



**DALCOUR
MACLAREN**

Arboricultural Impact Assessment

Client: Cadent Gas Limited

Project: Barlowmoor Clen Gas Governor

Date: November 2022



Project Details

Project Name	Barlowmoor Clen Gas Governor
Scheme Number	22003255
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Prepared by	
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1 Introduction

- 1.1.1 Treetec Consultancy Limited (Treetec) has been instructed by Dalcour Maclaren on behalf of Cadent Gas Limited (hereafter referred to as 'Cadent'), to identify and assess the significant trees that could be influenced by proposals, to install a kiosk and new gas generator.
- 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) outlining trees that will need to be removed which are in direct conflict with the works, and how Cadent 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.

1.1 Scope

- 1.1.1 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.
- 1.1.2 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.
- 1.1.3 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.
- 1.1.4 Where trees are located on third party land or are found to be inaccessible due to ground conditions, all measurements are estimated.

- 1.1.5 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).
- 1.1.6 In general, only trees which are in excess of 150mm dbh are included in the survey.
- 1.1.7 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.
- 1.1.8 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.

1.2 Personnel

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

1.3 Brief site description

- 1.3.1 The site is located to the rear of detached houses on the northeast side of Barlow Moor Road in a residential area of Manchester.
- 1.3.2 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.
- 1.3.3 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.
- 1.3.4 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.

1.4 Protective status of trees

- 1.4.1 Trees may legally be protected by a TPO or by the fact that they are located within a Conservation Area and exceed the threshold of 75mm in diameter at a height of 1.5m or more.
- 1.4.2 There is a potential for unlimited penalties to be attracted for illegally carrying out works on protected trees without formal permission to do so.
- 1.4.3 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.
- 1.4.4 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.
- 1.4.5 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".
- 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 are proposing to install a new kiosk to house a replacement gas converter. The existing converter is to be removed following completion of the works.
- 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 that on completion of the construction work, Cadent plant a minimum of 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, using the Cascade Chart for Tree Quality Assessment BS 5837:2012 (Appendix 1) from which the table template has also been taken.

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 first significant	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
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.

7.1 Trees to be removed due to the development

- 7.1.1 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).
- 7.1.2 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 ref number	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

- 7.1.3 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.
- 7.1.4 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.

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

- 7.2.1 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.
- 7.2.2 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.
- 7.2.3 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.
- 7.2.4 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.
- 7.2.5 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.

7.3 All remaining surveyed trees

- 7.3.1 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.
- 7.3.2 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.

7.4 General level changes within the RPAs

- 7.4.1 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.
- 7.4.2 When using mechanical machinery, it can be placed either outside the RPA or by using temporary ground protection. Alternatively, it can be carried out using hand tools, but whichever 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 likely have a detrimental effect to the tree's health.

- 7.4.3 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.
- 7.4.4 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 or by reference to the AMS.
- 7.4.5 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.

7.5 Changes in drainage or run off within the RPAs

- 7.5.1 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.
- 7.5.2 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.

7.6 Tree protection fences

- 7.6.1 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 trees adjacent to the development area, which are to be retained. The positioning of the fencing is shown on the enclosed Tree Protection Plan.
- 7.6.2 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 an 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).

- 7.6.3 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.
- 7.6.4 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 is adopted, following further consultation with the project Arboriculturist.
- 7.6.5 The type and specification of protective fencing is determined by the site suitability. Recommendations for this project can be found in Appendix 2.

7.7 Tree surgery work

- 7.7.1 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.
- 7.7.2 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.
- 7.7.3 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.
- 7.7.4 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/contractors.htm. Their Register of Contractors is available free from The Malthouse, Stroud Green, Standish, Stonehouse, Gloucestershire GL10 3DL.

7.8 Utilities

- 7.8.1 The exact location of any associated proposed and existing utilities was not available at the time of this survey; however, it is unlikely there will be a requirement for any mitigation for these unless they are routed through the RPAs of retained trees. It is advised where they are required, where possible any new utilities are located beyond the RPAs.

- 7.8.2 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 their health. Utilities should only be installed where approved mitigation is adopted which must be addressed within the AMS.
- 7.8.3 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 Summary of constraints to be addressed by the AMS

- 8.1.1 Further to this survey it is important that an AMS is prepared which also may be required as a condition of planning permission where applicable. Within this document it will be necessary to confirm construction proposals and detail mitigating construction methodology, where it is required to reduce any adverse effects to the health of trees within or adjacent to the working area(s).
- 8.1.2 The following constraints will need to be addressed in detail:
- Details of cutting back of tree canopies, low branches and confirmation of tree removal where there is direct conflict with the working areas;
 - Detailed specification for mitigating construction techniques where appropriate such as CCS.
 - Confirmation of installation methods and specification of temporary ground protection in areas identified where RPAs of trees to be retained are compromised.
 - Confirmation of access routes and specification of suitable ground protection within RPAs;
 - Confirmation of location of site huts and types of machinery to be used;
 - Final positioning of temporary protective fencing and ground protection;
 - Proposed level changes and earthworks if applicable; and
 - Details of final landscape and compensatory planting works.

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 2: 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 Amendments made as necessary	To be arranged , Dalcour McLaren with the project Arboriculturist
Post approval and pre-development	Preparation and submission of an AMS subject to panning conditions. Pre commencement meeting with all relevant parties. Methodology and location of protective fences agreed	To be arranged by the site operator/project manager, Dalcour McLaren with the project Arboriculturist
Pre-development	Preliminary tree work specification drawn up, approved and sent for tender.	As above with the project Arboriculturist
Pre-development	Pre-construction tree work implemented and supervised	As above
Pre-development	Protective fencing erected	As above
During development	Carry out supervisory visits as agreed and report findings and recommendations	As above

Timescale	Task	By whom / responsibility
Post development	Inspect retained trees and carry out remedial tree work as necessary Remove protective fencing and carryout soft landscaping where required	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 that 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	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	See Table 2
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	Trees with material conservation or other cultural value	See Table 2
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	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 landscape benefits	Trees with no material conservation or other cultural value	See Table 2

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

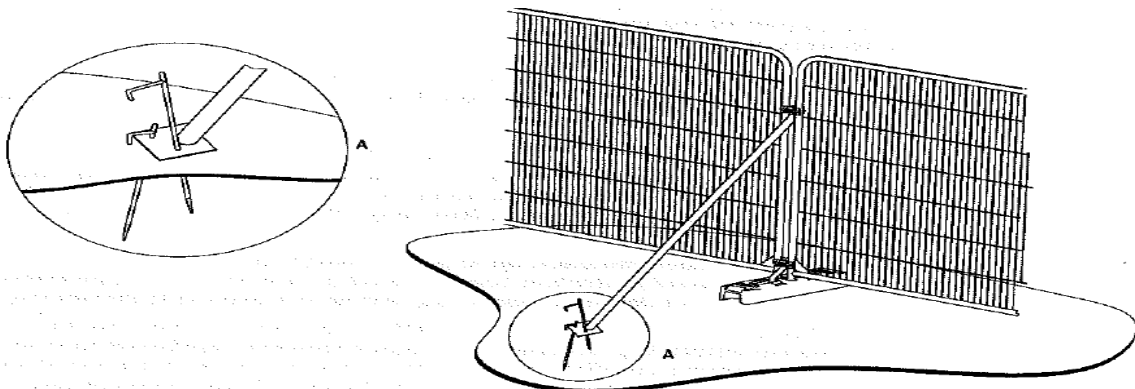
^{A)} Colours verified against <http://safecolours.rigdenage.com/palettfiles.html#files> [viewed 2012-03-26].

Appendix 2

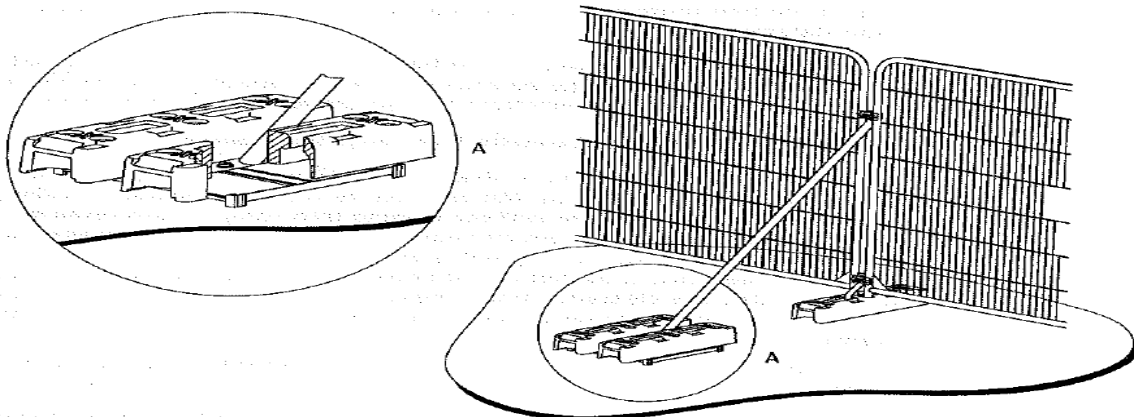
RPA Protective Barrier Fence Detail

BS5837 recommended protective barrier

Fence A-Herras type fence

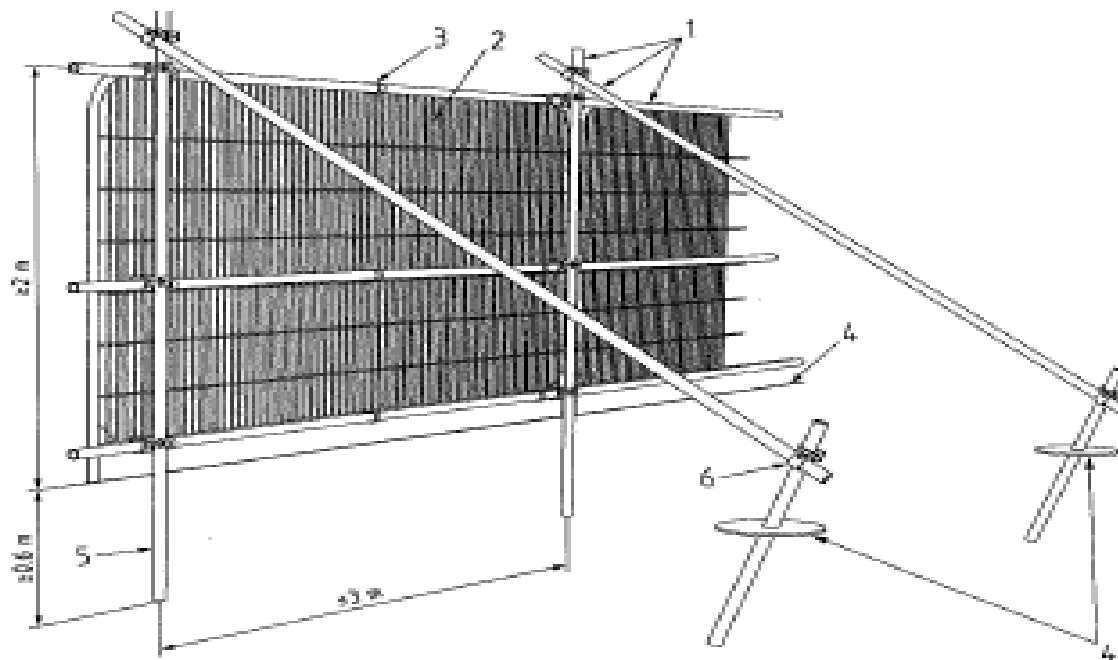


a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

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

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.



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