



**DALCOUR
MACLAREN**

Arboricultural Impact Assessment & Method Statement

Scheme: Barlow Moor Clen Gas Governor

Client: Cadent Gas Limited

Date: April 2023



Project Details

Project Name	EP – Barlow Moor Clen Gas Governor
Scheme Number	22003255
Report Number	001

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Contents

1	Introduction.....	5
1.1	Background.....	5
1.2	Scope.....	5
1.3	Personnel.....	6
1.4	Brief Site Description.....	6
1.5	Protective Status of Trees.....	6
2	Methodology.....	8
3	Plans.....	9
3.1	Tree Constraints Plan.....	9
3.2	Tree Protection Plan	9
4	Proposed Work.....	10
5	Observations.....	11
6	Tree Survey	12
7	Arboricultural Impact Assessment.....	15
7.2	Trees to be removed due to the development.....	15
7.3	Trees to be retained but are in direct influence of the development.....	16
7.4	All remaining surveyed trees	17
8	Arboricultural Method Statement	18
8.2	General level changes within the RPAs	18
8.3	Changes in drainage or run off within the RPAs.....	18
8.4	Tree protection fences	19
8.5	Tree surgery work.....	19
8.6	Tree stump removal within RPAs.....	20
8.7	Utilities	20
8.8	Temporary Ground Protection	21
9	Scheduling of Work.....	23
10	Summary and Conclusions.....	25
11	Closure	26
	Appendix 1: Cascade Chart for Tree Quality Assessment.....	27
	Appendix 2: RPA Protective Fence Detail.....	28
	Appendix 3: Extract from NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees.....	29
	Appendix 4: Glossary of Terms.....	34

Drawings

Drawing No.	Title	Scale
22003255_PLN_TCP_2.1_C	Tree Constraints Plan	1:250@A3
22003255_PLN_TPP_6.1_A	Tree Protection Plan	1:250@A3

1 Introduction

1.1 Background

- 1.1.1 Dalcour Maclaren commissioned Treetec Consultancy Limited (Treetec), on behalf of Cadent Gas Limited (CGL), to identify and assess the significant trees that could be influenced by proposals, to install a kiosk and new gas governor at a site known as Barlow Moor Clen.
- 1.1.2 It is intended this survey will be used to inform the engineering proposals for the necessary works, aimed at minimising damage to existing trees which are identified of amenity value.
- 1.1.3 This will be by means of an Arboricultural Impact Assessment (AIA) and an Arboricultural Method Statement (AMS) outlining trees that will need to be removed which are in direct conflict with the works, and how CGL would need safeguard the health of the trees whilst undertaking the works within root protection areas (RPAs) of trees identified for retention.
- 1.1.4 It is also intended to reassure interested parties of the steps to be taken to minimise any risk of long term damage to the adjacent semi mature trees which are located on neighbouring properties.
- 1.1.5 An Arboriculturist from Treetec visited the site on the 4th of July 2022 and surveyed all the significant trees which are considered at risk of being influenced by the proposed work.
- 1.1.6 The weather conditions were dry and sunny during the site survey.

1.2 Scope

- 1.2.1 The survey identifies and reports back on the general condition and amenity value of significant trees and vegetation situated within the influence of the proposed “development”, including any adjacent trees that may be affected.
- 1.2.2 British Standard BS5837:2012 “Trees in relation to design, demolition and construction, Recommendations” has been used as the basis for the assessment. The information contained in this survey will be used to ensure that the decisions made in respect of future development proposals consider the tree resource.
- 1.2.3 Trees worthy of retention and which are beneficial to the screening and the softening of the site have been identified. Conversely, less valuable trees, which are of lower importance due to their poor condition or for other reasons, have also been identified; these trees may be considered as suitable candidates for removal.
- 1.2.4 Where trees are located on third party land or are found to be inaccessible due to ground conditions, all measurements are estimated.

- 1.2.5 It is important this survey is referred to prior to the commencement of any works. The main priority being the protection of trees identified within this survey which are considered to be of amenity value, are to be retained or are in third party ownership and where they are found to be designated with a Tree Preservation Order (TPO).
- 1.2.6 In general, only trees which are in excess of 150mm dbh are included in the survey.
- 1.2.7 Based on the information and instruction provided by the client, trees considered to be outside of the zone of influence of the development have not been included in the survey and are not recorded on the associated tree survey plans.
- 1.2.8 Where there are trees which have not been included on the original base topographical survey and it has been thought necessary to include them, then these have been marked onto the tree survey plans in their approximate positions only and marked “AP” (approximate position). The positions of the trees should therefore be used for reference and general guidance only. If it is thought there is a danger that the works could influence the tree’s health, then it will be necessary to carry out further surveying work to confirm their exact positions in relation to the development.

1.3 Personnel

- 1.3.1 This report has been prepared by Alex Finn, Principal Arboriculturist at Treetec Consultancy Limited.

1.4 Brief Site Description

- 1.4.1 The site is located to the rear of detached houses on the northeast side of Barlow Moor Road in a residential area of Manchester.
- 1.4.2 A small hard surfaced lane which is gated and locked provides vehicular access to the site. The site is broadly rectangular in shape and is surrounded on three sides by rear gardens of surrounding properties.
- 1.4.3 The site is covered with young and semi mature trees which have generally taken over the site over the site in the 10-20 years.
- 1.4.4 To the front of the site amongst the trees is a small electricity substation and gas governor the latter of which is to be removed and replaced further into the site.

1.5 Protective Status of Trees

- 1.5.1 Trees may legally be protected by a Tree Preservation Order (TPO) or by the fact that they are located within a Conservation Area.

- 1.5.2 There is a potential for unlimited penalties to be attracted for illegally carrying out works on protected trees without formal permission to do so.
- 1.5.3 Information supplied from Manchester City Council on 03/10/2022, confirms that within the boundaries of the site, there are no current TPOs, and the site is not within a Conservation Area.
- 1.5.4 It should also be noted where it is intended to fell in excess of 5 cubic metres of timber in any calendar quarter, it may be necessary to obtain a Felling Licence from the Forestry Commission.
- 1.5.5 There are some exemptions to this regarding dead, dying and dangerous trees and this will only be necessary prior to planning consent or where planning consent is given, but there is a change in the proposals.

2 Methodology

- 2.1.1 All of the trees in this survey have been assessed from ground level individually with the aid of the Cascade Chart for Tree Quality Assessment BS 5837:2012 (see Appendix A).
- 2.1.2 Trees that have been recorded have been given a reference number which can be found within the Tree Survey (refer to Section 6) and on the supplied drawings.
- 2.1.3 Assessment is based mainly around the useful life expectancy of the tree(s) and their condition and contribution (amenity value) to the area, which has been categorised using four letters and four colours, the values of which are shown on the Cascade Chart for Tree Quality Assessment (Appendix 1). The letters have then been divided further using one to three sub-categories under one of three sub-headings.
- 2.1.4 All the colour categories and reference numbers have been marked onto the Tree Constraints Plan (TCP) and the Tree Protection Plan (TPP).
- 2.1.5 Branch spread in general has been measured on four sides and recorded together with confirmation on which side of the tree the measurement was taken with a laser measure.
- 2.1.6 Stem diameters have been generally measured at 1.5m above ground and are confined to a minimum dbh of 150mm.
- 2.1.7 Current tree heights have been measured using a SUUNTO Height Meter PM-5/1520, serial number 823208, except where trees are inaccessible when estimated measurements will have been recorded.
- 2.1.8 Where due to local constraints i.e., impenetrable vegetation or trees located in private properties, and it is not possible to gain direct access to the trees, field data will have been estimated.
- 2.1.9 If base topographical plans are not available or additional trees are added, it will sometimes be necessary to calculate the approximate position of these trees. Where this occurs trees will be marked with the letters “AP” (Approximate Position).
- 2.1.10 Where groups of trees or areas of woodland are surveyed, average measurements have been recorded in respect of crown spread and height. However, in order to calculate an adequate linear RPA, the largest stem measurements have been taken from the trees closest to the development.

3 Plans

3.1 Tree Constraints Plan

- 3.1.1 The Tree Constraints Plan (TCP) shows the RPAs for each tree or group of trees. These areas are calculated using the tree's trunk diameter which is generally measured at 1.5m above ground level (reference Annex C BS5837:2012). Once calculated the measurements provide a minimum area around the tree which should be left undisturbed during the development, in order to remove the risk of decline and ensure the survival of the trees.
- 3.1.2 There is also scope to carry out some construction works within the RPA using proven measures; however, these should be avoided if at all possible. Where these methods are required, they will be detailed within an Arboricultural Method Statement (AMS) which may be required once the development design has been finalised and planning permission has been consented.
- 3.1.3 Where tree canopies extend further than the RPA, care will be needed not to damage these during construction. Some pruning back may be accommodated where this is an issue. However, all work should only be carried out after further assessment and advice from the project Arboriculturist and in accordance with BS 3998:2010 "Tree work Recommendations" or latest research and revisions.

3.2 Tree Protection Plan

- 3.2.1 A Tree Protection Plan (TPP) has been included within this survey which is represented as a draft plan on a separate plan to the TCP. This plan shows the precise location and specification of the erection of protective fencing and any other relevant physical protection measures including ground protection to protect the RPA (construction exclusion zone).
- 3.2.2 Specifications in respect of recommended protective fencing can be found in Appendix 2 at the end of the report.

4 Proposed Work

- 4.1.1 Cadent Gas Limited are proposing to install a new kiosk to house a replacement gas converter. The existing converter adjacent to the substation is to be removed on completion.
- 4.1.2 The governor and kiosk will be transported to site pre-built and lowered into position onto a concrete base which will be constructed pre-delivery.
- 4.1.3 The new governor itself will be totally encapsulated within the GPR kiosk and will be mostly underground, with a small section above ground within the kiosk.
- 4.1.4 It is proposed to provide, on completion of the construction work, to plant two trees for every tree removed. This is likely to be therefore in the region of 32 trees.

5 Observations

- 5.1.1 The site is relatively compact being surrounded on 3 sides by the gardens of residential properties. To the front of the site (southeast boundary) is an existing electricity substation and the current gas governor.
- 5.1.2 The rest of the site is populated with trees the largest of which surround the current facilities. To the northwest of the site the trees tend to be young saplings and undergrowth which is dense in some areas.
- 5.1.3 Located on the rear northwest boundary there is a large mature sycamore which although is not thought to be in the influence of the development, is in decline and considered to be unstable. It is advised this tree is removed on safety grounds which will also provide an area for replacement planting.

6 Tree Survey

- 6.1.1 All the site information used for the assessment and grading of the individual trees and groups has been recorded into the following Tree Survey Table (Table 1), using the Cascade Chart for Tree Quality Assessment BS 5837:2012 (Appendix 1) from which the table template has also been taken.

Table 1: Tree Schedule

Tree Reference No.	Species	Height (m)	Dbh	No of stems	Canopy Spread N (m)	Canopy Spread E (m)	Canopy Spread S (m)	Canopy Spread W (m)	Height of first significant branch (m)	Age class	Physiological condition	Structural condition	Preliminary management recommendations	Estimated remaining contribution	Category grading
T1	Cherry	15	180	1	1	3.2	7.3	4.5	2.5	SM	Good	Good	Restricted growth	10+	C1
T2	Cherry	15	160	1	1	2.8	2	3.5	2.5	SM	Good	Good	Restricted growth	10+	C1
T3	Cherry	15	290	2	1.5	6	2.8	1.2	1.5	SM	Good	Fair	Unstable fork at ground level	10-	C1
T4	Poplar	15	220	2	3	6.5	4.5	0	2	SM	Good	Fair	Severe lean to east	10-	C1
T5	Cherry	15	150	1	1	0.5	2.5	4	2.5	SM	Fair	Fair	None	10-	C1
T6	Cherry	15	210	2	1.5	2	1.4	0.4	10	SM	Fair	Fair	None	10-	C1
T7	Sycamore	15	220	1	1	1	5	1	3	SM	Good	Good	None	10+	C1
T8	Cherry	15	200	1	3	3	0.5	1	3	SM	Good	Good	None	10+	C1
T9	Cherry	15	280	1	2	2	2	2.5	4	SM	Fair	Fair	None	10+	C1
T10	Sycamore	15	280	1	2	2	2.4	2.4	4	SM	Good	Good	None	10+	B1
T11	Sycamore	15	280	1	2.5	3.9	3.9	1.8	4.5	SM	Fair	Poor	Decay north side of main stem	5-	C1
T12	Sycamore	15	250	2	3	5	1.5	0	2.5	SM	Good	Fair	None	10+	C1
T13	Norway maple	12	290	2	5.1	4.5	4.5	1	1.1	SM	Good	Good	None	10+	B1
T14	Sycamore	15	600	2	5.1	4.1	5.2	5.5	5	M	Good	Good	None	20+	B1
T15	Ash	12	240	3	3.3	4.2	1.4	3.2	1.3	SM	Good	Fair	None	10-	C1
T16	Sycamore	13	230	1	1	2.2	4.8	3.3	5	SM	Good	Good	None	10+	C1

Tree Reference No.	Species	Height (m)	Dbh	No of stems	Canopy Spread N (m)	Canopy Spread E (m)	Canopy Spread S (m)	Canopy Spread W (m)	Height of first significant branch (m)	Age class	Physiological condition	Structural condition	Preliminary management recommendations	Estimated remaining contribution	Category grading
T17	Oak	15	300	1	2.75	6.2	6	3.6	2	SM	Good	Good	None	20+	B1
T18	Ash	15	200	1	0.2	2.5	3	2.2	4	SM	Good	Good	None	10+	C1
T19	Sycamore	15	350	1	3.5	3	2.5	3	8	SM	Good	Good	None	20+	B1
T20	Ash	15	180	1	0.5	1	3	4	2	SM	Good	Good	None	10+	C1
T21	Sycamore	16	200	1	0.5	1.5	2.2	2.5	2.8	SM	Fair	Good	None	10+	C1
T22	Sycamore	18	700	3	5.5	5.5	5.5	5.5	3	M	Poor	Poor	In serious decline/unstable	5-	U

7 Arboricultural Impact Assessment

7.1.1 After identifying the position of the trees and calculating the RPAs, the proposed route of the underground pipes has been overlaid onto the TCP, to enable possible areas of conflict to be identified. Trees which could potentially be impacted upon have been identified using this approach which, where practical, will allow for mitigation or changes to the final design layout. Where trees or hedges cannot be retained for any reason, they have been identified for removal on the TCP.

7.1.2 Damage to trees can be commonly caused by:

- Compaction around the trees, causing asphyxiation and a reduction in the availability of water and minerals to the roots;
- Physical damage to the roots by cutting and severing or removal of bark;
- Spillage of contaminants;
- Physical damage to the stem and branches.

7.1.3 The effects of the damage may not be immediately apparent and often it is the case that the tree does not show any symptoms until after the first year. Such symptoms may range from dieback in the crown and deterioration in health resulting in ultimate death. This will be dependent upon the severity of the damage and the ability of the roots to recover and regenerate.

7.1.4 Due to the nature of the work, it is likely the health of some of the retained trees will be at risk, where RPAs are identified as of being affected due to the one or more of the following activities:

- Installation of the replacement gas converter and removal of the old;
- The use of areas of land outside the immediate working areas/site for activities such as vehicular access, parking, storage or other construction purposes; and
- Low canopies that extend the over the working areas.

7.1.5 It therefore will be necessary to carry out preventative measures to reduce and mitigate damage to trees which are considered to be of value and are deemed practical to be retained. This is especially important for trees located on adjacent properties but are in the influence of the construction proposals.

7.2 Trees to be removed due to the development

7.2.1 From a total of 21 individual trees (T1 to T21) recorded within the influence of the proposed works, it is established it will be necessary to remove all the

trees within the red line working area due to the compact site and density of tree growth (refer to Table 2 below).

- 7.2.2 It will however be possible to retain 5 trees from the impact of the proposed works (T4, T12, T15, T18 and T21), of which 3 are located on third party land. This is provided where RPAs are compromised any recommendations within the AIA and detailed in an AMS are implemented.

Table 2: Trees to be removed.

Tree Reference No.	Species	Category	Reason
T1-T3, T5, T6, T8	Cherry	C1	Access
T7	Sycamore	C1	Access
T9	Cherry	C1	Access and building
T10	Sycamore	B1	Building
T11	Sycamore	C1	Building
T13	Norway maple	B1	Building
T14	Sycamore	B1	Building
T16	Sycamore	C1	Building
T17	Oak	B1	Building
T19	Sycamore	B1	Building
T20	Sycamore	C1	Building

- 7.2.3 In addition, it is advised tree T22, which is a large sycamore, is removed. This is not as a result of the development, but due to the risk of structural failure due to the poor condition of the tree. This will have the benefit of providing a practical area for replanting of replacement trees.
- 7.2.4 It is observed that from 16 trees identified for removal, only 5 of these fall into the B category, the remaining 11 trees being classified as C category trees. All of the trees appear to be self-set from windblown seed.

7.3 Trees to be retained but are in direct influence of the development

- 7.3.1 From reference to the TCP, it is observed that the RPAs of trees T4, T12, T15 and T18 are in danger of being compromised by the risk of soil compaction during the construction period.
- 7.3.2 It is therefore essential, where practical, that the guidelines recommended in a following AMS, are closely followed initially under the supervision of the project Arboriculturist.
- 7.3.3 These are likely to be the use of temporary ground protection which will need to be in place after any tree removal works have been completed, but before any construction work commences.

- 7.3.4 The type of ground protection used must be suitable to ensure that the soils below are not compacted, so they must be assessed to be of strength to support the type and weight of any machinery to be used.
- 7.3.5 It will also be required that an assessment of any tree works is made where low tree canopies overhang the working area, once the type of machinery is confirmed.

7.4 All remaining surveyed trees

- 7.4.1 All the remaining surveyed trees are beyond the direct influence of the construction activities and can be retained without damage to their health, although it will be necessary to ensure that protective fencing is adopted to prevent damage to the stems of the trees from machinery.
- 7.4.2 Vehicular route(s) and the position of storage compound(s), if required, must be discussed and agreed with the project Arboriculturist prior to any work on site commencing. It should be generally accepted that these will need to be located well away from the RPAs of retained trees, unless existing ground protection is used, or temporary suitable ground protection is provided.

8 Arboricultural Method Statement

8.1.1 The successful retention of trees depends upon the quality of the tree protection and the administrative and site supervision procedures which are in place, to ensure that protective measures remain for the duration of the development activity. An effective method of doing this is through an Arboricultural Method Statement (AMS), which can be specifically referred to as a planning condition. An AMS for this site is set out in detail below:

8.2 General level changes within the RPAs

- 8.2.1 It is understood it is not proposed to carry out any major increase in level changes in the RPAs, but where necessary small changes may be tolerated, however generally changes in levels in the RPAs must be avoided where possible.
- 8.2.2 When using mechanical machinery, it can be placed either outside the RPA or by using temporary approved ground protection (ref to section 8.8). Alternatively, it can be carried out by using hand tools, but which ever method is used it is important that the existing surface or the finished surface is not heavily compacted. In no circumstances should soils be increased or lowered around the stems of trees as this will in time have a detrimental effect to the tree's health.
- 8.2.3 Where it is proposed to cut the soil surface, the depth of the proposed cutting will much depend on the tree's rooting depth and each tree will need to be assessed individually. This may involve carrying out an exploratory hand dig to ascertain the rooting depths. Where surface roots are found, or roots found within the profile to be cut, it will be necessary to consult with the project Arboriculturist, but generally the methodology in respect of roots in section 8.7 below, should be applied.
- 8.2.4 It may be the case where this cannot be applied or cutting cannot be avoided in areas of high root density, further trees will have to be considered for removal or the soils left at their original level. It may be the case in these circumstances to consider incorporating retaining walls within a landscaping scheme, but these must be located outside the RPAs.

8.3 Changes in drainage or run off within the RPAs

- 8.3.1 Where diversion of water away from trees occurs, for example because of changes in drainage run off, consideration should be given to installing irrigation systems to replace natural water sources.
- 8.3.2 This also applies to the opposite where water is inadvertently directed to trees which could saturate soils and cause water logging, ultimately ending with reduction of trees health and possible even causing the tree(s) to die.

In this case water should be allowed to drain away before it reaches the tree. If either of these are found to be a possibility it may be necessary to consult further with the project Arboriculturist for further advice.

8.4 Tree protection fences

- 8.4.1 Before any materials or machinery are brought onto site and before any excavation and construction work commences, it will be necessary to erect protective fencing around the retained trees adjacent to the development area. The positioning of the fencing is shown on the enclosed TPP.
- 8.4.2 Once erected, protective fencing and any ground protection should be regarded as sacrosanct and should not be removed or altered without the prior approval of the project Arboriculturist, or where appropriate the LPA. Exceptions would be where there is proposed development within these areas and special approved construction and working methods are adopted. In areas where this is found to be necessary alternative routing for protective fencing, whilst the work is completed, will be detailed (refer to the TPP).
- 8.4.3 The protective fence must remain intact for the duration of the works, and should any breaches occur during this period then work must be stopped until repairs can be completed.
- 8.4.4 Once construction has been completed, it may be necessary to remove protective fencing in order to facilitate soft landscaping, however where this is required it is important to ensure that heavy machinery is not used within the RPAs unless suitable ground protection (ref section 8.8) is adopted, following further consultation with the project Arboriculturist.
- 8.4.5 The type and specification of protective fencing is determined by the site suitability. Recommendations for this project can be found in Appendix 2.

8.5 Tree surgery work

- 8.5.1 Before work commences it will be necessary for the project Arboriculturist to produce a schedule which details the tree work that will be required in order to implement the proposed works. However, it is unlikely that there will be a requirement to carry out any significant tree work in connection with this project, other than the initial removal of trees detailed in the survey and pruning back of trees overhanging the site.
- 8.5.2 Where tree work is found to be required, then it will be necessary to inform the tree owner, where trees are located in private properties and third-party land, and the LPA in writing. No work should be carried out until the LPA have approved the work (unless planning permission has already been consented or the work is exempt) if found to be protected under a TPO or within a Conservation area and/or the owner has not given their permission.

- 8.5.3 All work must be carried out by a competent tree surgeon to British standard recommendations BS 3998:2010 Tree work- Recommendations or as modified by more recent research.
- 8.5.4 It is advisable to select a contractor from the local authority list and preferably one approved by the Arboricultural Association. Telephone 01242 522152, website www.trees.org.uk Their Register of Contractors is available free from The Malthouse, Stroud Green, Standish, Stonehouse, Gloucestershire GL10 3DL.

8.6 Tree stump removal within RPAs

- 8.6.1 Where stumps are left resulting from the removal of trees, ideally these should be cut as close as possible to the ground and left in situ. If for any reason it is necessary to remove them this must be restricted to just below ground level using a pedestrian stump grinder. Any deeper removal must be discussed with the project Arboriculturist but where there is risk of unacceptable damage to the retained trees it will not be possible to remove them.

8.7 Utilities

- 8.7.1 The exact location of any associated proposed and existing utilities was not available at the time of this survey. It is however advised that where possible any new utilities are located beyond the RPAs, and old utilities left in situ undisturbed.
- 8.7.2 Where it is unavoidable, and utilities are proposed to be sited within RPAs, it will be necessary to consider the effects that the installation may have on the trees health. Utilities should only be installed where approved mitigation can be adopted.
- 8.7.3 In these circumstances, where practical it will be necessary to minimise root damage using broken trench or directional drilling (trenchless) techniques. These should be located at a minimum of 1.5m below ground level, and all launch and receptor pits, where direct drilling is used, must be placed outside RPAs (refer to extract of Volume 4 National Joint Utilities Group Guidelines Appendix 3).
- 8.7.4 As an alternative to trenchless techniques, which should only be adopted where less invasive methods cannot be used, a possible solution is to hand excavate any trenching. These excavations must be carefully dug using hand tools, in order to avoid any damage to the protective bark covering of larger roots, or worse severing of roots. It may be necessary in long stretches where there are concentrated areas of roots, to use a soil vacuum to remove the surrounding soil. If this is found to be the case, then it is recommended that further advice is given by the project Arboriculturist.

- 8.7.5 It is important to ensure most roots with a diameter of 25mm and greater are retained, as well as most of the finer roots. It is appreciated that it is not always possible to avoid the removal of some of the finer roots, but this must be kept to a minimum. Where these roots must be cut, then this should extend back to a side root and be undertaken using a sharp tool such as secateurs or a sharp hand saw to leave the smallest possible wound.
- 8.7.6 Directly following excavation all exposed roots must be covered and wrapped in damp hessian which must not be allowed to dry out until back filling is carried out. Where back filling is carried out soils must only be lightly compacted and should be backfilled in the order the soil types were excavated.
- 8.7.7 Where Inspection chambers and manholes are to be installed, these should ideally be located outside the RPAs of the retained trees to avoid unnecessary damage to tree roots. However, if it is unavoidable or it is necessary to make improvements to existing manholes within RPAs, it will be necessary to consult further with the project Arboriculturist, but generally the same methodology above in protecting roots should be adopted.
- 8.7.8 It is advisable prior to any development, at the pre-commencement meeting, the final route of utility runs, launch, receptor pits and mitigating installation techniques are confirmed, and then approved by the project Arboriculturist and/or the Local Planning Authority (LPA) where relevant.
- 8.7.9 Where existing utilities are found within the RPAs of retained trees, and it is required that they are removed, it will be necessary to consult further with an Arboriculturist to prevent damage to the trees, but in general these should be left in situ where it is possible to do so.

8.8 Temporary Ground Protection

- 8.8.1 Temporary ground protection must be adopted where it is necessary to provide a working platform within the RPAs, to prevent damage to the health of retained trees. Further to removal of trees to allow for construction identified within the AIA above, it will be necessary to ensure the remaining trees on the boundaries of the site are adequately protected during the construction phases.
- 8.8.2 This directly affects trees T4, T12, T15 and T18 where their RPAs encroach in the to the development area. These areas are marked in orange on the TPP reference 22003255_PLN_TPP_ 6.1_A
- 8.8.3 Temporary ground protection must conform to paragraph 6.2.3.3 of BS5837:2012 which states:

“New temporary ground protection should be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil.

- a) For pedestrian movements only, a single thickness of scaffolding boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g., 100mm depth of woodchip), laid onto a geotextile membrane.*
- b) For pedestrian operated plant up to a gross weight of 2t, proprietary inter-linked ground protection boards placed on top of a compression-resistant layer (e.g., 150mm depth of woodchip), laid onto a geotextile membrane.*
- c) For wheeled or tracked construction traffic exceeding 2t gross weight, an alternative system (e.g., proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subject.”*

8.8.4 Ground protection must remain in place until construction is complete and there is not a risk of causing damage to the trees. Once removed in order to carryout landscaping it will be necessary to ensure only handheld tools are used. If it is found heavy machinery is required, then this may be used working from outside the RPAs or on localised ground protection further to consultation and agreement with the project Arboriculturist.

9 Scheduling of Work

- 9.1.1 It is essential that a pre-commencement meeting is held on site before any of the construction work begins. This must be attended by the site or project manager/operator, the project Arboriculturist and if requested a Council representative. If a Council representative is not present, where requested the project Arboriculturist must inform the Council, in writing, details of what was discussed and agreed during the meeting.
- 9.1.2 All tree protection measures detailed in this survey must be fully discussed so that all aspects of their implementation and sequencing are understood by all the parties. Any clarification or modifications must be recorded and circulated to all parties in writing. It may be appropriate for the tree surgery contractor to also attend this meeting should it be necessary to carry out any identified tree surgery works.
- 9.1.3 It will be necessary thereafter to monitor and assess the development throughout the construction period. Provided the guidelines are followed then it is considered that trees shown for retention on the TPP can be retained with minimal damage to their health.

Table 3: Guidance of scheduling of works in order to protect trees to be retained.

Timescale	Task	By Whom / Responsibility
Pre-development approval	Submission of AIA and final TPP	To be arranged , Dalcour Maclaren with the project Arboriculturist
Post approval and pre-development	Amendments made as necessary	To be arranged by the site operator/project manager, Dalcour Maclaren with the project Arboriculturist
Pre-development	Preparation and submission of an AMS subject to planning conditions.	As above with the project Arboriculturist
Pre-development	Pre commencement meeting with all relevant parties. Methodology and location of protective fences, site huts utilities, and welfare units agreed	As above
Pre-development	Preliminary tree work specification drawn up, approved, and sent for tender.	As above
During development	Pre-construction tree work implemented and supervised	As above

Timescale	Task	By Whom / Responsibility
Post development	Inspect retained trees and carry out remedial tree work as necessary	As above

10 Summary and Conclusions

- 10.1.1 It is proposed to undertake a series of works to upgrade the existing gas convertor with a replacement facility further to the northwest.
- 10.1.2 Due to the presence of semi mature and mature trees it is identified that the proposed work is likely to directly impact on the health of 16 trees which are affected by the proposed works. Subsequently these trees will need to be removed.
- 10.1.3 All the remaining trees which are at risk during the construction period, which are in close to the vicinity of the works , can be successfully retained and where necessary protected with temporary protective fencing and ground protection for the duration of the works.
- 10.1.4 Some minor pruning to the canopies of trees maybe required, where they encroach over the site beyond the protective fence and are at risk of being damaged by machinery. A schedule of identified tree works where necessary will therefore need to be prepared and approved prior to any works being carried out.
- 10.1.5 Proposals are to be to plant two trees for every one removed, which will allow for opportunities to provide a much improved woodland structure of enhanced ecological value.
- 10.1.6 It is concluded these works will not have a significant impact on the health and appearance of the retained trees, due to the small footprint of the works, and resulting loss of low category self-set trees.

11 Closure

- 11.1.1 This report has been prepared by Treetec Consulting Limited with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.
- 11.1.2 This report is for the use of Cadent Gas Limited and its clients; no warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from Treetec.
- 11.1.3 Treetec disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

Appendix 1: Cascade Chart for Tree Quality Assessment

Table 1 Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)	Identification on plan
Trees unsuitable for retention (see Note)		
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	- Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) - Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline - Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality <i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i>	See Table 2
	1 Mainly arboricultural qualities	2 Mainly landscape qualities
		3 Mainly cultural values, including conservation
Trees to be considered for retention		
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees with material conservation or other cultural value
		Trees with no material conservation or other cultural value

BS 5837:2012

BRITISH STANDARD

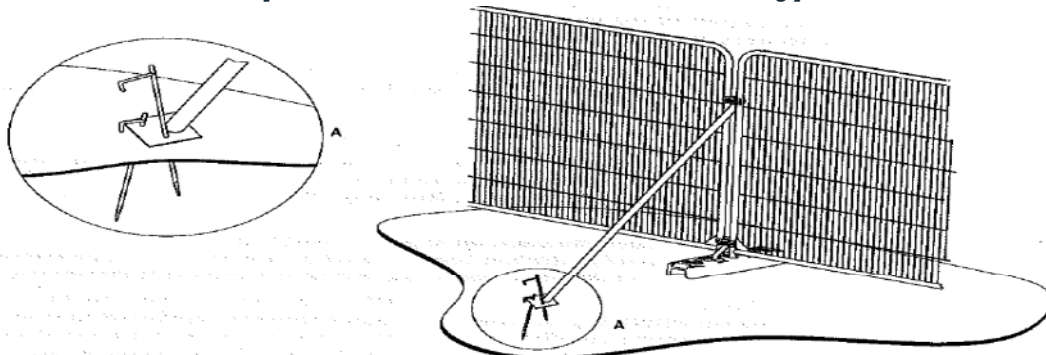
Table 2 Identification of tree categories

Category (from Table 1)	Colour ^{A)}	RGB code ^{A)}
U	Dark red	127-000-000
A	Light green	000-255-000
B	Mid blue	000-000-255
C	Grey	091-091-091

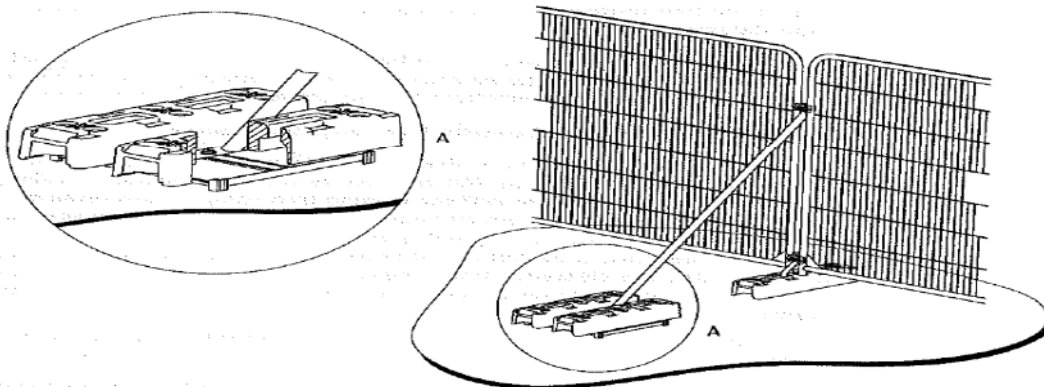
^{A)} Colours verified against <http://safecolours.rigdenage.com/palettetfiles.html#files> [viewed 2012-03-26].

Appendix 2: RPA Protective Fence Detail

BS5837 recommended protective fence - Fence A Heras type fence

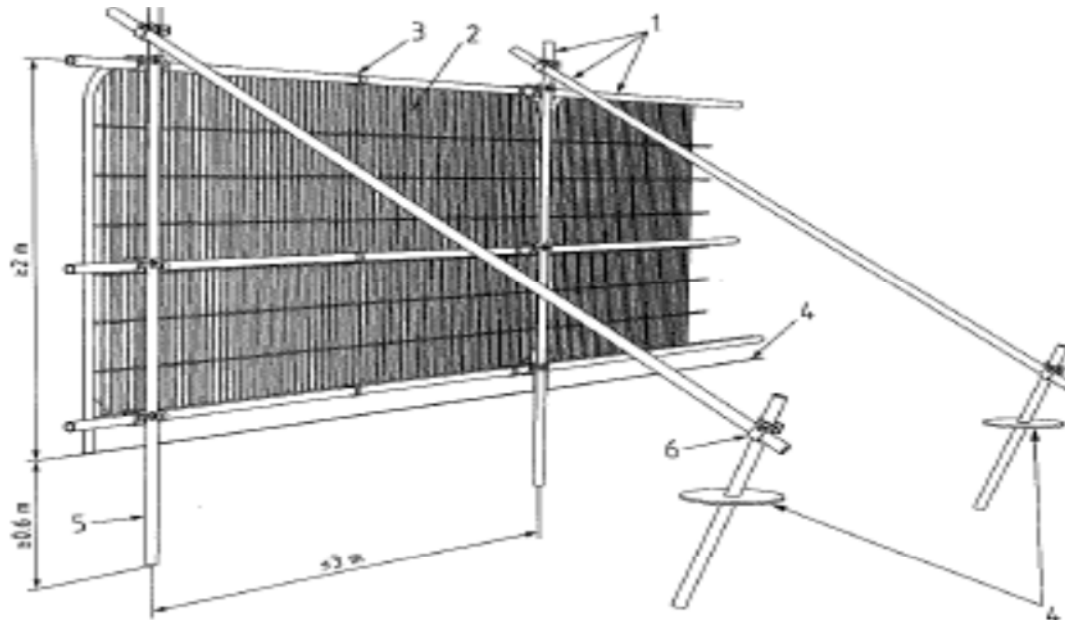


a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

BS5837 recommended protective fence - Fence B Scaffolding with wire mesh protective fence



Key

- 1 Standard scaffold poles
- 2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
- 3 Panels secured to uprights and cross-members with wire ties
- 4 Ground level
- 5 Uprights driven into the ground until secure (minimum depth 0.6 m)
- 6 Standard scaffold clamps

Appendix 3: Extract from NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees



NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees

Telecommunications Code (Schedule 2). Paragraph 19 of the Telecommunications Code enables operators to require the lopping of trees which overhang the street and obstruct or interfere with the working of their lines.

4. HOW TO AVOID DAMAGE TO TREES

This section gives general guidance on methods of work to minimise damage to trees. The local authority (or for privately owned trees, the owner or their agent), should be consulted at an early stage prior to the commencement of any works. This will reduce the potential for future conflict between trees and apparatus.

4.1 Below Ground

Wherever trees are present, precautions should be taken to minimise damage to their root systems. As the shape of the root system is unpredictable, there should be control and supervision of any works, particularly if this involves excavating through the surface 600mm, where the majority of roots develop.

4.1.1 Fine Roots

Fine roots are vulnerable to desiccation once they are exposed to the air. Larger roots have a bark layer which provides some protection against desiccation and temperature change. The greatest risk to these roots occurs when there are rapid fluctuations in air temperature around them e.g. frost and extremes of heat. It is therefore important to protect exposed roots where a trench is to be left open overnight where there is a risk of frost. In winter, before leaving the site at the end of the day, the exposed roots should be wrapped with dry sacking. This sacking must be removed before the trench is backfilled.

4.1.2 Precautions

The precautions referred to in this section are applicable to any excavations or other works occurring within the Prohibited or Precautionary Zones as illustrated in Figure 1 – 'Tree Protection Zone'.

4.1.3 Realignment

Whenever possible apparatus should always be diverted or re-aligned outside the Prohibited or Precautionary Zones. Under no circumstances can machinery be used to excavate open trenches within the Prohibited Zone.



NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees

The appropriate method of working within the Precautionary Zone should be determined in consultation with the local authority (or for privately owned trees the owner or their agent) and may depend on the following circumstances;

- the scope of the works (e.g. one-off repair or part of an extensive operation)
- degree of urgency (e.g. for restoration of supplies)
- knowledge of location of other apparatus
- soil conditions
- age, condition, quality and life expectancy of the tree

Where works are required for the laying or maintenance of any apparatus within the Prohibited or Precautionary Zones there are various techniques available to minimise damage.

Acceptable techniques in order of preference are;

a) Trenchless

Wherever possible trenchless techniques should be used. The launch and reception pits should be located outside the Prohibited or Precautionary Zones. In order to avoid damage to roots by percussive boring techniques it is recommended that the depth of run should be below 600mm. Techniques involving external lubrication of the equipment with materials other than water (e.g. oil, bentonite, etc.) must not be used when working within the Prohibited Zone. Lubricating materials other than water may be used within the Precautionary Zone following consultation and by agreement.

b) Broken Trench - Hand-dug

This technique combines hand dug trench sections with trenchless techniques if excavation is unavoidable. Excavation should be limited to where there is clear access around and below the roots. The trench is excavated by hand with precautions taken as for continuous trenching as in (c) below. Open sections of the trench should only be long enough to allow access for linking to the next section. The length of sections will be determined by local conditions, especially soil texture and cohesiveness, as well as the practical needs for access. In all cases the open sections should be kept as short as possible and outside of the Prohibited Zone.



NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees

c) Continuous Trench - Hand-dug

The use of this method must be considered only as a last resort if works are to be undertaken by agreement within the Prohibited Zone. The objective being to retain as many undamaged roots as possible.

Hand digging within the Prohibited or Precautionary zones must be undertaken with great care requiring closer supervision than normal operations.

After careful removal of the hard surface material digging must proceed with hand tools. Clumps of roots less than 25mm in diameter (including fibrous roots) should be retained in situ without damage. Throughout the excavation works great care should be taken to protect the bark around the roots.

All roots greater than 25mm diameter should be preserved and worked around. These roots must not be severed without first consulting the owner of the tree or the local authority tree officer / arboriculturist. If after consultation severance is unavoidable, roots must be cut back using a sharp tool to leave the smallest wound.

4.1.5 Backfilling

- Any reinstatement of street works in the United Kingdom must comply with the relevant national legislation (see: **Volume 6 – ‘Legislation and Bibliography’**). In England this relates to the requirements of the code of practice – ‘Specification for the Reinstatement of Openings in Highways’ approved under the New Roads and Street Works Act 1991. Without prejudice to the requirements relating to the specification of materials and the standards of workmanship, backfilling should be carefully carried out to avoid direct damage to roots and excessive compaction of the soil around them.
- The backfill should, where possible, include the placement of an inert granular material mixed with top soil or sharp sand (not builder’s sand) around the roots. This should allow the soil to be compacted for resurfacing without damage to the roots securing a local aerated zone enabling the root to survive in the longer term.
- Backfilling outside the constructed highway limits should be carried out using the excavated soil. This should not be compacted but lightly “tamped” and usually left slightly proud of the surrounding surface to allow natural settlement. Other materials should not be incorporated into the backfill.



NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees

4.1.6 Additional Precautions near Trees

- Movement of heavy mechanical plant (excavators etc.) must not be undertaken within the Prohibited Zone and should be avoided within the Precautionary Zone, except on existing hard surfaces, in order to prevent unnecessary compaction of the soil. This is particularly important on soils with a high proportion of clay. Spoil or material must not be stored within the Prohibited Zone and should be avoided within the Precautionary Zone.
- Where it is absolutely necessary to use mechanical plant within the Precautionary Zone care should be taken to avoid impact damage to the trunk and branches. A tree must not be used as an end-stop for paving slabs or other materials nor for security chaining of mechanical plant. If the trunk or branches of a tree are damaged in any way advice should be sought from the local authority tree officer / arboriculturist.

See TABLE 1 –‘Prevention of Damage to Trees Below Ground’ below for summary details regarding causes and types of damage to trees and the implications of the damage and the necessary precautions to be taken to avoid damage.

Appendix 4: Glossary of Terms

Arboricultural Implications Assessment (AIA) A study, undertaken by an arboriculturist, to identify, evaluate and possibly mitigate the extent of direct and indirect impacts on existing trees that may arise as a result of the implementation of any site layout proposal.

Arboricultural Method Statement (AMS) The methodology for the implementation of any aspect of development that has the potential to result in loss of or damage to a tree.

Construction Exclusion Zone Area based on the RPA (in m²), identified by an arboriculturist, to be protected during development, including demolition and construction work, by the use of barriers and/or ground protection fit for purpose to ensure the successful long-term retention of a tree.

Crown or Apron clearance Height or spread in meters of the lowest significant branches above ground level.

Diameter Trunk diameter measured at 1.5 metres above ground level or at the base of trees where they are twin or multi stemmed.

DBH Diameter at breast height.

Height The height of a tree measure using a clinometer.

Management recommendations General comments on the condition of the tree, group or woodland and recommendations for future work

Pruning The removal of living or dead parts of a plant or tree. Such parts may be soft growth, branches, limbs or sections of the trunk or stem.

Root Protection Area (RPA) Layout design tool indicating the area surrounding a tree that contains sufficient rooting volume to ensure the survival of the tree, shown in plan form in m²

Species The species is based on visual field observation and lists the common name. On in depth surveys the botanical name is also listed.

Spread Measurement of the largest extent of the trees branch growth.

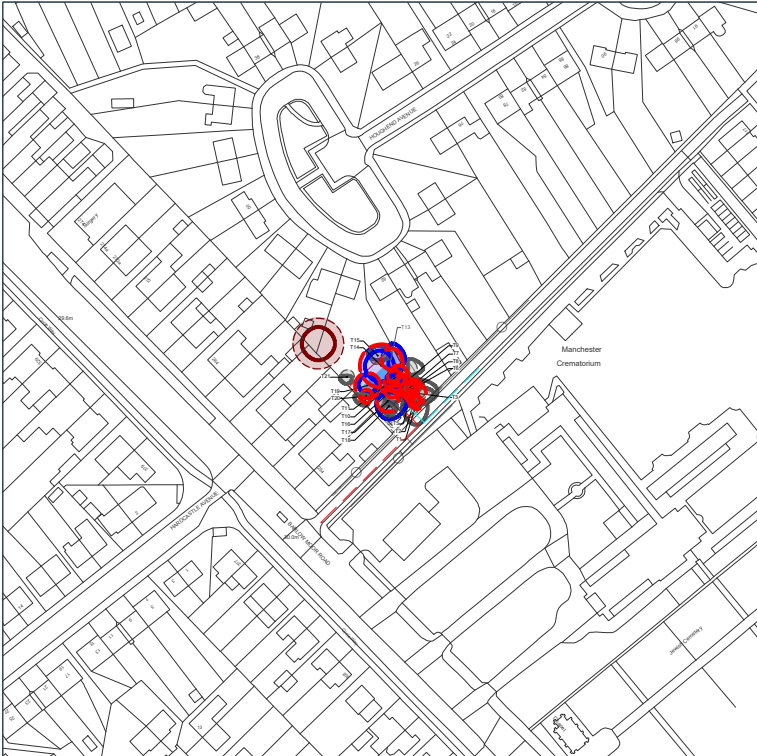
Structural condition Description of any decayed or physical defects.

Tree Constraints Plan (TCP) Plan prepared by an arboriculturist for the purposes of layout design showing the RPA and representing the effect that the mature height and spread of retained trees will have on layouts through shade, dominance, etc.

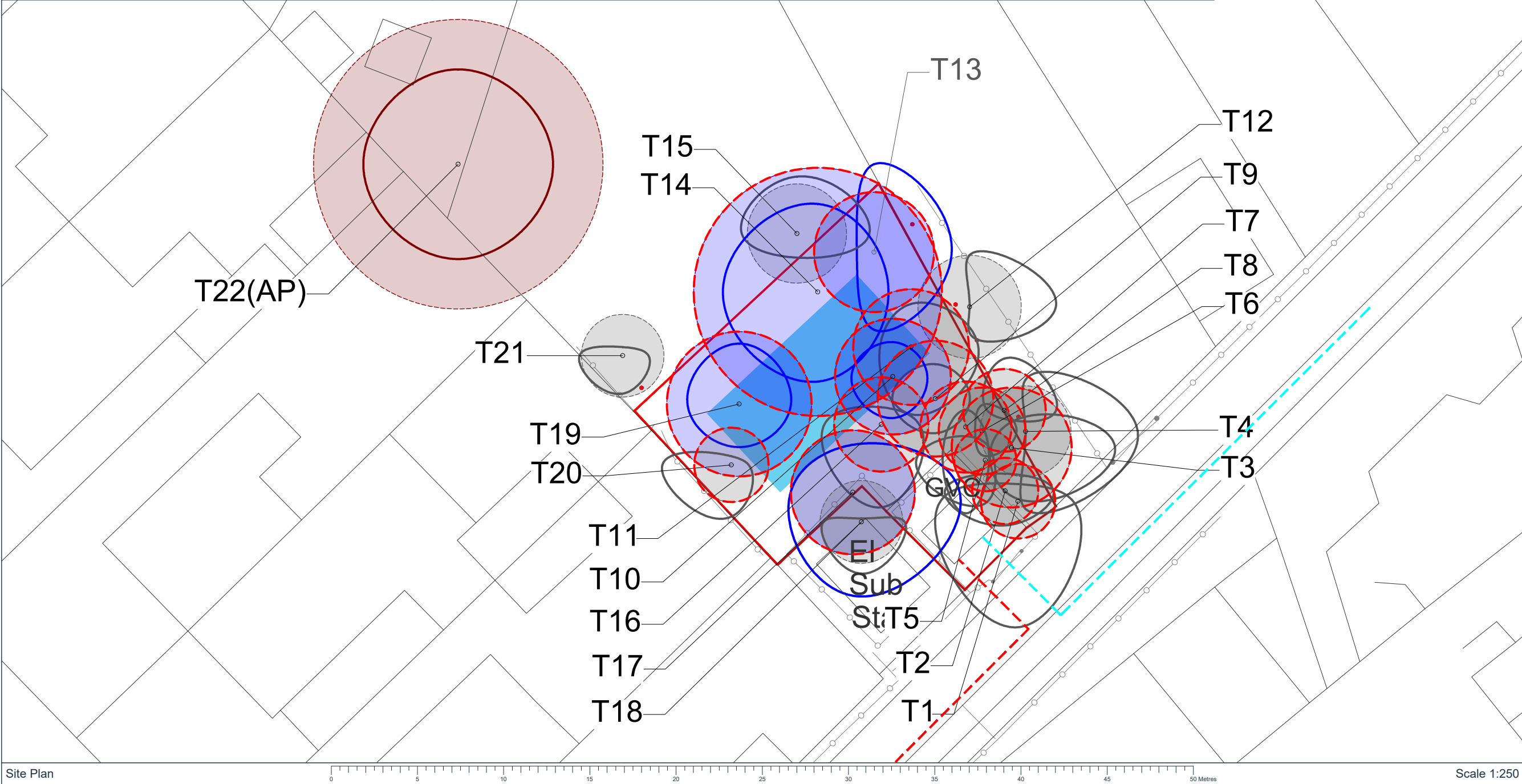
Tree Protection Plan (TPP) Scale drawing prepared by an arboriculturist showing the finalised layout proposals, tree retention and tree and landscape protection measures

detailed within the Arboricultural method statement (AMS), which can be shown graphically.

Tree Root Preservation Service (TRPS) A non-evasive foundation construction system designed to prevent damage to tree roots and adapted for specific site use in conjunction with an arboriculturist



Tree reference number	Species	Height (m)	Dbh	No of stems	Canopy Spread N (m)	Canopy Spread E (m)	Canopy Spread S (m)	Canopy Spread W (m)	Height of crown clearance (m)	Age class	Physiological condition	Structural condition	Preliminary management recommendations	Estimated remaining contribution	Category grading
T1	Cherry	15	180	1	1	3.2	7.3	4.5	2.5	SM	Good	Good	Restricted growth	10+	C1
T2	Cherry	15	160	1	1	2.8	2	3.5	2.5	SM	Good	Good	Restricted growth	10+	C1
T3	Cherry	15	290	2	1.5	6	2.8	1.2	1.5	SM	Good	Fair	Unstable fork at gl	10-	C1
T4	Poplar	15	220	2	3	6.5	4.5	0	2	SM	Good	Fair	Severe lean to east	10-	C1
T5	Cherry	15	150	1	1	0.5	2.5	4	2.5	SM	Fair	Fair	None	10-	C1
T6	Cherry	15	210	2	1.5	2	1.4	0.4	10	SM	Fair	Fair	None	10-	C1
T7	Sycamore	15	220	1	1	1	5	1	3	SM	Good	Good	None	10+	C1
T8	Cherry	15	200	1	3	3	0.5	1	3	SM	Good	Good	None	10+	C1
T9	Cherry	15	280	1	2	2	2	2.5	4	SM	Fair	Fair	None	10+	C1
T10	Sycamore	15	280	1	2	2	2.4	2.4	4	SM	Good	Good	None	10+	B1
T11	Sycamore	15	280	1	2.5	3.9	3.9	1.8	4.5	SM	Fair	Poor	Decay N side of main srem	5-	C1
T12	Sycamore	15	250	2	3	5	1.5	0	2.5	SM	Good	Fair	None	10+	C1
T13	Norway maple	12	290	2	5.1	4.5	4.5	1	1.1	SM	Good	Good	None	10+	B1
T14	Sycamore	15	600	2	5.1	4.1	5.2	5.5	5	M	Good	Good	None	20+	B1
T15	Ash	12	240	3	3.3	4.2	1.4	3.2	1.3	SM	Good	Fair	None	10-	C1
T16	Sycamore	13	230	1	1	2.2	4.8	3.3	5	SM	Good	Good	None	10+	C1
T17	Oak	15	300	1	2.75	6.2	6	3.6	2	SM	Good	Good	None	20+	B1
T18	Ash	15	200	1	0.2	2.5	3	2.2	4	SM	Good	Good	None	10+	C1
T19	Sycamore	15	350	1	3.5	3	2.5	3	8	SM	Good	Good	None	20+	B1
T20	Ash	15	180	1	0.5	1	3	4	2	SM	Good	Good	None	10+	C1
T21	Sycamore	16	200	1	0.5	1.5	2.2	2.5	2.8	SM	Fair	Good	None	10+	C1
T22	Sycamore	18	700	3	5.5	5.5	5.5	5.5	3	M	Poor	Poor	In serious decline/unstable	5-	U



DM

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MACLAREN

Key:

Canopy Spread - Category B Tree

Minimum RPA - Category B Tree

Canopy Spread - Category C Tree

Minimum RPA - Category C Tree

Canopy Spread - Category U Tree

Minimum RPA - Category U Tree

Proposed Governor

Proposed Boundary Fence

Trees to be Removed

LP Main

MP Main

Notes:

Interest:

N/A

Location:

Land north of Barlow Moor Road,
Manchester, M21 7GZ

Coords:

382331, 392782

Scheme Name:

EP - Barlow Moor Clen gas governor

Drawing Name:

Tree Constraints Plan

Drawing No:

22003255_PLN_TCP_2.1_C

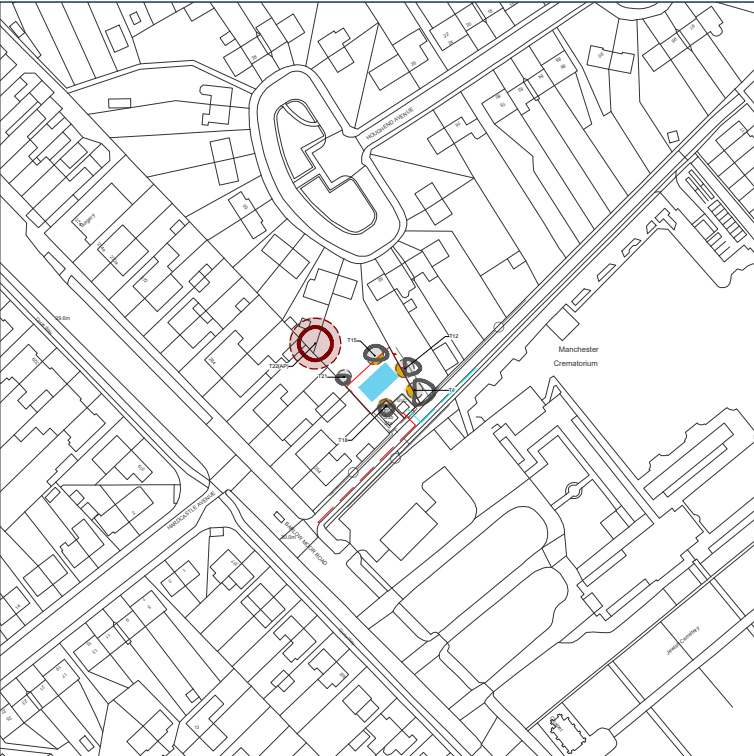
Rev	Date	Description
-	11.08.2022	First Issue
A	01.09.2022	Proposed Governor Amendment
B	03.10.2022	Tree's to be removed
C	05.10.2022	T21 added

Drawn:	SG/MJL	
Approved:	LD	
Sheet No:	1 of 1	
Sheet Size:	A3	

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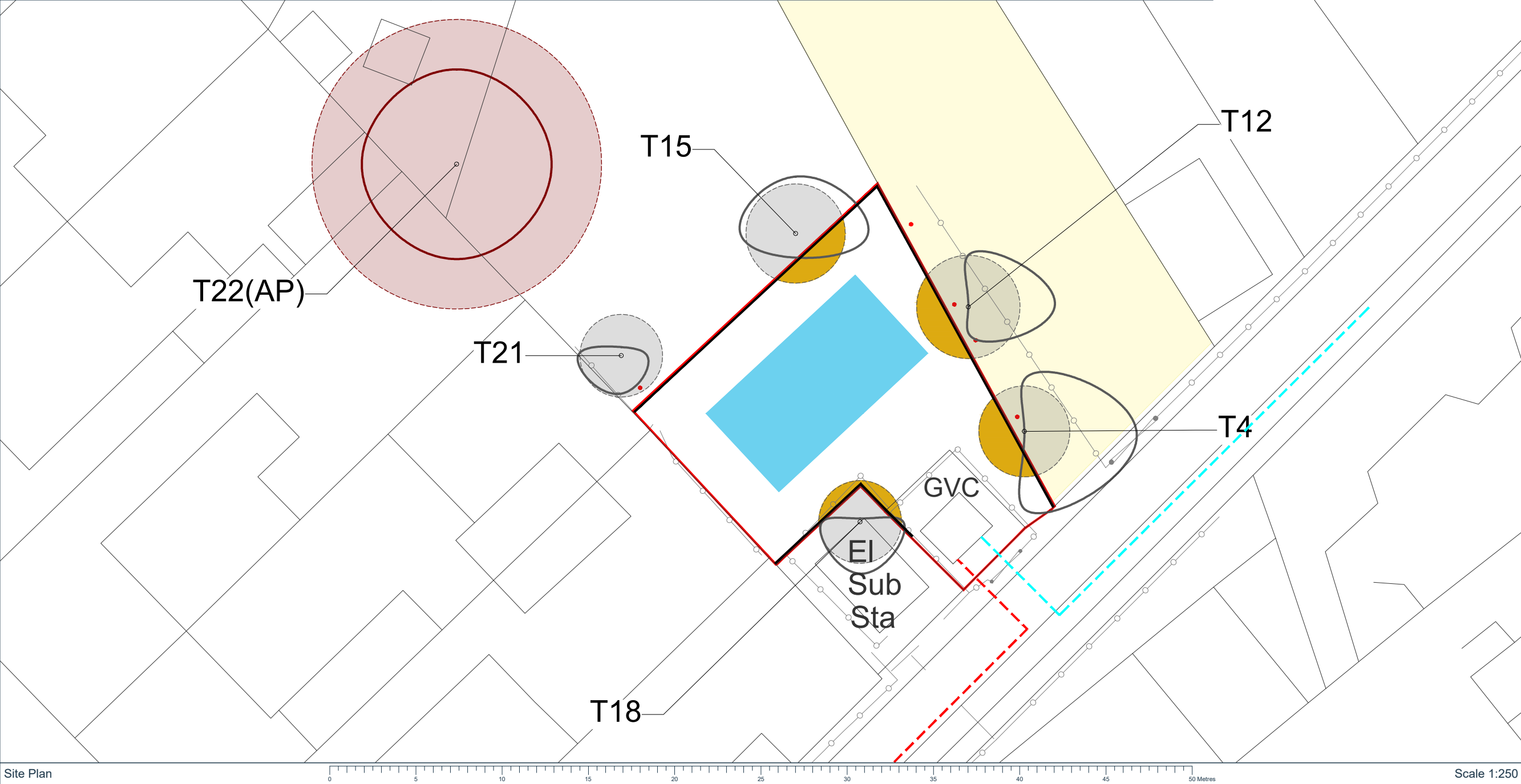
Your Gas Network

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Tree reference number	Species	Height (m)	Dbh	No of stems	Canopy Spread N (m)	Canopy Spread E (m)	Canopy Spread S (m)	Canopy Spread W (m)	Height of crown clearance (m)	Age class	Physiological condition	Structural condition	Preliminary management recommendations	Estimated remaining contribution	Category grading
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T6	Cherry	15	210	2	1.5	2	1.4	0.4	10	SM	Fair	Fair	None	10-	C1
T7	Sycamore	15	220	1	1	1	5	1	3	SM	Good	Good	None	10+	C1
T8	Cherry	15	200	1	3	3	0.5	1	3	SM	Good	Good	None	10+	C1
T9	Cherry	15	280	1	2	2	2	2.5	4	SM	Fair	Fair	None	10+	C1
T10	Sycamore	15	280	1	2	2	2.4	2.4	4	SM	Good	Good	None	10+	B1
T11	Sycamore	15	280	1	2.5	3.9	3.9	1.8	4.5	SM	Fair	Poor	Decay N side of main srem	5-	C1
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T18	Ash	15	200	1	0.2	2.5	3	2.2	4	SM	Good	Good	None	10+	C1
T19	Sycamore	15	350	1	3.5	3	2.5	3	8	SM	Good	Good	None	20+	B1
T20	Ash	15	180	1	0.5	1	3	4	2	SM	Good	Good	None	10+	C1
T21	Sycamore	16	200	1	0.5	1.5	2.2	2.5	2.8	SM	Fair	Good	None	10+	C1
T22	Sycamore	18	700	3	5.5	5.5	5.5	5.5	3	M	Poor	Poor	In serious decline/unstable	5-	U

Location Plan Scale 1:2500



Site Plan Scale 1:250



- Key:
- Canopy Spread - Category C Tree
 - Minimum RPA - Category C Tree
 - Canopy Spread - Category U Tree
 - Minimum RPA - Category U Tree
 - Proposed Governor
 - Proposed Boundary Fence
 - Neighboring Property
 - Post
 - LP Main
 - MP Main
 - Temporary Protective Fence
 - Temporary Ground Protection

Notes:

Interest:

N/A

Location:

Land north of Barlow Moor Road, Manchester, M21 7GZ

Coords: 382331, 392782

Scheme Name:

EP - Barlow Moor Clen gas governor

Drawing Name:

Tree Protection Plan

Drawing No: 22003255_PLN_TPP_6.1_A

Rev	Date	Description
-	03.10.2022	First Issue
A	06.10.2022	T21 Added

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Approved:	LD	
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Sheet Size:	A3	



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