixed amenity planting including bunch, horse chestnut, Norway maple.. Group Mutually suppressed. Drawn form. Bark wound/s. Decay pockets on stem. Light deadwood in crown.	40+ Years	B2	Area: 1525 sq m.
T108	White Poplar	Tree	25	590	N:10 E:6 S:5 W:8	3		Mature	Surface roots sustained damage. Decay pockets on stem. Light deadwood in crown. Leans north	20+ Years	B2	Radius: 7.1m. Area: 158 sq m.
T109	Hornbeam x4 Silver Maple x1	Group	16	360	N:4 E:5 S:4 W:5	3		Early Mature	Close growing group. Mutually suppressed. Included bark in main forks of hornbeam. Decay pockets on stem. Light deadwood in crown.	30+ Years	B2	Area: 196 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T110	Lime Silver Maple Pedunculate Oak Norway Maple Field Maple Horse Chestnut Wild Cherry Silver Birch	Group	20	360	N:6 E:4 S:5 W:4		4	Early Mature	Group of 16 trees. Mutually suppressed. Drawn form. Included bark present in main fork of field maple.	40+ Years	B2	Area: 518 sq m.
T111	Pedunculate Oak Pine Norway Maple Horse Chestnut Purple Plum Silver Birch Cherry Rowan Elder Dogwood	Group	25	910	N:10 E:10 S:10 W:10	1		Mature	Dense belt of mature trees with understorey. Mutually suppressed. Basal growth. Decay pockets on stem. Broken branches in crown. Storm damage with shed limbs. Moderate deadwood in crown.	40+ Years	A2	Area: 3349 sq m.
T112	Horse Chestnut	Tree	15	400	N:5 E:6 S:6 W:5	3		Early Mature	Twin stemmed at 2.5m. Bark wound on trunk	40+ Years	B2	Radius: 4.8m. Area: 72 sq m.
T113	Swedish Whitebeam	Group	13	370	N:5 E:5 S:5 W:5	3		Early Mature	Group includes Swedish whitebeam, horse chestnut, field maple. Mutually suppressed. Decay pockets on stem. Light deadwood in crown.	40+ Years	B2	Area: 148 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T114	Wild Cherry Norway Maple Silver Maple Swedish Whitebeam Mountain Ash Silver Birch	Group	17	450	N:6 E:6 S:3 W:5	2		Early Mature	Variable ages within group. 2 trees dead and a 3rd in decline. Included bark present in main forks. Light deadwood in crown.	40+ Years	B2	Area: 419 sq m.
T115	Wild Cherry Norway Maple Silver Birch	Group	16	360	N:6 E:3 S:5 W:4	3		Early Mature	Group includes wild cherry, Norway maple, birch. Mutually suppressed. Surface roots sustained damage. Decay pockets on stem. Light deadwood in crown.	40+ Years	B2	Area: 256 sq m.
T116	Lime Norway Maple Field Maple Horse Chestnut Hornbeam	Group	14	350	N:5 E:5 S:5 W:5	1		Semi Mature	Mutually suppressed. 1 small dead tree. Light deadwood in crown. Maintained cypress hedge around group.	40+ Years	B2	Area: 420 sq m.
T117	Purple Plum Norway Maple Cherry Mixed shrubs	Group	8	240	N:4 E:4 S:4 W:4	0		Semi Mature	Mixed shrub bed including occasional young trees including our pleasant plum Norway maple and cherry	40+ Years	B2	Area: 261 sq m.
T118	Norway Maple Silver Maple	Group	5	330	N:3 E:3 S:3 W:3	1		Early Mature	Linear group including Norway maple and silver maple planted alternately. Mutually suppressed. Maintained as pollards.	40+ Years	B2	Area: 122 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T119	Cherry Plum Common Ash Sycamore Field Maple Elm	Group	9	280	N:4 E:5 S:3 W:4	0		Early Mature	Belt of trees Mutually suppressed. Some dead elm. Trunk forks below 1.5m. Light deadwood in crown. Crown dieback. Included bark in low forks.	40+ Years	B2,3	Area: 968 sq m.
T120	Swedish Whitebeam Ash 'Raywood' Cherry Plum Lime Walnut Hazel Dogwood	Group	12	500	N:5 E:4 S:7 W:5	3		Mature	End section of belt of trees Mutually suppressed. Heavy ivy on trunks. Low forks present. Large Raymond ash split apart. Light deadwood.	40+ Years	B2	Area: 651 sq m.
T121	Elm Hawthorn Cherry Plum	Hedge	4.5	60, 60	N:2 E:2 S:2 W:2	0		Early Mature	Hedge of elm, hawthorn, cherry plum. Some dieback in individuals. Light deadwood.	40+ Years	B2,3	Area: 200 sq m.
T122	Pedunculate Oak	Tree	11	1000	N:4 E:3 S:5 W:5	1	2(SE)	Early Mature	Ivy on stem. Unable to inspect stem due to ivy. Epicormics on trunk Light deadwood in crown. Crown distorted due to group pressure.	40+ Years	B2	Radius: 12.0m. Area: 452 sq m.
T123	Horse Chestnut	Tree	11	530	N:5 E:6 S:6 W:5	2		Early Mature	Ivy on stem. Bark wound/s. Light deadwood in crown.	40+ Years	B2	Radius: 6.4m. Area: 129 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T124	Swedish Whitebeam	Tree	7	270	N:2 E:3 S:3.5 W:3	2	1.5(N)	Early Mature	Bark wound/s. Light deadwood in crown. Crown distorted due to group pressure.	20+ Years	B2	Radius: 3.2m. Area: 32 sq m.
T125	Small-leaved Lime	Tree	9	290	N:4 E:5 S:5 W:2	1.5	2.5(E)	Early Mature	Light deadwood in crown. Crown distorted due to group pressure. Inclusive bark.	40+ Years	B2	Radius: 3.5m. Area: 38 sq m.
T126	Wild Cherry	Tree	9	310	N:2 E:3 S:2 W:3	2		Early Mature	Low vitality. Declining. Bark wound/s. Major deadwood in crown. Crown dieback.	<10 years	U	None - due to Retention Category of U.
T127	Small-leaved Lime	Tree	25	580	N:6 E:6 S:7 W:5	1.5	2.5(W)	Mature	Light deadwood in crown. Decay pockets in crown.	50+ Years	A2	Radius: 7.0m. Area: 154 sq m.
T128	Horse Chestnut	Tree	10	610	N:7 E:5 S:5 W:7	2	2(W)	Mature	Ivy on stem. Unable to inspect stem due to ivy. Light deadwood in crown.	40+ Years	A2	Radius: 7.3m. Area: 167 sq m.
T129	Small-leaved Lime	Tree	17	420	N:2.5 E:4 S:4 W:5	1	1.5(SE)	Early Mature	Ivy on stem. Epicormics on trunk. Light deadwood in crown.	40+ Years	B2	Radius: 5.0m. Area: 79 sq m.
T130	Small-leaved Lime	Tree	20	490	N:7 E:6 S:7 W:6	1.5	2(SE)	Mature	Epicormics on trunk Light deadwood in crown. Inclusive bark. Major bark wound on stem ground level to 1.2m occluding	40+ Years	B2	Radius: 5.9m. Area: 109 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T131	Pedunculate Oak	Tree	17	790	N:7 E:7 S:7 W:8	1	2(SW)	Mature	Ivy on stem. Unable to inspect stem due to ivy. Epicormics on trunk Light deadwood in crown. Decay pockets in crown. Bark wounds on lower branches	50+ Years	A2,3	Radius: 9.5m. Area: 284 sq m.
T132	Common Alder	Tree	3	100	N:1 E:1 S:1 W:1			Semi Mature	Poor shape/form. Low vitality. Declining. Ivy on stem. Unable to inspect stem due to ivy. Light deadwood in crown. Crown dieback.	<10 years	C2	Radius: 1.2m. Area: 5 sq m.
T133	Common Alder	Tree	3	120	N:1 E:0.5 S:1 W:2	0		Semi Mature	Poor shape/form.	20+ Years	C2	Radius: 1.4m. Area: 6 sq m.
T134	Aspen	Tree	18	300	N:6 E:6 S:1 W:5	5		Early Mature	Poor shape/form. Bark wound/s. Light deadwood in crown. Leans North. Basal decay South side	<10 years	C2	Radius: 3.6m. Area: 41 sq m.
T135	Norway Maple	Tree	12	390	N:7 E:5 S:4 W:5	1.5	1.5(N)	Early Mature	Bark wound/s. Light deadwood in crown. Crown distorted due to group pressure.	20+ Years	B2	Radius: 4.7m. Area: 69 sq m.
T136	Pedunculate Oak	Tree	9	290	N:5 E:5 S:4 W: 4	1	2(E)	Semi Mature	Occluded trunk wound. Light deadwood.	50+ Years	B2	Radius: 3.5m. Area: 38 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T137	Common Ash	Tree	9	250	N:5 E:4 S:3 W:4	1	1.5(W)	Semi Mature	Light deadwood in crown. Crown distorted due to group pressure.	40+ Years	B2	Radius: 3.0m. Area: 28 sq m.
T138	Field Maple	Tree	7	120, 110	N:3 E:3 S:2 W:1	2		Semi Mature	Trunk forks below 1.5m. Crown distorted due to group pressure.	40+ Years	C2	Radius: 2.0m. Area: 13 sq m.
T139	Common Hawthorn Blackthorn	Hedge	3	90	N:0.5 E:0.5 S:0.5 W:0.5	0	0	Semi Mature	Includes blackthorn. Managed hedge.	40+ Years	B2,3	Area: 101 sq m.
T140	Common Ash	Tree	11	400	N:5 E:5 S:5 W:5	1	0.5(E)	Early Mature	Sub-dominant stem. Multiple stems from 2m. Broken branches in crown. Light deadwood in crown.	40+ Years	B2	Radius: 4.8m. Area: 72 sq m.
T141	Sycamore	Tree	9	380	N:5 E:5 S:5 W:5	0	1.5(S)	Early Mature	Epicormics on trunk. Sub-dominant stem present	40+ Years	B2	Radius: 4.6m. Area: 66 sq m.
T142	Common Hawthorn Field Maple	Hedge	4	120	N:1 E:1.5 S:1 W:1.5	0		Early Mature	Occasional field maple. Some minor dieback in places. Occasional small gaps	40+ Years	B2,3	Area: 1244 sq m.
T143	Swedish Whitebeam	Tree	5	290	N:2.5 E:2.5 S:2.5 W:2.5	1	1.1(N)		Bark wound/s. Light deadwood in crown.	40+ Years	B2	Radius: 3.5m. <u>Area: 38 sq m.</u>
Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA

T144	Swedish Whitebeam	Tree	5	310	N:3 E:3 S:3 W:3	1	1.1 (NE)	Early Mature	Major bark wound occluding. Light deadwood in crown.	40+ Years	B2	Radius: 3.7m. Area: 43 sq m.
T145	Silver Maple	Tree	11	480	N:6 E:5 S:4 W:5		0.4	Mature	Basal growth. Unable to access stem. Epicormics on trunk Light deadwood in crown.	30+ Years	B2	Radius: 5.8m. Area: 106 sq m.
T146	Common Ash	Tree	18	500	N:6 E:6 S:6 W:6	3	3(N)	Mature	Decay pockets on stem. Light deadwood in crown.	40+ Years	A2	Radius: 6.0m. Area: 113 sq m.
T147	Common Hawthorn	Hedge	2.5	90	N:1 E:1 S:1 W:1	0		Early Mature	Maintained hedge.	40+ Years	A2,3	Area: 610 sq m.
T148	Common Hawthorn	Hedge	4	100	N:2 E:2 S:1 W:2	0		Early Mature	Hedge maintained on farm side. Crown dieback in some sections. Amenity value for road users	40+ Years	A2,3	Area: 977 sq m.
T149	Common Hawthorn Elm	Hedge	4	120	N:1 E:0.5 S:2 W:2	0		Early Mature	Includes small group of elm South end some dead. Hedge maintained on farm side	40+ Years	B2,3	Area: 173 sq m.
T150	Elder	Tree	6	280	N:3 E:2 S:3 W:2	0		Mature	Small group of trees. Stems grafting over fence. Trunk decay. Light deadwood	<10 years	C3	Radius: 10.1m. Area: 320 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T151	Common Hawthorn	Tree	4	150	N:2 E:2 S:2 W:2	0		Mature	Low vitality. Declining. Trunk forks below 1.5m. Unable to access stem. Light deadwood in crown. Crown dieback.	<10 years	C2	Area: 21 sq m.
T152	Blackthorn	Hedge	2	30	N:2 E:2 S:2 W:2	0		Semi Mature	Small section of unmanaged hedge	40+ Years	C2	Area: 26 sq m.
T153	Elder	Tree	3	80	N:1.5 E:1.5 S:1.5 W:1.5	0		Early Mature	Trunk forks below 1.5m. Light deadwood in crown.	20+ Years	C2	Radius: 2.5m. Area: 20 sq m.
T154	Norway Maple	Tree	9	510	N:6 E:5 S:7 W:7	1		Early Mature	Surface roots sustained damage. Broken branches in crown. Light deadwood in crown.	40+ Years	B2	Radius: 6.1m. Area: 117 sq m.
T155	Blackthorn	Hedge	4.5	90	N:2 E:2 S:2 W:3	0		Early Mature	Unmanaged hedge. Overhead power cable will require long-term management	40+ Years	B2,3	Area: 130 sq m.
T156	Common Ash	Tree	9	300, 340	N:5 E:5 S:5 W:5	3		Early Mature	Trunk forks below 1.5m. Unable to access stem. Light deadwood in crown. Inclusive bark. Branches touching cable	40+ Years	B2	Radius: 5.4m. Area: 92 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T157	Elder Common Ash Hawthorn Blackthorn	Group	7	180	N:3 E:3 S:3 W:3	0		Mature	Mixed group including ash, elder, hawthorn, blackthorn. Some trees inaccessible due to undergrowth. Light deadwood in crown. Inclusive bark.	30+ Years	B2	Area: 2005 sq m.
T158	Cherry Plum	Tree	8	160, 100, 150, 120, 140	N:4 E:4 S:4 W:4	0		Mature	Trunk forks below 1.5m. Unable to access stem. Light deadwood in crown. Inclusive bark.	20+ Years	B2	Radius: 3.6m. Area: 41 sq m.
T159	Hawthorn	Hedge	4	90	N:1 E:1.5 S:1 W:1.5	0		Early Mature	Maintained hedge includes field maple. Trunk forks below 1.5m. Light deadwood in crown. Crown dieback.	30+ Years	B2,3	Area: 150 sq m.
T160	White Poplar	Tree	19	430, 550	N:9 E:9 S:5 W:7	2.5		Mature	Trunk forks below 1.5m. Decay pockets on stem. Light deadwood in crown. Inclusive bark.	<10 years	C2	Radius: 8.4m. Area: 222 sq m.
T161	White Poplar	Tree	8	280	N:9 E:3 S:0 W:4	0		Semi Mature	Poor shape/form. Suppressed	20+ Years	C2	Radius: 3.4m. Area: 36 sq m.
T162	White Poplar	Tree	19	350, 400	N:5 E:8 S:6 W:9	0		Mature	Trunk forks below 1.5m. Inclusive bark. Broken branches in crown. Moderate deadwood in crown. Fungi at base	20+ Years	C2	Radius: 6.4m. Area: 129 sq m.
T163	White Poplar	Tree	20	270, 400	N:9 E: 8 S:7 W:8	1		Mature	Trunk forks below 1.5m. Decay pockets on stem. Light deadwood in crown.	20+ Years	C2	Radius: 5.8m. Area: 106 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T164	Common Ash	Tree	9	310, 320	N:5 E:5 S:5 W:5	0		Early Mature	Suppressed. Trunk forks below 1.5m.	40+ Years	B2	Radius: 5.4m. Area: 92 sq m.
T165	White Poplar x6	Group	25	550	N:10 E:9 S:5 W:9	1		Mature	Poor shape/form. Trunk forks below 1.5m. Decay pockets on stem. Broken branches in crown. Storm damage with shed limbs. Moderate deadwood in crown. Crown distorted due to group pressure. Inclusive bark. Group of similar trees. Some trees appear windblown but no access due to vegetation	10+ Years	C2	Area: 664 sq m.
T166	White Poplar	Group	20	500	N:9 E:10 S:9 W:8	2		Mature	Group of 3. Included bark present. Some self-set trees present Light deadwood in crown. Crowns distorted due to group pressure.	20+ Years	B2	Area: 378 sq m.
T167	White Poplar	Group	18	600	N:10 E:10 S:8 W:9	0		Mature	Poor shape/form. Trunk forks below 1.5m. Decay pockets on stem. Broken branches in crown. Storm damage with shed limbs. Inclusive bark.	20+ Years	B2	Area: 634 sq m.
T168	Willow	Group	6	300	N:4 E:4 S:4 W: 4	0		Early Mature	Trunk forks below 1.5m. Unable to access stem. Dbh estimated from distance	30+ Years	C2	Area: 446 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T169	Common Ash	Tree	15	520, 340, 480	N:12 E:8 S:8 W:9	1	1(S)	Mature	Trunk forks below 1.5m. Moderate deadwood in crown. Inclusive bark. Multiple stems from ground level. Basal growth. Decay pockets on stem.	20+ Years	B2	Radius: 9.4m. Area: 278 sq m.
T170	Pedunculate Oak	Tree	4	300	N:3 E:3 S:3 W:3	0	1(E)		Light deadwood in crown. Top possibly lost in past	40+ Years	B2	Radius: 3.6m. Area: 41 sq m.
T171	Common Ash Wild Cherry Pyracantha Cotoneaster Elder	Group	12	320	N:5 E:5 S:5 W:5	1.5		Early Mature	Includes wild cherry Dense group of self-set trees with understorey of pyracantha, cotoneaster, elder. Mutually suppressed. Light deadwood in crown. Crown distorted due to group pressure. Inclusive bark.	20+ Years	B2	Area: 567 sq m.
T172	Mixed species	Group	5	150	N:3 E:3 S:3 W:3	0		Early Mature	Overgrown shrub bed. Unmanaged.	10+ Years	C2	Area: 123 sq m.
T173	Common Holly Field Maple	Hedge	4	100	N:1 E:1.5 S:1 W:1.5	0		Early Mature	Includes field maple. Managed hedge. Light deadwood. Some gaps	30+ Years	C2,3	Area: 179 sq m.
T174	Common Hawthorn	Hedge	4	180	N:1 E:1.5 S:1 W:1.5	0		Early Mature	Managed hedge. Not managed recently. Light deadwood. Includes Elder	30+ Years	C2,3	Area: 127 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T175	Common Hawthorn Common Ash	Hedge	6	250	N:3 E:3 S:3 W:3	1		Early Mature	Unmanaged hedge, not maintained for a number of years. Light deadwood. Gaps in belt with brambles.	30+ Years	C2	Area: 262 sq m.
T176	Willow	Tree	11	600	N:5 E:5 S:5 W:5	2		Mature	Ivy on stem. Unable to inspect stem due to ivy. Epicormics on trunk Light deadwood in crown. Lapsed pollard.	40+ Years	B2	Radius: 7.2m. Area: 1 63 sq m.
T177	Blackthorn Hawthorn	Hedge	5	300	N:1.5 E:1.5 S:1.5 W:1.5	0		Mature	Mixed hedge. Mature blackthorn topped in past and regrowing. Includes hawthorn, brambles. Gappy	20+ Years	C2	Area: 1148 sq m.
T178	Elder	Group	5	150.90.100.80	N:3 E:3 S:3 W:3	1.5		Mature	Trunk forks below 1.5m. Ivy on stem. Unable to inspect stem due to ivy. Light deadwood in crown. Crown dieback. Group of 11 forming a line. Inclusive bark present	10+ Years	C2	Area: 7 sq m.
T179	Walnut	Tree	5	190	N:3 E:3 S:2 W:3	1		Semi Mature	Leans north	40+ Years	C2	Radius: 2.3m. Area: 17 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T180	Common Ash	Tree	14.0	410	N:5 E:5 S:5 W:5	1.5	2(SE)	Early Mature	Light deadwood Bark wounds on trunk occluding Multiple stems from 2m Bark wounds in crown from vehicle strikes	40+ Years	B2	Radius: 4.9m. Area: 75 sq m.
T181	Pedunculate Oak	Tree	14.0	520	N:4.5 E:5.5 S:6 W:4	11.0	2(SW)	Early Mature	Light deadwood Bark wounds on trunk occluded Bark wounds in crown from vehicle strikes Minor decay pockets in crown Crown suppressed on North side	50+ Years	B2	Radius: 6.2m. Area: 121 sq m.
T182	Common Ash	Tree	12.0	4450	N:5.5 E:5 S:5 W:4.5	2.0	2(NW)	Early Mature	Light deadwood Minor new bark wounds on trunk Major Occluding bark wound on East side Bark wounds in crown from vehicle strikes	40+ Years	B2	Radius: 5.3m. Area: 88 sq m.
T183	European Lime	Tree	14.0	520	N:5 E:5 S:5 W:5	1.0	2(W)	Early Mature	Light deadwood Basal wound Occluding Heavy epicormic growth Exposed roots west side	50+ Years	A2	Radius: 6.2m. Area: 121 sq m.
T184	Common Ash	Tree	15.0	530	N:7 E:6.5 S:7 W:7	1.5	2(SW)	Mature	Occluding basal wounds on East side Exposed surface roots west side Bark wounds on roots Light deadwood	40+ Years	A2	Radius: 6.4m. Area: 129 sq m.
T185	European Lime	Tree	15.0	630	N:5.5 E:5.5 S:5.5 W:5	1.0	1.5(NW)	Mature	Light deadwood Heavy epicormic growth Lower crown over access damaged by vehicle strikes Self grafted branches in crown	50+ Years	A2	Radius: 7.6m. Area: 181 sq m.

Ref	Common Name	Structure	Height (m)	Stem Diam (mm)	Spread	Crown Clearance (m)	Lowest Branch	Life Stage	General Observations	Rem. Contrib.	Retention Category	RPA
T186	Common Ash	Tree	17.0	530	N:5 E:6 S:5 W:5.5	1.0	2.5(W)	Mature	Girdling root Light deadwood scattered throughout crown	30+ Years	B2	Radius: 6.4m. Area: 129 sq m.
T187	Poplar	Tree	1.0	Not recorded					Tree felled Regrowth from stump		U	N/A
T188	White Willow	Tree	25.0	1330	N:7.5 E:8 S:8.5 W:8	1.0	3(E)	Mature	Multiple stems from 3.5m Light to moderate deadwood throughout the crown Prominent Hanging broken branches in crown Storm damage with shed limbs Decay pockets in crown	40+ Years	A2,3	Radius: 15.0m. Area: 707 sq m.

Appendix 3: Tree Root Protection Area Distances

Tree Ref	Name	Category	RPA Radius (m)
T1	Hawthorn	B3	1.2
T2	Common Oak	A2	11.88
T3	Pedunculate Oak	B3	10.56
T4	Pedunculate Oak	A2	12.84
T5	Pedunculate Oak	A2	9.84
T6	Common Oak	B3	7.8
T7	Common Oak	A2	11.4
T8	Common Oak	B2	15
T9	Ash	B2	10.2
T10	Common Ash	B2	4.56
T11	Common Ash	B3	4.56
T12	Common Ash	B3	7.24
T13	Common Ash	B3	9.19
T14	Common Ash	B3	4.92
T15	Common Ash	B3	7.31
T16	Common Ash	B3	8.35
T17	Common Ash	C2	3.84
T18	Common Ash	B3	7.8
T19	Common Ash	B3	5.62
T20	Common Ash	B3	7.13
H21	Common Hawthorn	A2	1.2
T22	Common Ash	C2	4.34
T23	Ash	B2	3.84

T24	Elm	U	2.4
H25	Common Hawthorn	C2	0.8
T27	Common Ash	C2	1.44
T28	Common Ash	B2	3
H30	Common Hawthorn	C2	1.8
T31	Common Ash	B2	5.63
T32	Common Ash	C2	2.63
T33	Common Ash	C2	1.68
G34	Common Ash x7	B2	4.67
T35	Pedunculate Oak	B2	6
T36	Pedunculate Oak	B2	7.2
T37	Common Ash x2	B2	2.4
T38	Common Ash	B3	6.24
T39	Common Ash	B2	8.4
T40	Common Ash	B2	4.08
T42	Common Ash	B2	3.61
T44	Common Hawthorn	C2	0.96
T45	Common Hawthorn	C2	0.96
T47	Hornbeam	B2	3.71
T48	Willow	B2	4.08
T49	Cypress species	B2	4.8
H50	Common Hawthorn	C2	1.5
T51	Cherry Plum	B2	2.77
T52	Common Ash	B2	7.67
G53	Common Hawthorn	C2	1.68

T55	Common Ash	B2	7.9
T56	Common Ash	C2	4.56
T57	Common Ash	B2	5.3
T58	Common Ash	C2	3.28
T59	White Willow	B2	10.8
H60	Common Hawthorn	B2	1.4
H61	Elder	C2	1
T62	Common Ash	B2	6
T63	Common Ash	B2	12
T64	White Willow	C2	0.6
T65	White Willow	C2	6
G66	White Willow	B2	8.4
T67	Common Hawthorn	C2	1.68
G68	Sycamore x3	C2	4.56
T69	Willow	B2	8.4
T70	Pear	B2	5.33
G71	Elm	C2	1.56
T72	Sycamore	C2	2.4
T73	Sycamore	C2	2.28
T74	Hornbeam	B2	3
T75	Norway Maple	B2	3.6
T76	Hornbeam	B2	3.56
T77	Common Ash	B2	7.44
T78	Sycamore	B2	6.12
T79	Hornbeam	B2	3.96

T80	Sycamore	B2	4.68
T81	Field Maple	B2	3
T82	Norway Maple	B2	3.84
T83	Sycamore	B2	4.8
T84	Sycamore	B2	6.36
T85	Sycamore	B2	5.88
T86	Sycamore	B2	5.52
T87	Common Ash	B2	4.08
T88	Common Ash	B2	3.6
T89	Field Maple	B2	6.82
T90	Common Ash	B2	5.64
T91	Common Ash	B2	6.36
T92	Common Ash	C3	7.44
G94	Common Ash	B2	4.44
T95	Pedunculate Oak	A2	8.4
T96	Common Ash	B2	4.08
T97	Common Ash	A2	7.56
T98	Sycamore	B2	4.2
T99	Common Ash	B2	5.04
T100	Common Ash	B2	4.8
T101	Common Ash	B2	4.2
T102	Cypress	B2	4.85
T103	Common Ash	B2	5.52
T104	Common Ash	B2	3.38
<u>T105</u>	<u>Pedunculate Oak</u>	<u>B2</u>	<u>16</u>

H106	Elm	B2	2.3
G107	Norway Maple	B2	4.56
T108	White Poplar	B2	7.08
G109	Hornbeam x5	B2	4.32
G110	Lime x16	B2	4.32
G111	Not identified	A2	10.92
T112	Horse Chestnut	B2	4.8
G113	Swedish	B2	4.44
G114	Not identified	B2	5.4
G115	Not identified	B2	4.32
T116	Not identified	B2	3.6
G117	Not identified	B2	2.88
G118	Not identified	B2	3.96
H119	Not identified	B2	3.5
G120	Not identified	B2	4.8
H121	Not identified	B2	1
T122	Pedunculate Oak	B2	12
T123	Horse Chestnut	B2	6.36
T124	Swedish	B2	3.24
T125	Small-leaved Lime	B2	3.48
T126	Wild Cherry	U	3.72
T127	Small-leaved Lime	A2	6.96
T128	Horse Chestnut	A2	7.32
T129	Small-leaved Lime	B2	5.04
T130	Small-leaved Lime	B2	5.88

T131	Pedunculate Oak	A2	9.48
T132	Common Alder	C2	1.2
T133	Common Alder	C2	1.44
T134	Aspen	C2	3.6
T135	Norway Maple	B2	4.68
T136	Pedunculate Oak	B2	3.48
T137	Common Ash	B2	3
T138	Field Maple	C2	1.96
H139	Common Hawthorn	B2	1.2
T140	Common Ash	B2	4.8
T141	Sycamore	B2	4.56
H142	Common Hawthorn	B2	1.5
<u>T143</u>	<u>Swedish Whitebeam</u>	<u>B2</u>	<u>3.48</u>
<u>T144</u>	<u>Swedish Whitebeam</u>	<u>B2</u>	<u>3.72</u>
T145	Silver Maple	B2	5.76
T146	Common Ash	A2	6
H147	Common Hawthorn	A2	1.2
H148	Common Hawthorn	A2	1.2
H149	Common Hawthorn	B2	1.2
G150	Elder	C3	3.36
G151	Common Hawthorn	C2	1.8
T153	Elder	C2	0.96
T154	Norway Maple	B2	6.12
H155	Blackthorn	B2	1
T156	Common Ash	B2	5.44

G157	Elder	B2	2.16
T158	Cherry Plum	B2	3.64
H159	Hawthorn	B2	1
T160	White Poplar	C2	8.38
T161	White Poplar	C2	3.36
T162	White Poplar	C2	6.38
T163	White Poplar	C2	5.8
T164	Common Ash	B2	5.35
G165	White Poplar x6	C2	6.6
G166	White Poplar	B2	6
G167	White Poplar	B2	7.2
G168	Willow	C2	3.6
T169	Common Ash	B2	9.42
T170	Pedunculate Oak	B2	3.6
G171	Common Ash	B2	3.84
G172	Mixed species	C2	1.8
H174	Common Hawthorn	C2	2.2
H175	Common Hawthorn	C2	3
T176	White Willow	B2	7.2
H177	Blackthorn	C2	3.6
T178	Elder	C2	2.32
<u>T179</u>	<u>Walnut</u>	<u>C2</u>	<u>2.28</u>
<u>T180</u>	<u>Common Ash</u>	<u>B2</u>	<u>Radius: 4.9m. Area: 75 sq m.</u>
<u>T181</u>	<u>Pedunculate Oak</u>	<u>B2</u>	<u>Radius: 6.2m. Area: 121 sq m.</u>
<u>T182</u>	<u>Common Ash</u>	<u>B2</u>	<u>Radius: 5.3m. Area: 88 sq m.</u>

<u>T183</u>	<u>European Lime</u>	<u>A2</u>	<u>Radius: 6.2m.</u> <u>Area: 121 sq m.</u>
<u>T184</u>	<u>Common Ash</u>	<u>A2</u>	<u>Radius: 6.4m.</u> <u>Area: 129 sq m.</u>
<u>T185</u>	<u>European Lime</u>	<u>A2</u>	<u>Radius: 7.6m.</u> <u>Area: 181 sq m.</u>
<u>T186</u>	<u>Common Ash</u>	<u>B2</u>	<u>Radius: 6.4m.</u> <u>Area: 129 sq m.</u>
<u>T187</u>	<u>Poplar</u>	<u>U</u>	<u>N/A</u>
<u>T188</u>	<u>White Willow</u>	<u>A2,3</u>	<u>Radius: 15.0m.</u> <u>Area: 707 sq m.</u>



KEY

- BS CAT A
- BS CAT B
- BS CAT C
- BS CAT U

PROTECTIVE FENCE TO BS5837:2012

GROUND PROTECTION & SPECIAL PRECAUTIONS

VALVE

RM-OC
OPEN CUT PIPE

RM-DD
DIRECTIONAL DRILL

RM-MT
TUNNELING

LAUNCH & RECEPTION PIT

WORKING AREA INCLUDING LAYDOWN AREA

DRAWING TITLE
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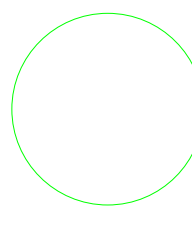
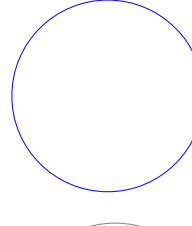
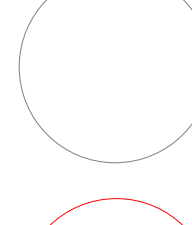
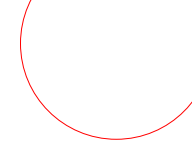
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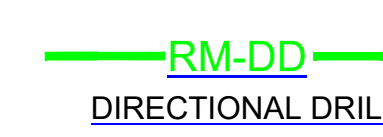

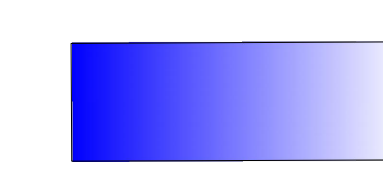
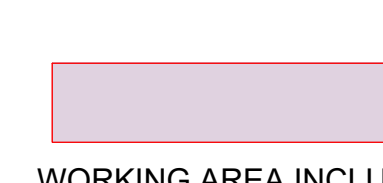


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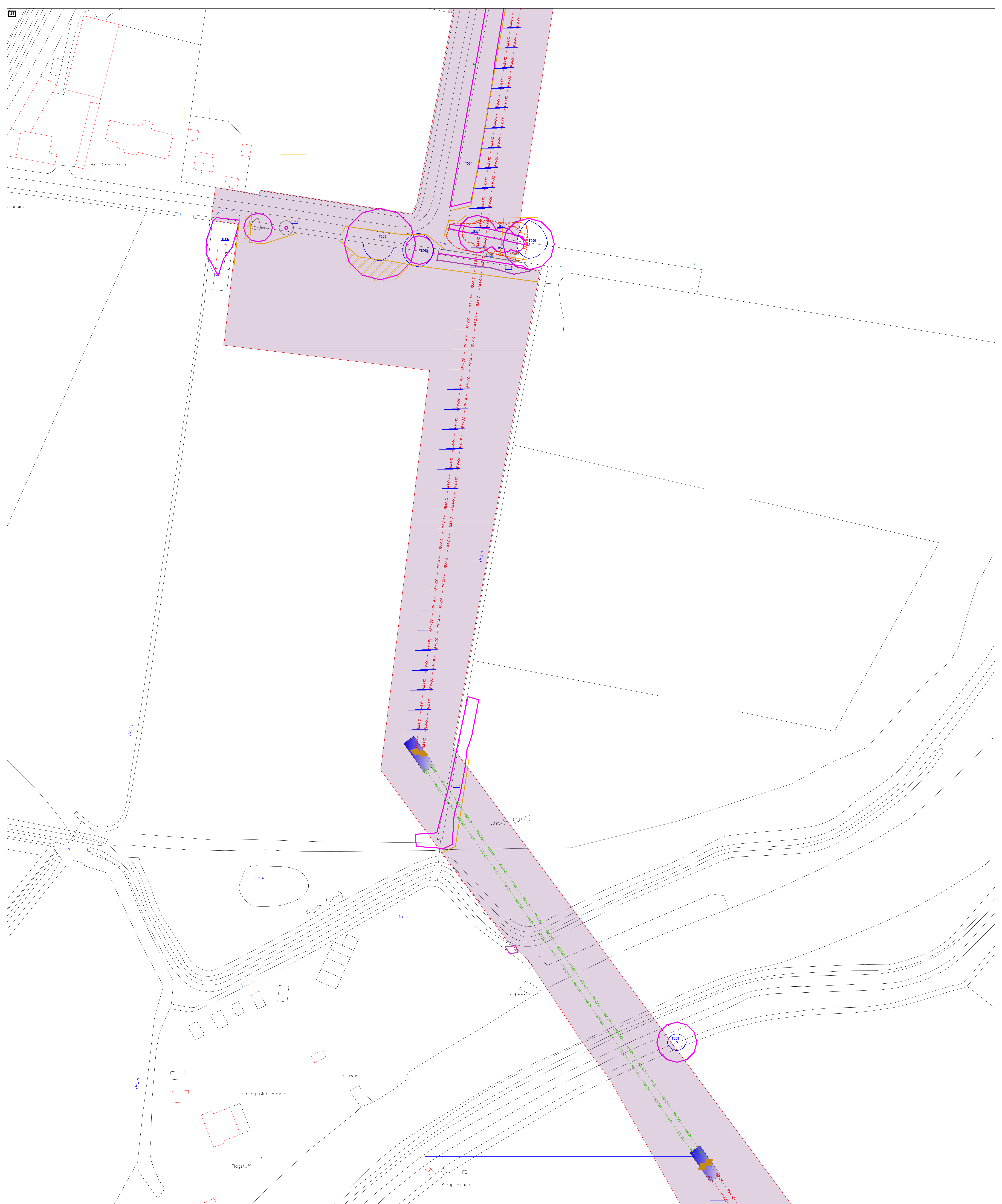
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DIRECTIONAL DRILL
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TUNNELING
-  LAUNCH & RECEPTION PIT
-  WORKING AREA INCLUDING LAYDOWN AREA

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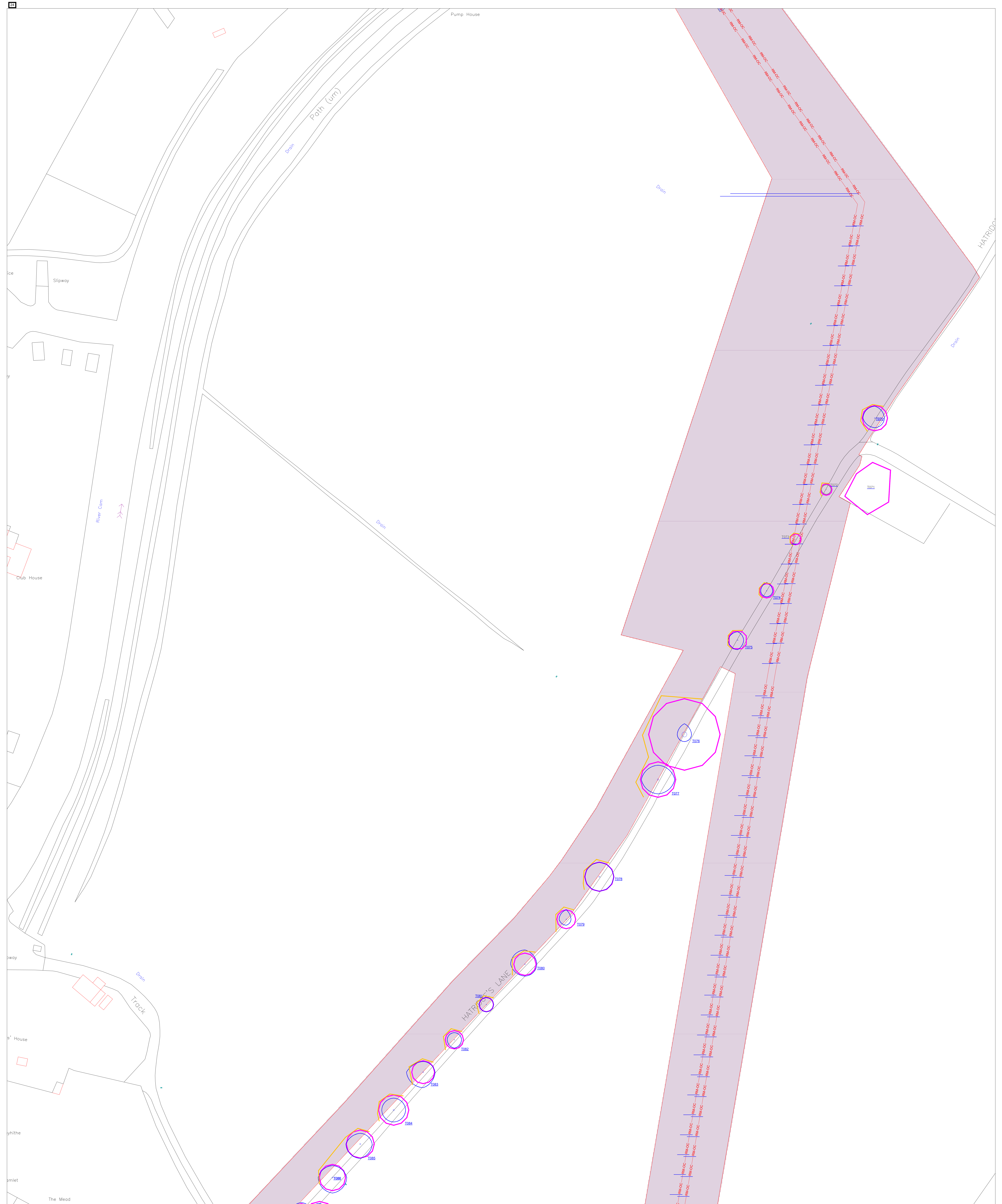
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-  POTENTIAL TREE LOSSES
-  VALVE
-  RM-OC
OPEN CUT PIPE
-  RM-DD
DIRECTIONAL DRILL
-  RM-MT
TUNNELING
-  LAUNCH & RECEPTION PIT
-  WORKING AREA INCLUDING LAYDOWN AREA

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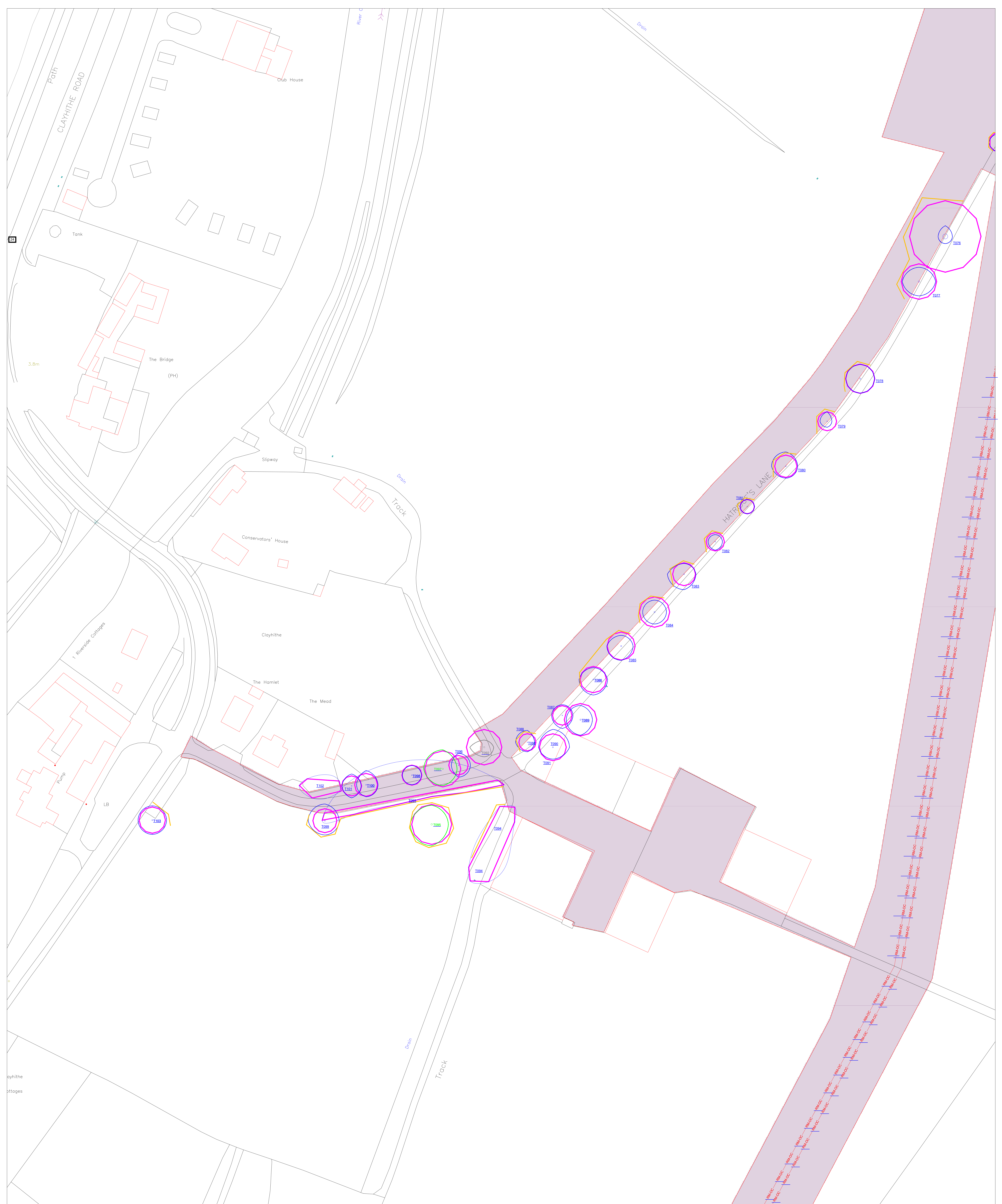
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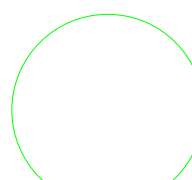
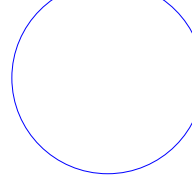
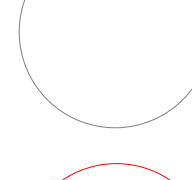
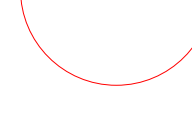



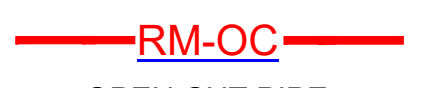



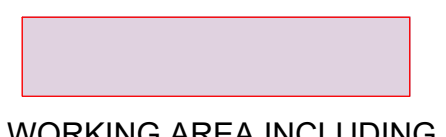
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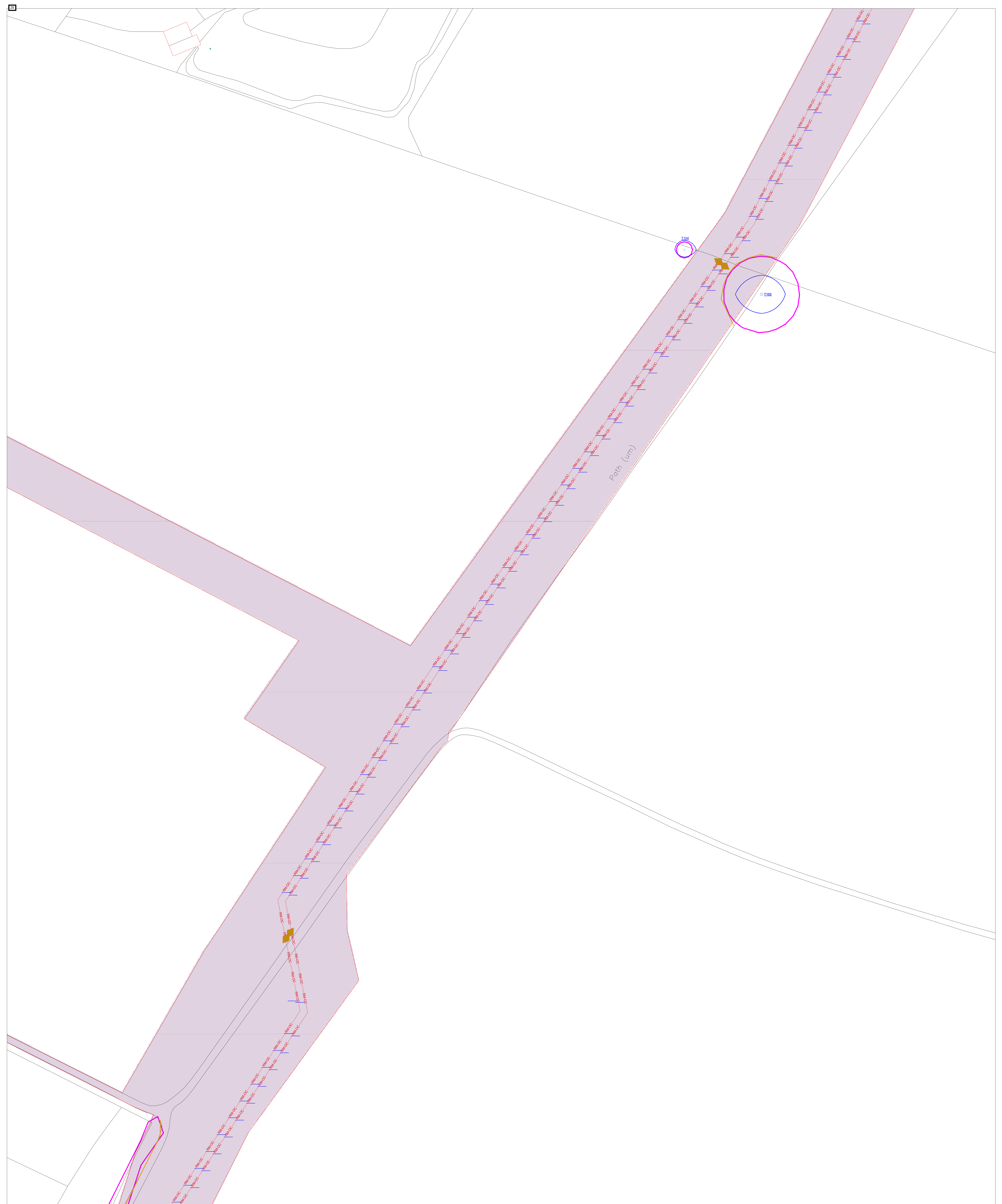
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 -  WORKING AREA INCLUDING LAYDOWN AREA

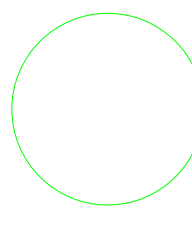
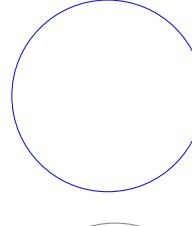
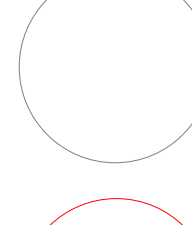
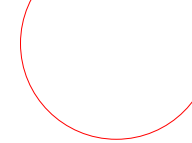
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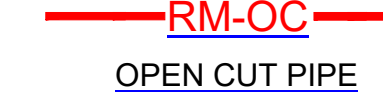
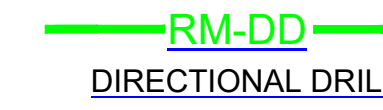


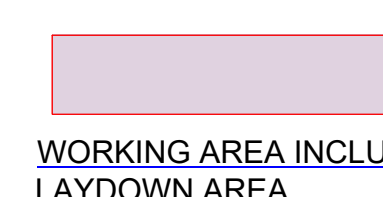


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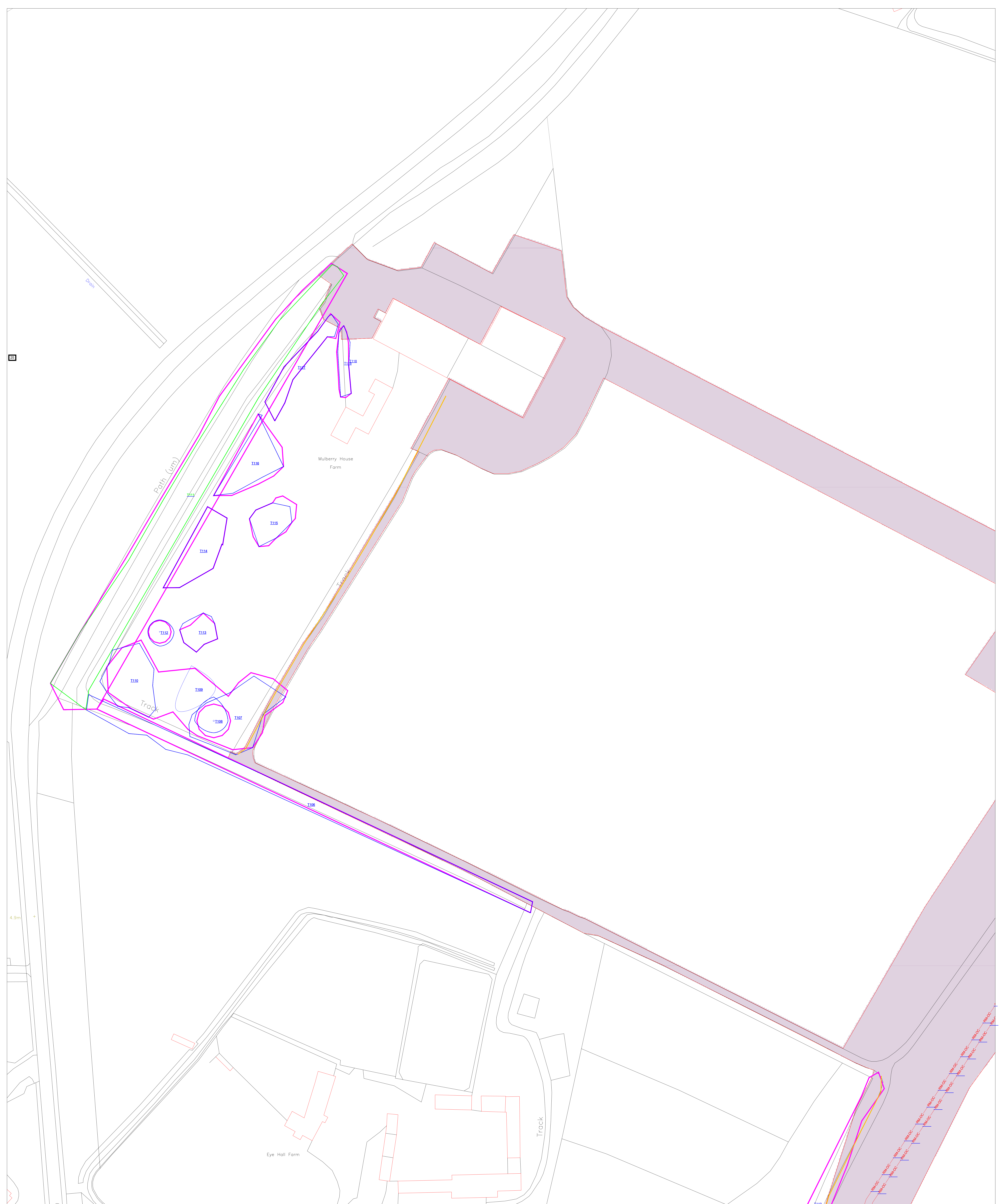
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OPEN CUT PIPE
-  RM-DD
DIRECTIONAL DRILL
-  RM-MT
TUNNELING
-  LAUNCH & RECEPTION PIT
-  WORKING AREA INCLUDING LAYDOWN AREA

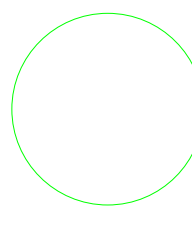
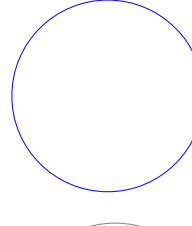
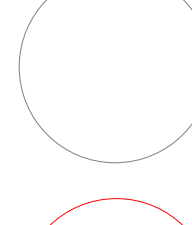
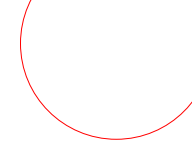
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C	11/2023	AMENDED RPA TREE T105



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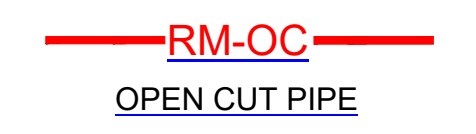
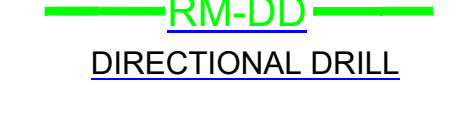
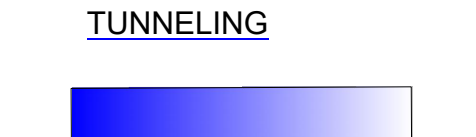
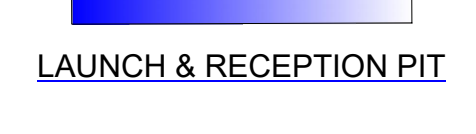
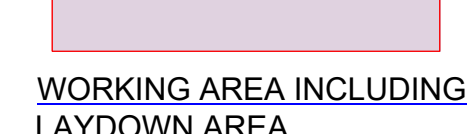


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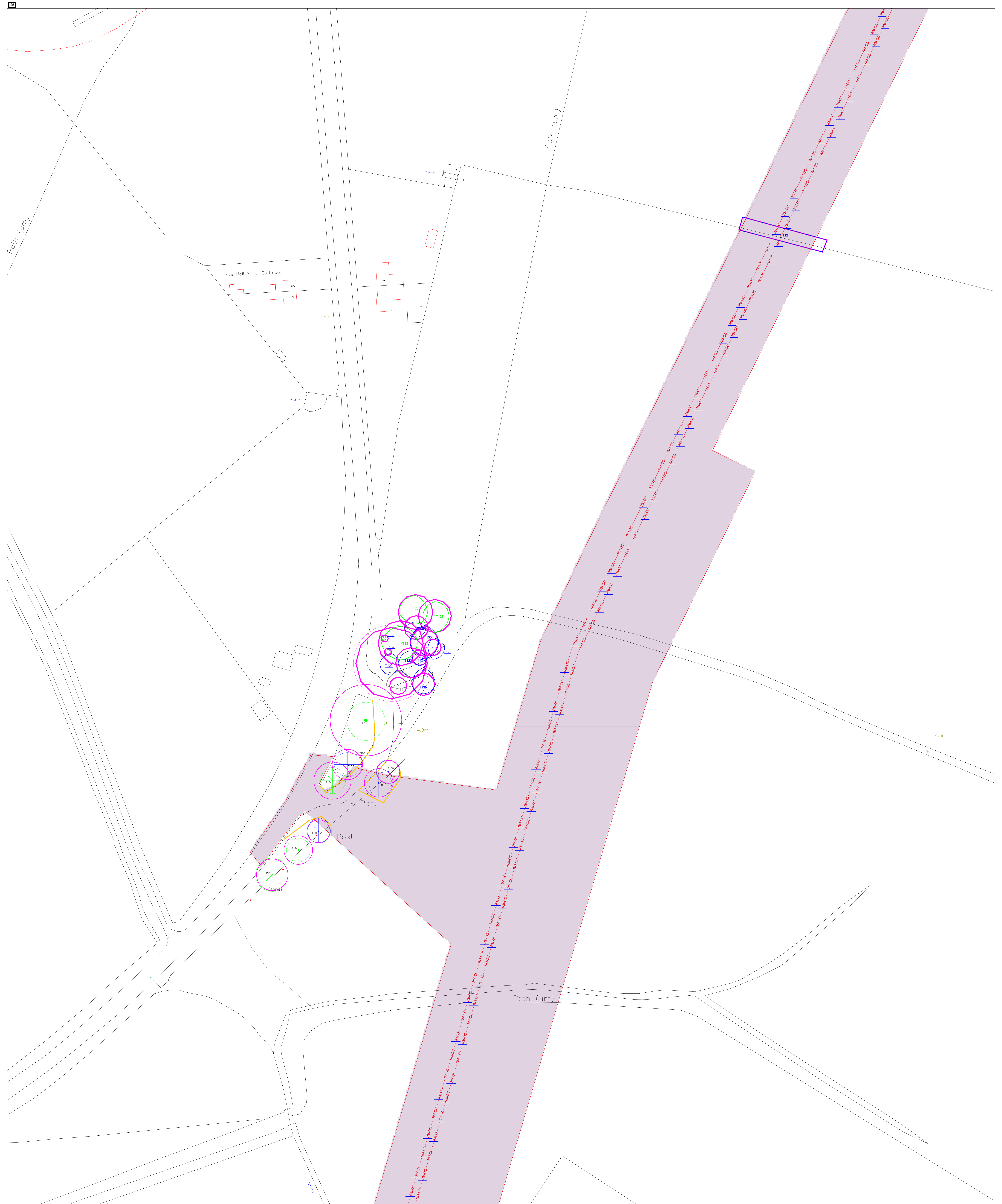
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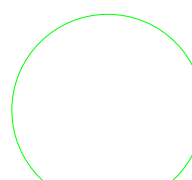
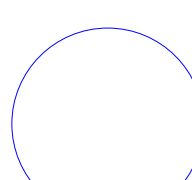
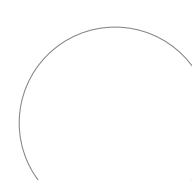
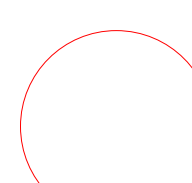
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-  RM-DD
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-  RM-MT
TUNNELING
-  LAUNCH & RECEPTION PIT
-  WORKING AREA INCLUDING LAYDOWN AREA

DRAWING TITLE	
TREE PROTECTION PLAN	
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	REVISED LAYOUT



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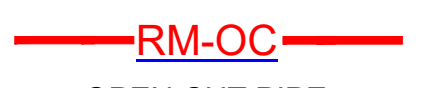



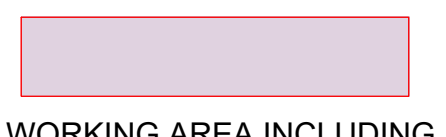
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GROUND PROTECTION & SPECIAL PRECAUTIONS

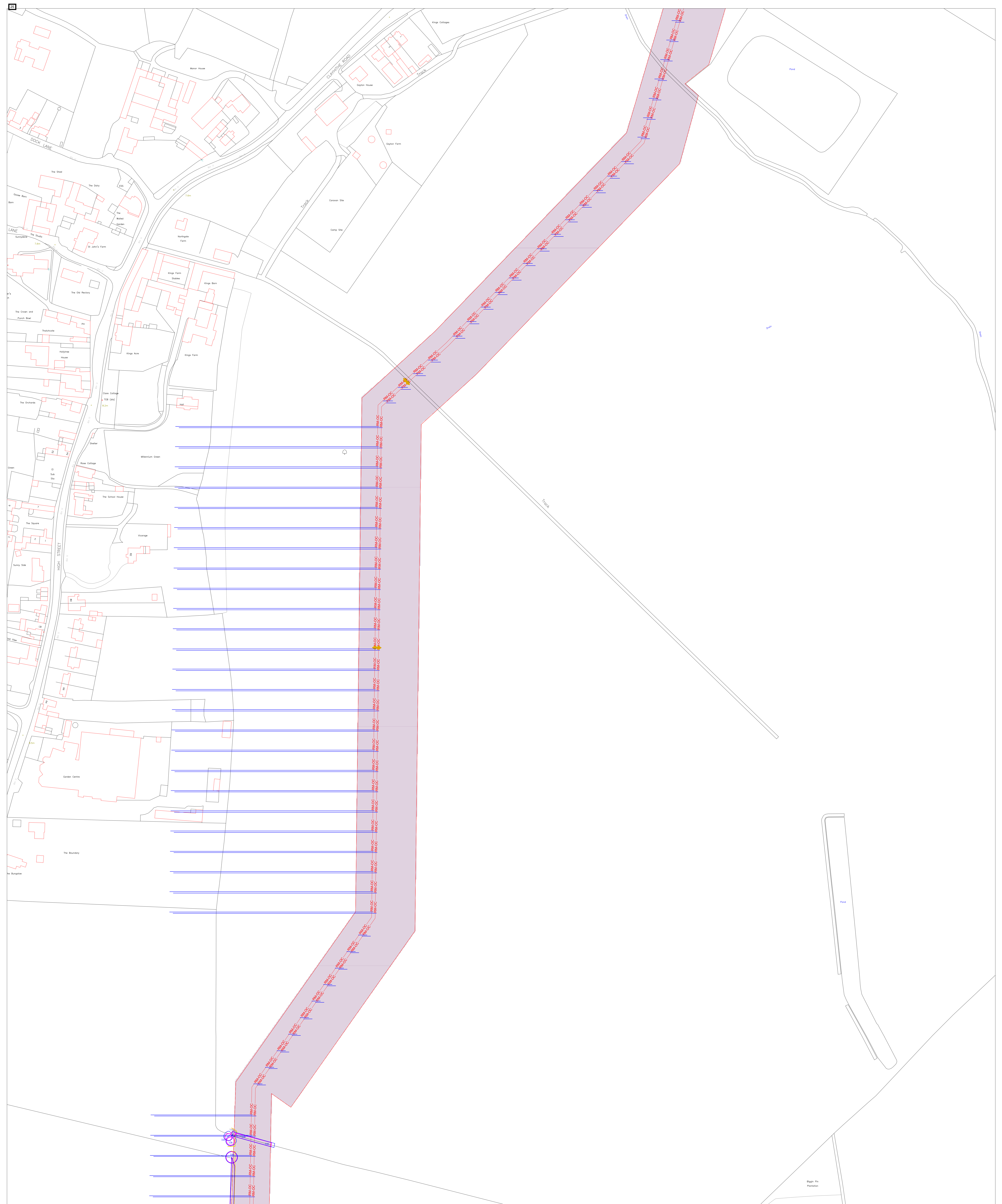


-  VALVE
-  RM-OC
OPEN CUT PIPE
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DIRECTIONAL DRILL
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TUNNELING
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-  WORKING AREA INCLUDING LAYDOWN AREA

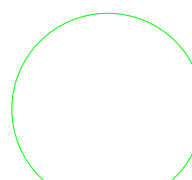
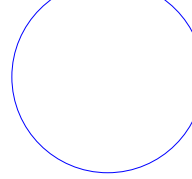
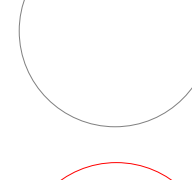
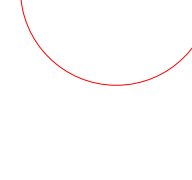
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No. DATE	REVISION
B 07/2022	REVISED LAYOUT



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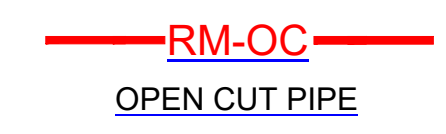
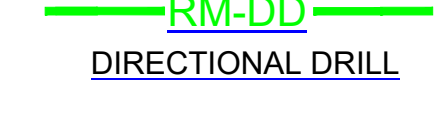
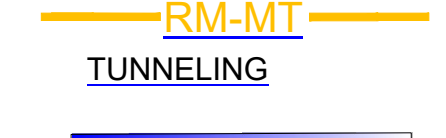

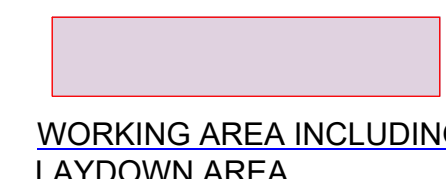


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-  BS CAT B
-  BS CAT C
-  BS CAT U

 PROTECTIVE FENCE TO BS5837:2012

 GROUND PROTECTION & SPECIAL PRECAUTIONS

-  VALVE
-  RM-OC
OPEN CUT PIPE
-  RM-DD
DIRECTIONAL DRILL
-  RM-MT
TUNNELING
-  LAUNCH & RECEPTION PIT
-  WORKING AREA INCLUDING LAYDOWN AREA

DRAWING TITLE

TREE PROTECTION PLAN

PROJECT

CWWTPR - WBRM

CLIENT

ANGLIAN WATER @one

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DATE OF ISSUE FEB 2022

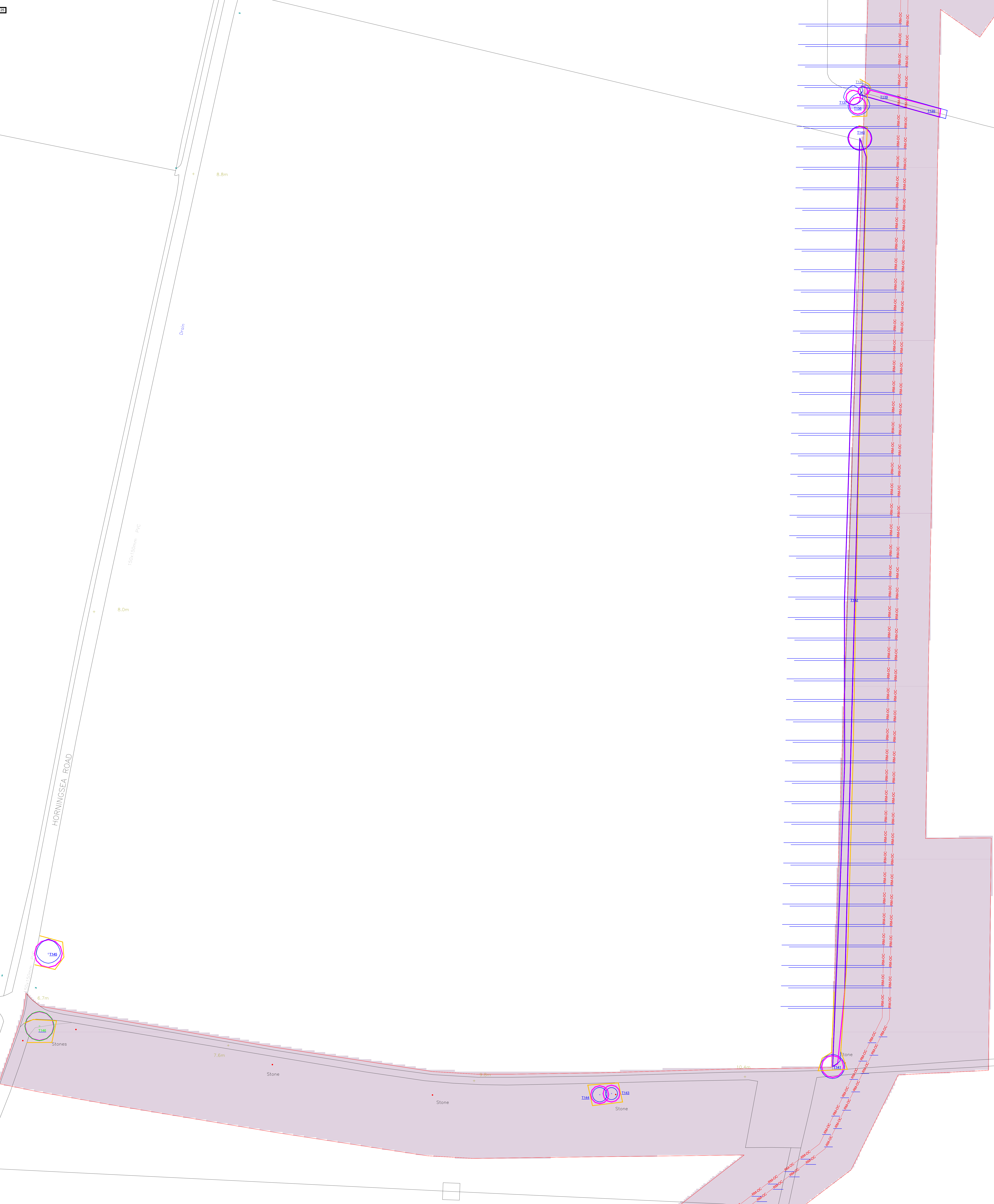
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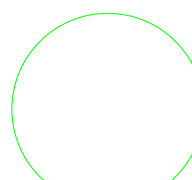
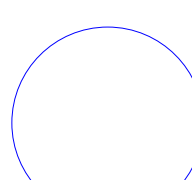
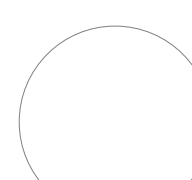
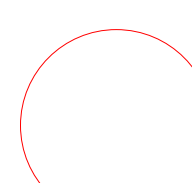
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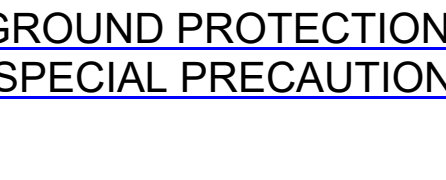



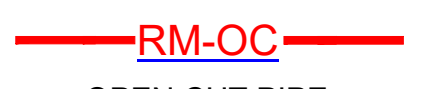
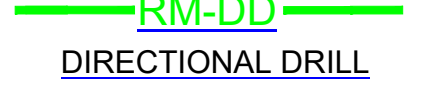


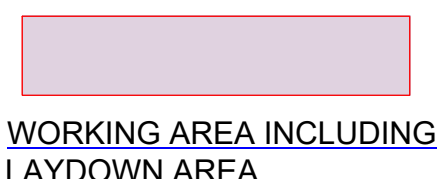
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-  BS CAT B
-  BS CAT C
-  BS CAT U

-  PROTECTIVE FENCE TO BS5837:2012
-  GROUND PROTECTION & SPECIAL PRECAUTIONS

-  VALVE
-  RM-OC
OPEN CUT PIPE
-  RM-DD
DIRECTIONAL DRILL
-  RM-MT
TUNNELING
-  LAUNCH & RECEPTION PIT
-  WORKING AREA INCLUDING LAYDOWN AREA

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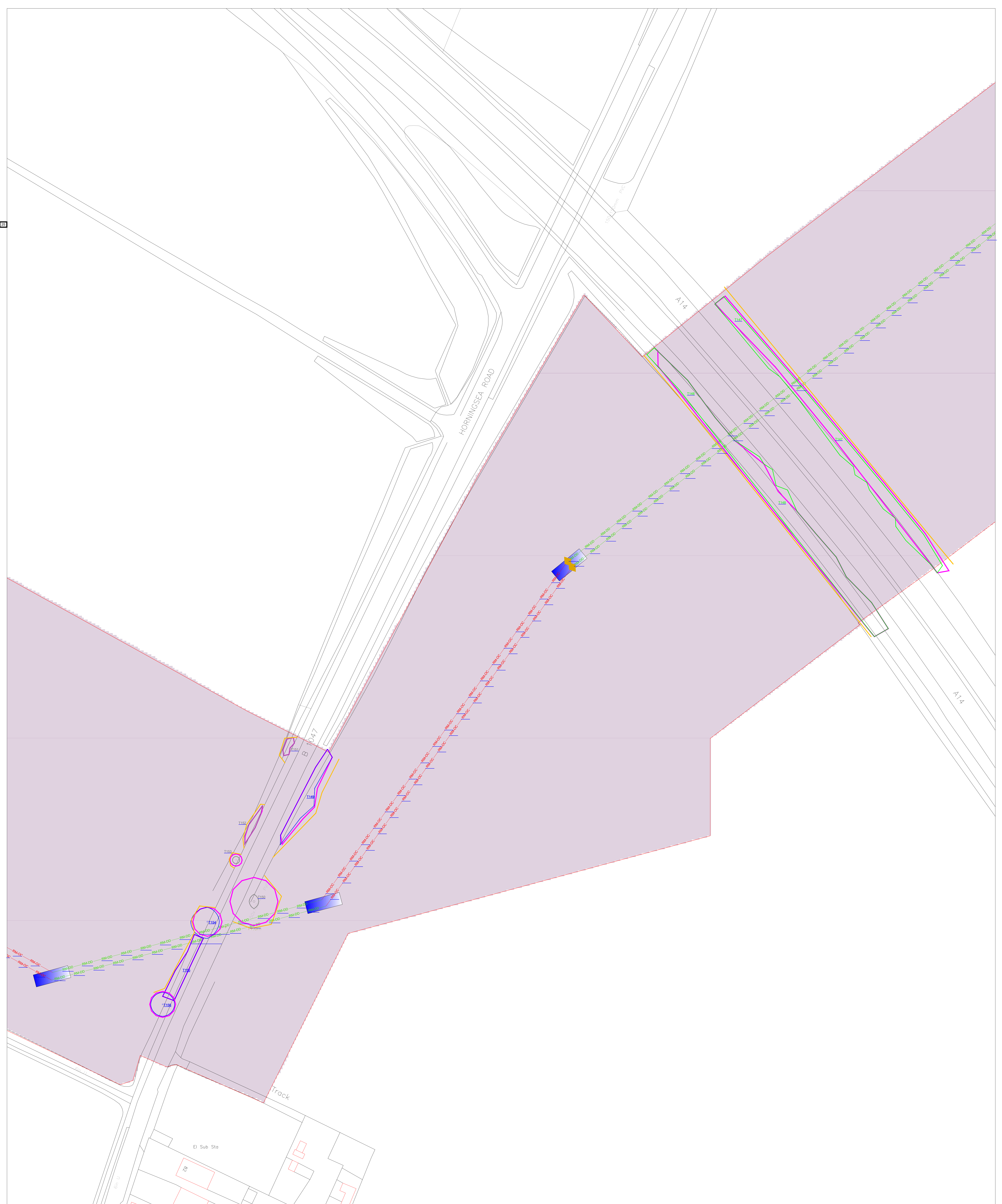
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CLIENT
ANGLIAN WATER @one

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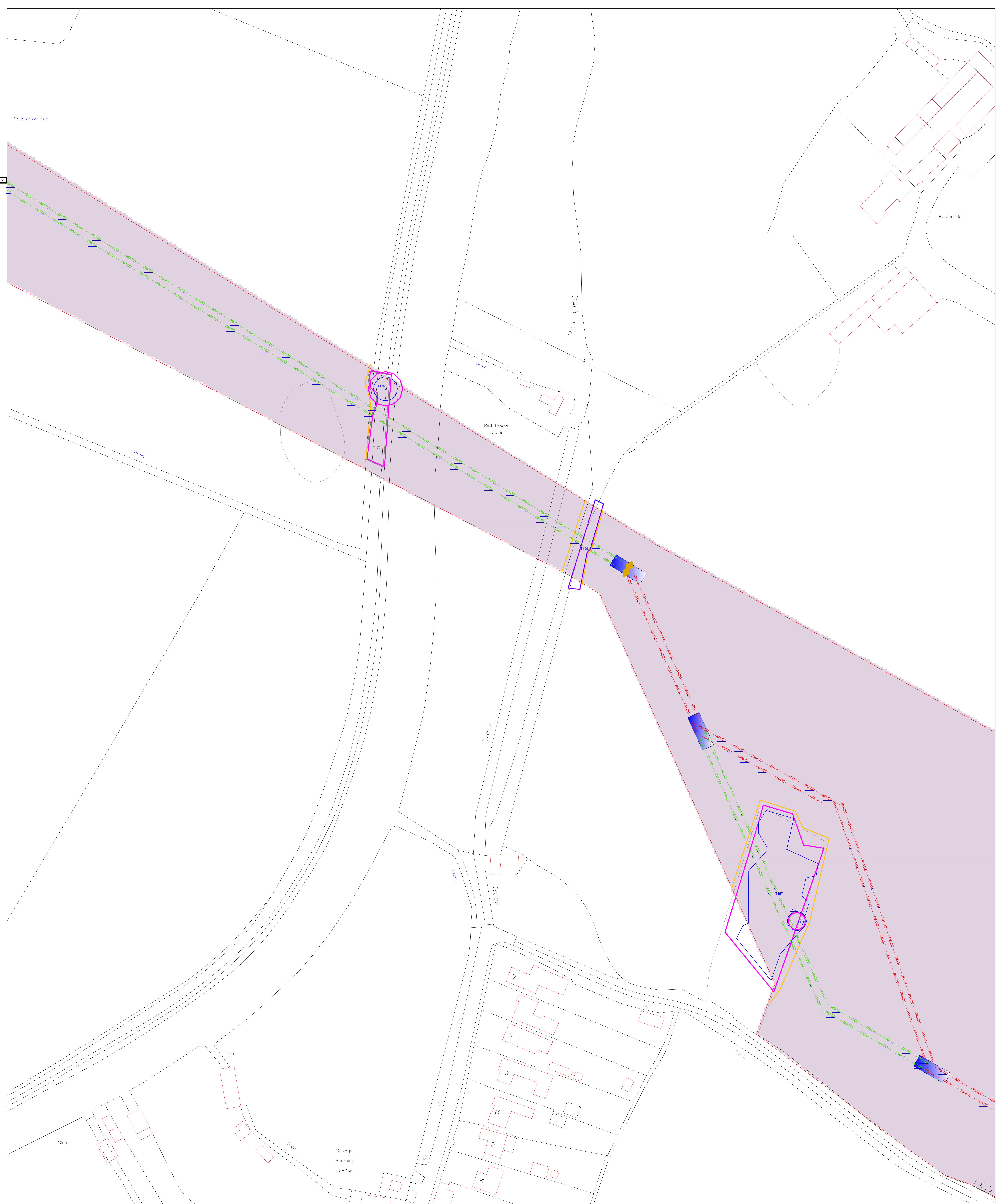
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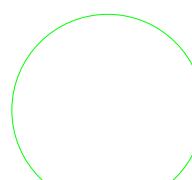
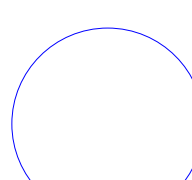
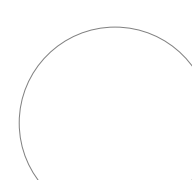
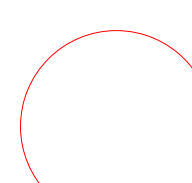
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 -  GROUND PROTECTION & SPECIAL PRECAUTIONS
-
-  VALVE
 -  RM-OC
OPEN CUT PIPE
 -  RM-DD
DIRECTIONAL DRILL
 -  RM-MT
TUNNELING
 -  LAUNCH & RECEPTION PIT
 -  WORKING AREA INCLUDING LAYDOWN AREA

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PROJECT	
CWWTPR - WBRM	
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B 07/2022	REVISED LAYOUT




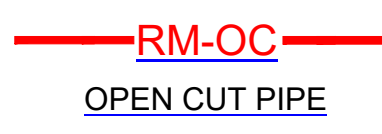
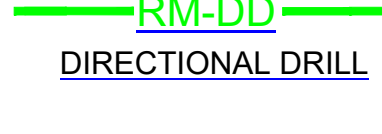

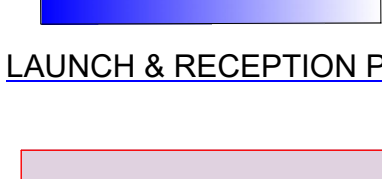
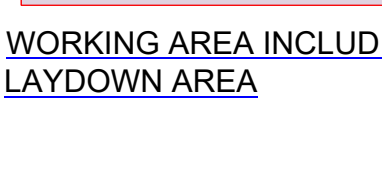
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 -  BS CAT C
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PROTECTIVE FENCE
TO BS5837:2012


GROUND PROTECTION &
SPECIAL PRECAUTIONS

-  VALVE
-  RM-OC
OPEN CUT PIPE
-  RM-DD
DIRECTIONAL DRILL
-  RM-MT
TUNNELING
-  LAUNCH & RECEPTION PIT
-  WORKING AREA INCLUDING
LAYDOWN AREA

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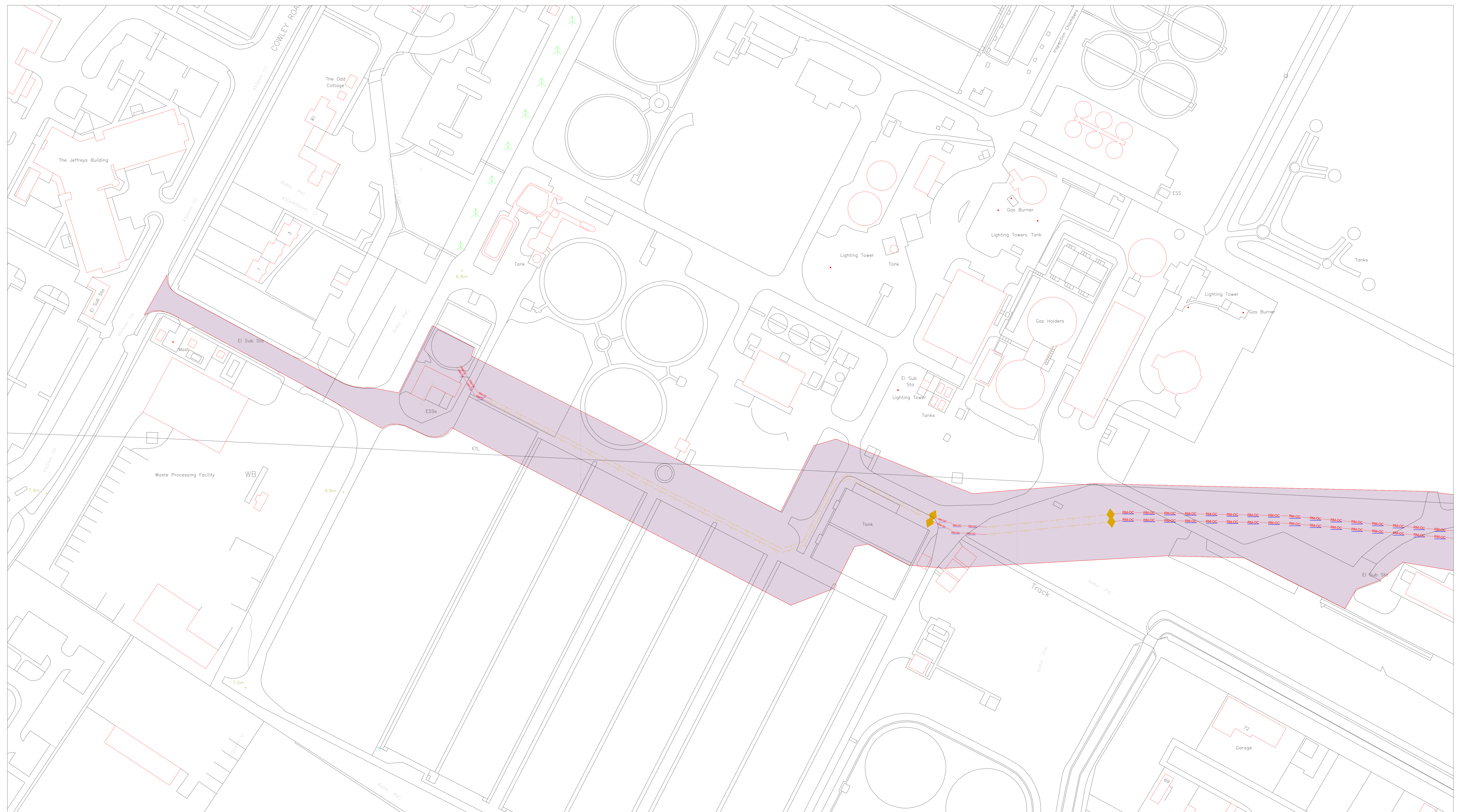
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CWWTPR - WBRM

CLIENT
ANGLIAN WATER
@one

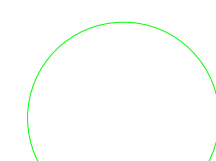
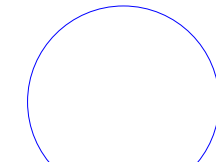
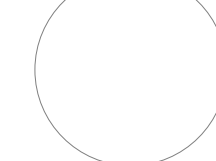

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B	07/2022	REVISED LAYOUT



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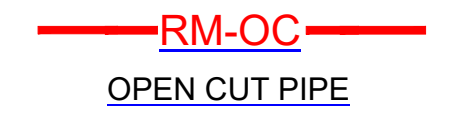
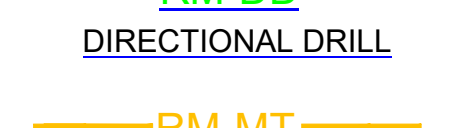

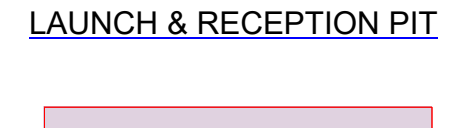
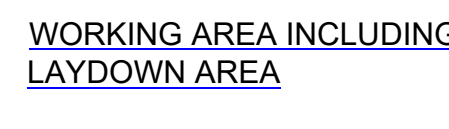

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-  BS CAT B
-  BS CAT C
-  BS CAT U

PROTECTIVE FENCE TO BS837:2012



GROUND PROTECTION & SPECIAL PRECAUTIONS

-  VALVE
-  RM-OC
OPEN CUT PIPE
-  RM-DD
DIRECTIONAL DRILL
-  RM-MT
TUNNELING
-  LAUNCH & RECEPTION PIT
-  WORKING AREA INCLUDING LAYDOWN AREA
-  ABOVE GROUND SECTION

DRAWING TITLE
TREE PROTECTION PLAN

PROJECT
CWTWPR - WBRM

CLIENT
ANGLIAN WATER @one

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No. 1 DATE REVISION
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Get in touch

You can contact us by:



Emailing at info@cwwtpr.com



Calling our Freephone information line on **0808 196 1661**



Writing to us at **Freepost: CWWTPR**

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You can view all our DCO application documents and updates on the application on The Planning Inspectorate website:

<https://infrastructure.planninginspectorate.gov.uk/projects/eastern/cambridge-waste-water-treatment-plant-relocation/>

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Comments Change Report

#	Change	Comments Text
1	Modified	Appendix 8.178-19 : Proposed WWTP Waterbeach Pipeline
2	Modified	Application Document Reference: 5.4.8.175-4.8.19
3	Modified	Revision No. 0301 20 November April -2023
4	Modified	Image is modified by 30
5	Deleted	Arboricultural Impact Assessment
6	Inserted	Waterbeach
7	Deleted	July 2022
8	Inserted	November 2023
9	Modified	Image is modified by 64
10	Deleted	Image
11	Inserted	Waterbeach
12	Modified	Document Reference: GWA-Waterbeach-AIA- 20231115 20220217 -008002
13	Inserted	003 Arboricultural Impact Assessment/Method Statement 004 Arboricultural Impact Assessment/Method Statement 005 Arboricultural Impact Assessment/Method Statement 006 Arboricultural Impact Assessment/Method Statement 007 Arboricultural Impact Assessment/Method Statement 008 Arboricultural Impact Assessment/Method Statement
14	Inserted	G Causey Mark Leatherland Mary Parnwell 15/07/22 G Causey Mark Leatherland Mary Parnwell 19/07/22 G Causey Mary Parnwell Mary Parnwell 20/07/2022 G Causey Mary Parnwell Mary Parnwell 21/07/2022 G Causey Mary Parnwell Mary Parnwell 25/07/2022 G Causey Mark Leatherland Mary Parnwell 15/11/2023
15	Modified	Image is modified by 9
16	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
17	Modified	1.0 Executive Summary 4 3
18	Modified	2.0 Introduction and Terms of Reference 6 5 3.0 Site Location & Construction Requirements 7 6 4.0 Legislation and Policy 9 7 5.0 Methodology 11 9 6.0 Results 14 2 7.0 Impact Assessment, Conclusions and Recommendations 15 13 8.0 Method Statement 16 4
19	Modified	Table One: Tree Work Pruning -Specification
20	Modified	Appendix Two: Tree Schedule Appendix Three: Tree Root Protection Area Distances Areas 1.0 Executive Summary 1.1 Rationale Greenwillows Associates Limited (GWA) was commissioned to conduct an arboricultural appraisal of a proposed route for a new wastewater pipeline and wastewater treatment plant in the Waterbeach area of Cambridge. The area surveyed comprises an approximate 8.4km route and is referred to as 'the site' for the purposes of this report. Greenwillows Associates carried out the initial survey between 25 th – 28 th October 2021 and produced an Arboricultural Appraisal Note (AAN) to the relevant parties to highlight potential conflicts between the proposed works and the existing vegetation. The client has provided a
21	Modified	Image is modified by 9

22	Modified	<p>Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM 1.0 Executive Summary 1.1 Rationale Greenwillows Associates Limited (GWA) was commissioned to conduct an arboricultural appraisal of a proposed route for a new wastewater pipeline and wastewater treatment plant in the Waterbeach area of Cambridge. The area surveyed comprises an approximate 8.0km route and is referred to as 'the site' for the purposes of this report. Greenwillows Associates carried out the initial survey between 25 th – 28 th October 2021 and produced an Arboricultural Appraisal Note (AAN) to the relevant parties to highlight potential conflicts between the proposed works and the existing vegetation. The client has provided a</p>
23	Modified	<p>circa 8.4km in length.</p>
24	Modified	<p>With reference to drawing drawings TPP_WATERBEACH_1_2 to TPP_WATERBEACH_14_2, a number of trees are shown to be potentially impacted (T047, T178 & east end of T049, refer to TPP_WATERBEACH_3_2 and T055-T056, refer to TPP_WATERBEACH_4_2 a number of trees are shown to be impacted with losses T055 – T058 & T060). In addition, sections of hedgerow (T054, T121, & T139 & T173 shown on drawings TPP_WATERBEACH_3_2, TPP_WATERBEACH_10_2, & TPP_WATERBEACH_11_2 & TPP_WATERBEACH_14_2) require removal to <u>facilitate installation of</u> insertthe new mains supply. There may be further areas where localised vegetation clearance may be required mainly for access and compounds, but this is likely to be minor and involving low value specimens/scrub. The majority of the areas where there are potential impacts on the tree population will utilise directional <u>drilling digging</u> at depth to eliminate the potential for root <u>Internal Ref: WATE001</u> damage. It should be noted that the method of installation shown in the drawings is indicative only, and where there is conflict with the tree population the installation will revert to directional drilling where possible to avoid tree loss. Some limited crown pruning will be required to ensure clearance over plant accessing the site and where in close proximity to proposed compounds and a section of a tree belt (T120 on drawing TPP_WATERBEACH_9_2) will require cutting back to clear the access. It is likely that some root pruning may be required prior to the installation to prevent excessive damage. The</p>
25	Modified	<p>Image is modified by 9</p>
26	Page Inserted	<p><u>Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM potential for root damage. It should be noted that the method of installation can be micro managed to a degree to help retain trees, however, in some cases tree removals may be unavoidable due to additional constraints, and replacement trees/hedges will be planted following completion of the project. Some limited crown pruning will be required to ensure clearance over plant accessing the site and where in close proximity to proposed compounds and a section of a tree belt (T120 on drawing TPP_WATERBEACH_9_2) will require cutting back to clear the access. It is likely that some root pruning may be required prior to the installation to prevent excessive damage. The Preliminary Ecological Appraisal has categorised four trees as notable or with veteran characteristics (ref: Waterbeach Pipeline) - Preliminary Ecological Appraisal (100104106-0004-E), referring to the tree schedule, one of the trees is T105 (drawing TPP_WATERBEACH_7_2) categorised as B2/3 (landscape, cultural and conservation values), the remaining three trees are outside the area designated for the tree survey but fell within the scope of the Ecological Appraisal. Whilst the route passes close to tree T105, there is a drainage ditch immediately on the west side and the adjacent fields are used for arable farming with both factors likely to lead to a degree of root restriction. Initial comments from the Planning Inspectorate, referring to this report and the Preliminary Ecological Appraisal (PEA) stated that the Root Protection Area (RPA) for T105 should be calculated as per the Woodland Trust recommendations for the protection of the RPA. The recommendation is that an RPA is based on 15 times the trunk diameter or 5m beyond the crown extent, whichever is the greatest. Therefore, the protective fence for tree T105 will be installed at a minimum of 16m from the trunk (based on 5m beyond the crown radius) as shown on drawing TPP_WATERBEACH_7_2 Rev C and in the details in Appendix 2. 1.2.3 Recommendations Recommendations in Section 8 (Method Statement) should be followed to ensure there is minimal impact on the trees. Page 5</u></p>
27	Modified	<p>Arboricultural Impact Assessment & Preliminary Ecological Appraisal has categorised two trees as veterans (ref: Waterbeach Pipeline) – Preliminary Ecological Appraisal (100104106-0004-A), referring to the tree schedule, one of the trees is T105 (drawing TPP_WATERBEACH_7_2), the second tree is outside the area for tree surveying but was within the scope of the Ecological Appraisal. 1.2.3 Recommendations Recommendations in section 8 (Method Statement) should be followed to ensure there is <u>Waterbeach CWWTPR-WBRM</u> minimal impact on the trees.</p>

28	Modified	2.4 The proposed route has been provided to Graham Causey in various source materials:
29	Deleted	3.0 Site Location & Construction Requirements 3.1 The site is situated between Waterbeach New Town and the Cambridge (Milton) WWTP Cowley Road (see Appendix One).
30	Inserted	Internal Ref: WATE001
31	Modified	Page 6 5
32	Modified	Image is modified by 9
33	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM 3.0 Site Location & Construction Requirements 3.1 The site is situated between Waterbeach New Town and the Cambridge (Milton) WWTP Cowley Road (see Appendix One).
34	Modified	including micro-siting micro-siting to accommodate the environmental constraints to in order to reduce its impact, discussion with landowners and technical considerations. Further assessment will also be needed to determine the exact location crossings points under the River Cam, the railway line and the A14.
35	Modified	be either horizontal direction drilling (HDD) or pipe jack micro-tunnelling pipejack micro-tunnelling .
36	Modified	3.7 Where pipe jack micro-tunnelling pipejack micro-tunnelling is used then a larger access pit will be required, circa 15
37	Modified	the construction takes place. Each laydown lay-down area is expected to be a maximum of 20 metres
38	Modified	by 80 metres. As a reasonable worst-case scenario, it has been assumed that each will be topsoil stripped and covered with hardstanding. The hardstanding will be removed, and the topsoil reinstated when the use of the laydown area ceases.
39	Modified	Page 7 6
40	Modified	Image is modified by 9
41	Page Inserted	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM topsoil stripped and covered with hardstanding. The hardstanding will be removed, and the topsoil reinstated when the use of the laydown area ceases. 3.10 A main compound area will be required. The primary compound will be located at the Waterbeach end of the rising main. This will be a maximum of 100 metres by 100 metres. It will be topsoil stripped and covered with hardstanding. The hardstanding will be removed, and the topsoil reinstated when the use of use of the compound area ceases. 3.11 Satellite welfare units will also be used. These would be mobile units (eco unit or similar) which will move with the construction gang along the pipeline and would be located within the 30-metre working corridor. Internal Ref: WATE001 Page 8
42	Modified	Arboricultural Impact Assessment & Method Statement 3.10 A main compound area will be required. The primary compound will be located at the Waterbeach CWWTPR-WBRM end of the rising main. This will be a maximum of 100 metres by 100 metres. It will be topsoil stripped and covered with hardstanding. The hardstanding will be removed, and the topsoil reinstated when the use of use of the compound area ceases. 3.11 Satellite welfare units will also be used. These would be mobile units (eco unit or similar) which will move with the construction gang along the pipeline and would be located within the 30-metre working corridor.
43	Modified	lopping, topping, damaging or destroying trees which can be unintentionally caused by such simple means as damaging the soil structure around the trees during site preparation or building work. 4.5.3 The effect of a Tree Preservation Order (if one should be made) is that a formal application will normally need to be submitted to the LPA (subject to exceptions) for tree works. Such an application may be refused, approved or approved subject to conditions. There is a right of appeal against refusals, conditions or non-determination. In all cases, unauthorised work or wilful damage or destruction etc is a criminal offence, on summary conviction leading to fines of up to £20,000 per tree and on indictment, to an unlimited fine and / or imprisonment. All trees are a 'material consideration' in the town planning context and extra weight is normally given to those the subject of the above statutory protection. If TPOs are applied, it is imperative that the LPA is consulted with respect to any activities that affect trees whether directly or indirectly.

44	Modified	Page 97
45	Modified	Image is modified by 9
46	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM simple means as damaging the soil structure around the trees during site preparation or building work. 4.5.3 The effect of a Tree Preservation Order (if one should be made) is that a formal application will normally need to be submitted to the LPA (subject to exceptions) for tree works. Such an application may be refused, approved or approved subject to conditions. There is a right of appeal against refusals, conditions or non-determination. In all cases, unauthorised work or wilful damage or destruction etc is a criminal offence, on summary conviction leading to fines of up to £20,000 per tree and on indictment, to an unlimited fine and/or imprisonment. All trees are a 'material consideration' in the town planning context and extra weight is normally given to those the subject of the above statutory protection. If TPOs are applied, it is imperative that the LPA is consulted with respect to any activities that affect trees whether directly or indirectly.
47	Modified	indicated in this report. 4.8 Third Party Disclaimer 4.8.1 The report was prepared by the author on behalf of Greenwillows Associates . The author provides this advice without prejudice and bases his opinions on knowledge, experience, qualifications and published research and cannot be held responsible for the consequences of a difference of opinion held by third parties, for example the Local Planning Authority or Planning Inspector. The author does not accept liability for any loss or damage arising from reliance on the content of this report. 4.9 Status 4.9.1 This is not a tree safety report. This report has been prepared in respect of the potential impact upon trees of the installation of a proposed new wastewater main. The report includes recommendations for tree protection which may have implications for design, construction, materials and methods to be employed during implementation. Any such recommendations should be approved by the appropriate responsible parties. Internal Ref: WATE001
48	Modified	Page 108
49	Modified	Image is modified by 9
50	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM 4.8 Third-Party Disclaimer 4.8.1 The report was prepared by the author on behalf of Greenwillows Associates. The author provides this advice without prejudice and bases his opinions on knowledge, experience, qualifications and published research and cannot be held responsible for the consequences of a difference of opinion held by third parties, for example the Local Planning Authority or Planning Inspector. The author does not accept liability for any loss or damage arising from reliance on the content of this report. 4.9 Status 4.9.1 This is not a tree safety report. This report has been prepared in respect of the potential impact upon trees of the installation of a proposed new wastewater main. The report includes recommendations for tree protection which may have implications for design, construction, materials and methods to be employed during implementation. Any such recommendations should be approved by the appropriate responsible parties.
51	Modified	removed for reasons of sound arboricultural management. Trees within this category are: i. Trees that have a serious irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees; ii. Trees that are dead or are showing signs of significant, immediate or irreversible overall decline; iii. Trees infected with pathogens of significance to the health and or/safety of other trees nearby trees or very low-quality trees suppressing adjacent trees of better quality. 5.2.2 Category 'A'. (Green): are trees whose retention is most desirable and are of high quality and value. These trees are considered to be in such a condition as to be able to make a lasting contribution (at least 40 years) and may comprise: i. Trees which are particularly good examples of their species especially rare or unusual, or essential components of groups or of formal or semi-formal arboricultural features (e.g., the dominant and/or principal trees within an avenue); ii. Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features; iii. Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g., Veteran trees or wood-pasture trees).
52	Modified	Page 119
53	Modified	Image is modified by 9

54	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM i. Trees that have a serious irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees; ii. Trees that are dead or are showing signs of significant, immediate or irreversible overall decline; iii. Trees infected with pathogens of significance to the health and or/safety of other trees nearby trees or very low-quality trees suppressing adjacent trees of better quality. 5.2.2 Category 'A'. (Green): are trees whose retention is most desirable and are of high quality and value. These trees are considered to be in such a condition as to be able to make a lasting contribution (at least 40 years) and may comprise: i. Trees which are particularly good examples of their species especially rare or unusual, or essential components of groups or of formal or semi-formal arboricultural features (e.g., the dominant and/or principal trees within an avenue); ii. Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features; iii. Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g., Veteran trees or wood-pasture trees).
55	Modified	where necessary and where access permits. The measurements are always considered in the following sequence: north, east, south and west, and therefore appear as such within the Tree Survey Schedule. Where access is not available dimensions are estimated. 5.4 In the assessment, particular consideration has been given to the following when considering the appropriate BS Category and Sub-Category allocation: i. the health, vigour and condition of each tree; ii. the presence of any structural defects in each tree and its remaining contribution in years (i.e., future life expectancy); iii. the size and form of each tree and its suitability within the context of a proposed development for the land use; iv. the location of each tree relative to existing site features, e.g., its value as a screen or as a skyline feature. 5.5 Age class is assessed according to the age class categories referred to in BS 5837. • Young trees • Early-mature, trees less than 1/2 life expectancy • Mature trees up to 2/3 life expectancy • Over-mature, declining or moribund trees of low vigour Internal Ref: WATE001
56	Modified	Page 12 40
57	Modified	Image is modified by 9
58	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM following sequence: north, east, south and west, and therefore appear as such within the Tree Survey schedule. Where access is not available dimensions are estimated. 5.4 In the assessment, particular consideration has been given to the following when considering the appropriate BS Category and Sub-Category allocation: i. the health, vigour and condition of each tree; ii. the presence of any structural defects in each tree and its remaining contribution in years (i.e., future life expectancy); iii. the size and form of each tree and its suitability within the context of a proposed development for the land use; iv. the location of each tree relative to existing site features, e.g., its value as a screen or as a skyline feature. 5.5 Age class is assessed according to the age class categories referred to in BS 5837. • Young trees • Early-mature, trees less than 1/2 life expectancy • Mature trees up to 2/3 life expectancy • Over-mature, declining or moribund trees of low vigour
59	Modified	5.6 5-6 Major defects or diseases and relevant observations have been recorded under General
60	Modified	• Storm damage • Canker formations • Loose bark • Damage to roots • Basal, stem or branch / limb cavities • Die-back in the crown • Abnormal foliage size and colour • Any changes to the timing of normal leaf flush and leaf fall patterns • Other pathological diseases affecting any part of the tree
61	Modified	Page 13 44
62	Modified	Image is modified by 9
63	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM • Canker formations • Loose bark • Damage to roots • Basal, stem or branch / limb cavities • Die-back in the crown • Abnormal foliage size and colour • Any changes to the timing of normal leaf flush and leaf fall patterns • Other pathological diseases affecting any part of the tree

64	Modified	6.1 There is a likely loss of No trees (T055 – T058 and T060) as a result of are required to be removed to implement the installation of the new main by open-cut. Careful selection of the route and narrowing the working width may allow for part retention of this group of trees scheme (T055 – T058 and T060 refer to section 1.2.2 above). In addition, four however, three sections of hedgerow (T054, T121, & T139 and T173 shown on drawings
65	Modified	TPP_WATERBEACH_3_2, TPP_WATERBEACH_10_2 & TPP_WATERBEACH_11_2 TPP WATERBEACH 14 2) are to be cleared to allow access. The proposed route as shown on the drawings, may require the removal of up to two 30m wide sections to provide the necessary access for plant to excavate the trench for installation of the pipes. As the hedgerow sections are narrow in spread, it may be possible to reduce the length of section to be removed to the minimum necessary to allow passage of vehicles during the open cut operations.
66	Modified	retained vegetation. With reference to drawings TPP_WATERBEACH_410_2, and TPP_WATERBEACH_11_2, the proposed access/work areas will require protective ground protection and fencing to prevent compaction of the soil within the RPA of trees T063, T065, T143 - T144 & T146). Tree T065 is considered to be of low value and as a worst-case worst-case scenario could be removed and replaced if necessary.
67	Modified	6.3 With reference to drawing TPP_WATERBEACH_10_2, there may be a need to widen access from the proposed site access is shown adjacent to retained trees (trees T180 to T185 inclusive) public highway for a temporary laydown area . This is an existing access with may be influenced by highway compacted ground, however, regulations and the need for visibility splays: the final location will ensure no trees are growing within a grass verge, with arable field to the east, and will require protective fencing both to ensure that the ground is not compacted by vehicle movements or by plant striking the crowns impacted .
68	Modified	6.4 Temporary access from Horningsea Road will may be required (refer to drawing TPP_WATERBEACH_12_2) and this may impact on vegetation. Ensuring any access on the west side of the carriageway is north of tree T154 and its associated Root Protection Area (RPA) should allow rom room for the access without impacting on tree T153 (low quality Elder). On the east side of the road south of tree T150 (low quality Elder) is adequate space for access without impacting any vegetation. Internal Ref: WATE001
69	Modified	Page 14 12
70	Modified	Image is modified by 9
71	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
72	Modified	The pipeline No trees are recommended for removal to facilitate the installation will result in the removal of T055 – T058 & T060. Any tree losses will be mitigated by replacement planting following completion of the project new mains wastewater pipe .
73	Modified	Where there is a loss of hedgerows hedgerow (as noted in 6.1 above) the scheme should strive to ensure
74	Modified	the scheme, replanting should be undertaken to ensure there is future hedge continuity. 7.2 Consideration of other trees that could be affected
75	Modified	set clear of the root areas or directional drilling may will be possible employed where there is a potential
76	Modified	easement zone to micro-manage micro-manage the installation to avoid impacts on the vegetation.
77	Modified	Page 15 13
78	Modified	Image is modified by 9
79	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
80	Modified	(location as shown on drawings TPP_WATERBEACH_1_2 to TPP_WATERBEACH_1514_2). Where

81	Modified	required to prevent compaction damage to the soil. It is recommended that Table table-1 (Appendix Three2) is used to correctly place the protection zone to ensure all the RPA is enclosed to allow for any drift of the GPS signal during plotting. All measurements are to be taken from the nearest trunk of the tree/group to the work area. For example, Tree T2 will have fencing placed 11.88m from the trunk; for ease rounding up to the nearest whole number is advised.
82	Modified	8.1.2 The post-and-rope post and rope barriers should be in place before any materials or machinery is
83	Modified	protective barrier will be installed. In this case, tree T105 will be protected by Heras Herras fencing as shown in Figure 1 installed at 16m from the trunk. In addition, those trees designated notable in the PEA should be protected by Heras fencing located at 15m from trunk centre where practicable and ensuring no disruption to farming activities. 8.1.4 Trees T180 – T185 (refer to drawing TPP WATERBEACH 10 2) have a reduced rooting area available due to the compacted ground within the existing field access. To ensure that there is no damage to the soil structure it is recommended that the higher specification Heras fencing (refer to Figure 1 below). Internal Ref: WATE001
84	Modified	Page 16 ¹⁴
85	Modified	Image is modified by 9
86	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
87	Modified	Figure 1: Tree Protective Fencing feneing
88	Modified	drawing TPP_WATERBEACH_43_2 , the access is shown to make a significant encroachment
89	Modified	into the RPA of tree T063. Ideally, the access should be routed around the RPA of the tree but if this is not possible and access is required on a longer-term basis, then the use of a no-dig road using a cellular confinement system may be required. Refer to Figure 2 below for a general overview of a typical installation with porous tarmac (illustration courtesy of
90	Modified	Page 17 ¹⁵
91	Modified	Image is modified by 9
92	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM if this is not possible and access is required on a longer-term basis, then the use of a no-dig road using a cellular confinement system may be required. Refer to Figure 2 below for a general overview of a typical installation with porous tarmac (illustration courtesy of
93	Modified	expected loads and should be based on the manufacturer's recommendation. Internal Ref: WATE001
94	Modified	Page 18 ¹⁶
95	Modified	Image is modified by 9
96	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
97	Modified	Page 19 ¹⁵
98	Modified	Image was moved
99	Modified	Image is modified by 9
100	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
101	Modified	TPP_WATERBEACH_15_14_2). Refer to Table 8.3.2 below for tree works. 8.3.2. Tree Work Specification work specification
102	Inserted	T054 TPP WATERBEACH 3 2 Section of hedge to be grubbed out
103	Modified	T054, T121, T139 TPP_WATERBEACH_109_2 Section of hedge to be grubbed out T139 TPP WATERBEACH 11 2 Section of hedge to be grubbed out

104	Modified	T173 TPP WATERBEACH 14 2 Section of hedge to be grubbed out
105	Modified	excavated by air spade along the line of the marked-out marked-out pipe route and any roots found severed cleanly to prevent the excavator pulling roots out of the ground. The roots should be cut at least 200mm from the outer edge of the proposed trench.
106	Modified	Page 20 18
107	Modified	Image is modified by 9
108	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM severed cleanly by an arboriculturist to prevent the excavator pulling roots out of the ground. The roots should be cut at least 200mm from the outer edge of the proposed trench and covered with damp hessian to prevent desiccation.
109	Modified	spillage. Appendices Appendix One: Site Location Plan Appendix Two: Tree Root Protection Areas
110	Modified	Page 21 19
111	Modified	Image is modified by 9
112	Page Inserted	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM Appendices Appendix One: Site Location Plan Appendix Two: Tree Schedule Appendix Three: Tree Root Protection Area Distances Page 22
113	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
114	Modified	Page 23 20
115	Modified	Image is modified by 9
116	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
117	Modified	Page 24 21
118	Modified	Image is modified by 9
119	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
120	Inserted	Radius: 7.8m. Area: 213 sq m
121	Inserted	T009 Common Ash Tree 15 850 N:8 E:8 S:7 W:18 T010 Common Ash Tree 10 380 N:5 E:6 S:6 W:4
122	Deleted	20+ Years B2,3 Radius: 15.0m. Area: 707 sq m. T009 Common Ash Tree 15 850 N:8 E:8 S:7 W:18
123	Inserted	5 Early Mature
124	Inserted	20+ Years Prolific ivy. 40+ Years B2,3 Radius: 15.0m. Area: 707 sq m.
125	Deleted	T010 Common Ash Tree 10 380 N:5 E:6 S:6 W:4 5 Early Mature Prolific ivy. 40+ Years
126	Modified	Page 25 22
127	Modified	Image is modified by 9
128	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
129	Modified	Page 26 23
130	Modified	Image is modified by 9
131	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
132	Modified	Page 27 24
133	Modified	Image is modified by 9

134	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
135	Modified	Page 28 ²⁵
136	Modified	Image is modified by 9
137	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
138	Modified	Page 29 ²⁶
139	Modified	Image is modified by 9
140	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
141	Modified	Page 30 ²⁷
142	Modified	Image is modified by 9
143	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
144	Modified	Light deadwood in crown
145	Modified	Page 31 ²⁸
146	Modified	Image is modified by 9
147	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
148	Modified	Page 32 ²⁹
149	Modified	Image is modified by 9
150	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
151	Modified	Page 33 ³⁰
152	Modified	Image is modified by 9
153	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
154	Modified	Page 34 ³¹
155	Modified	Image is modified by 9
156	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
157	Modified	Page 35 ³²
158	Modified	Image is modified by 9
159	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
160	Modified	Page 36 ³³
161	Modified	Image is modified by 9
162	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
163	Modified	Page 37 ³⁴
164	Modified	Image is modified by 9
165	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
166	Modified	Page 38 ³⁵

167	Modified	Image is modified by 9
168	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
169	Modified	Page 39 ³⁶
170	Modified	Image is modified by 9
171	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
172	Modified	B2,3 Radius: 1612.6 m. Area: 804 ⁴⁹⁹ -sq m.
173	Modified	Page 40 ³⁷
174	Modified	Image is modified by 9
175	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
176	Modified	Page 41 ³⁸
177	Modified	Image is modified by 9
178	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
179	Modified	Page 42 ³⁹
180	Modified	Image is modified by 9
181	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
182	Modified	Page 43 ⁴⁰
183	Modified	Image is modified by 9
184	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
185	Modified	Page 44 ⁴¹
186	Modified	Image is modified by 9
187	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
188	Modified	Page 45 ⁴²
189	Modified	Image is modified by 9
190	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
191	Modified	Page 46 ⁴³
192	Modified	Image is modified by 9
193	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
194	Modified	Area: 38 sq m. Ref Common Name Structure Height (m) Stem Diam (mm) Spread Crown Clearance (m) Lowest Branch Life Stage General Observations Rem. Contrib. Retention Category RPA
195	Modified	Page 47 ⁴⁴
196	Modified	Image is modified by 9
197	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM Ref Common Name Structure Height (m) Stem Diam (mm) Spread Crown Clearance (m) Lowest Branch Life Stage General Observations Rem. Contrib. Retention Category RPA
198	Modified	Page 48 ⁴⁵

199	Modified	Image is modified by 9
200	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
201	Modified	Page 49 46
202	Modified	Image is modified by 9
203	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
204	Modified	Page 50 47
205	Modified	Image is modified by 9
206	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
207	Modified	Page 51 48
208	Modified	Image is modified by 9
209	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
210	Modified	Page 52 49
211	Modified	Image is modified by 9
212	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
213	Modified	Page 53 50
214	Modified	Image is modified by 9
215	Page Inserted	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM Ref Common Name Structure Height (m) Stem Diam (mm) Spread Crown Clearance (m) Lowest Branch Life Stage General Observations Rem. Contrib. Retention Category RPA T180 Common Ash Tree 14.0 410 N:5 E:5 S:5 W:5 T181 Pedunculate Oak Tree 14.0 520 N:4.5 E:5.5 S:6 W:4 T182 Common Ash Tree 12.0 4450 N:5.5 E:5.5 S:5 W:4.5 T183 European Lime Tree 14.0 520 N:5 E:5 S:5 W:5 1.5 2(SE) Early Mature 11.0 2(SW) Early Mature 2.0 2(NW) Early Mature 1.0 2(W) Early Mature Light deadwood Bark wounds on trunk occluding Multiple stems from 2m Bark wounds in crown from vehicle strikes Light deadwood Bark wounds on trunk occluded Bark wounds in crown from vehicle strikes Minor decay pockets in crown Crown suppressed on North side Light deadwood Minor new bark wounds on trunk Major Occluding bark wound on East side Bark wounds in crown from vehicle strikes Light deadwood Basal wound Occluding Heavy epicormic growth Exposed roots west side 40+ Years 50+ Years 40+ Years 50+ Years B2 B2 B2 A2 Radius: 4.9m. Area: 75 sq m. Radius: 6.2m. Area: 121 sq m. Radius: 5.3m. Area: 88 sq m. Radius: 6.2m. Area: 121 sq m. T184 Common Ash Tree 15.0 530 N:7 E:6.5 S:7 W:7 T185 European Lime Tree 15.0 630 N:5.5 E:5.5 S:5.5 W:5 1.5 2(SW) Mature Occluding basal wounds on East side Exposed surface roots west side Bark wounds on roots Light deadwood 1.0 1.5(NW) Mature Light deadwood Heavy epicormic growth Lower crown over access damaged by vehicle strikes Self grafted branches in crown 40+ Years 50+ Years A2 A2 Radius: 6.4m. Area: 129 sq m. Radius: 7.6m. Area: 181 sq m. Page 54
216	Page Inserted	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM Ref Common Name Structure Height (m) Stem Diam (mm) Spread Crown Clearance (m) Lowest Branch Life Stage General Observations Rem. Contrib. Retention Category RPA T186 Common Ash Tree 17.0 530 N:5 E:6 S:5 W:5.5 1.0 2.5(W) Mature Girdling root Light deadwood scattered throughout crown 30+ Years B2 Radius: 6.4m. Area: 129 sq m. T187 Poplar Tree 1.0 Not recorded Tree felled Regrowth from stump U N/A T188 White Willow Tree 25.0 1330 N:7.5 E:8 S:8.5 W:8 1.0 3(E) Mature Multiple stems from 3.5m Light to moderate deadwood throughout the crown Prominent Hanging broken branches in crown Storm damage with shed limbs Decay pockets in crown 40+ Years A2,3 Radius: 15.0m. Area: 707 sq m. Page 55
217	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
218	Modified	Appendix 3: Tree Root Protection Area Distances distances

219	Modified	Page 56 ⁵¹
220	Modified	Image is modified by 9
221	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
222	Modified	Page 57 ⁵²
223	Modified	Image is modified by 9
224	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
225	Modified	Page 58 ⁵³
226	Modified	Image is modified by 9
227	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
228	Modified	T105 Pedunculate Oak B2 16 ^{12.6}
229	Modified	Page 59 ⁵⁴
230	Modified	Image is modified by 9
231	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
232	Modified	Page 60 ⁵⁵
233	Modified	Image is modified by 9
234	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
235	Modified	T143 Swedish Whitebeam B2 3.48
236	Modified	T144 Swedish Whitebeam B2 3.72
237	Modified	Page 61 ⁵⁶
238	Modified	Image is modified by 9
239	Modified	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM
240	Modified	T179 Walnut C2 2.28 T180 Common Ash B2 Radius: 4.9m. Area: 75 sq m. T181 Pedunculate Oak B2 Radius: 6.2m. Area: 121 sq m. T182 Common Ash B2 Radius: 5.3m. Area: 88 sq m.
241	Modified	Page 62 ⁵⁷
242	Modified	Image is modified by 9
243	Page Inserted	Arboricultural Impact Assessment & Method Statement Waterbeach CWWTPR-WBRM T183 European Lime A2 Radius: 6.2m. Area: 121 sq m. T184 Common Ash A2 Radius: 6.4m. Area: 129 sq m. T185 European Lime A2 Radius: 7.6m. Area: 181 sq m. T186 Common Ash B2 Radius: 6.4m. Area: 129 sq m. T187 Poplar U N/A T188 White Willow A2,3 Radius: 15.0m. Area: 707 sq m. Page 63

