Arboricultural Impact Assessment and Arboricultural Method Statement for Proposed Mineral extraction at Hamble

CEMEX UK Materials Ltd

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1.0 INTRODUCTION

A site visit and tree inspection survey were carried out on the 11th June 2020, within and adjacent to the planning application redline boundary, for the proposed sand and gravel quarry at Hamble. The survey was carried out by Alex Finn (TechArborA), Senior Arboricultural Manager at Cemex UK Operations Limited.

The purpose of the survey was to inspect the existing tree resource within and adjacent to the site redline boundary, to assess the potential impact of the proposed quarry and infrastructure on the existing trees, and to identify where necessary appropriate mitigation measures are required and where trees might have to be removed.

2.0 SCOPE

The survey identifies and reports 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.

British Standard BS5837:2012 “Trees in design, demolition and construction, Recommendations” has been used as the basis for the assessment. It is intended the information contained in this survey will be used to ensure that the decisions made in respect of the future development proposals consider the tree resource. 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.

Where trees are located on third party land or are found to be inaccessible due to ground conditions all measurements are estimated.

Guidance as to the stand-off distances required to prevent damage to retained trees during the extraction phases, have been calculated and are shown as dashed circles on the Tree Constraints Plan (TCP). These areas are referred to as the Root Protection Areas (RPAs).

This document will be consulted to prior to any site excavation, soil moving, and infrastructure works commencing. The main priority being the protection of those trees identified within the survey, which are of amenity value, are in third party ownership, or where they are found to be designated with a Tree Preservation Order (TPO) or within a Conservation Area (CA).

In general, only individuals and groups of trees which are in excess of 150mm dbh are included in the survey.

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.

Where it has been found 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 these trees should therefore only be used for reference and general guidance only. If it is thought that 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.

3.0 METHODOLOGY

The trees included 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).

Trees that have been recorded have been given a reference number which can be found within the Tree Survey (see Section 6) and on the supplied drawings.

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.

All the colour categories and reference numbers have been marked onto the accompanying Tree Constraints Plan and the Tree Protection Plan.

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.

Stem diameters have been generally measured at 1.5m above ground.

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.

Where trees are surveyed as woodlands or groups rather than individuals, in order to calculate their RPAs, the largest recorded DBH on trees located on the outer edges has been used. All other dimensions recorded are averaged out.

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.

Where 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 mark with the letters “AP” (approximate position).

4.0 PLANS

4.1 Tree Constraints Plans

To accompany this survey, a Tree Constraints Plan (TCP) has been produced. All trees included in the survey have been illustrated and colour coded by reference to the Cascade Chart for Tree Quality Assessment, as shown in Appendix A.

Each colour which represents the assigned tree category has been marked onto the plan. This enables the reader to instantly see the trees and areas of highest or lowest merit and where they are located.

Where individual trees are not represented on the original topographical base plan, they have been illustrated in their approximate positions and marked “AP”.

RPAs are calculated by using the tree’s trunk diameter measured at 1.5m above ground level. The measurements are multiplied to 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.

There is also scope to carry out some construction works within the RPA using proven measures; however, these will be avoided if possible. Where these methods are required, they will be recommended within an AMS, which will be required once the development design has been finalised.

Where tree canopies extend further than the RPA, care will be needed not to damage these during site work. Some pruning back may be accommodated where this is an issue. All work, however, will only be carried out after further assessment and advice from the project Arboriculturist in accordance with BS 3998 “Recommendations for tree work” or latest research.

4.2 Tree Protection Plans

A Tree Protection Plan (TPP) has been included with this report which is represented on a separate plan to the TCP. This plan will show the precise location and specification of the erection of tree protective fences and any other relevant physical protection measures, including ground protection to protect the RPA (root protection area).

Specifications in respect of recommended tree protection fencing can be found in Appendix B at the end of the survey.

4.3 Protective Status of Trees and Hedgerows

Trees may be legally protected by a Tree Preservation Order (TPO) or located within a Conservation Area (CA).

There is a potential for large penalties to be attracted for illegally carrying out works on protected trees without formal permission to do so.

Information supplied by reference to Eastleigh Borough Council's (EBC) web page on 31/11/2021, established that there are not any TPOs, or a Conservation Area located within the red line site boundaries. However, it is noted that Eastleigh propose to cover the site with a TPO.

It is advised that prior to construction however, that if any proposed tree works is required, that further searches are made in case amendments have been made.

Where it is intended to fell in excess of 5 cubic metres of timber in any calendar quarter, it will be necessary to obtain a Felling Licence from the Forestry Commission. There are some exemptions to this regarding dead, dying and dangerous trees and this will only be necessary prior to planning approval, or where planning consent is given but there is a change in the proposals, or the trees were not included in the original planning application.

Under the 1997 Hedgerow regulations it is against the law to remove most countryside hedgerows without permission (pre planning consent). To obtain permission to remove a hedgerow, an application to the local planning authority must be made. If the Council decides to prohibit removal of an important hedgerow, it must be advised within 6 weeks of the application. If a hedgerow is removed without permission (whether it is important or not) an unlimited fine may be imposed. It may also be necessary to replace the hedgerow. However, a hedge must meet certain criteria set out if it is considered to be important.

5.0 OBSERVATIONS

The site, which is a former airfield, is broadly rectangular in shape with a tree lined main line railway forming the northern boundary. The residential areas of Satchell Lane and Astral Gardens are found on the eastern and southern boundaries, with Hamble Lane and a wooded margin forming the western boundary.

The proposed mineral extraction area currently comprises of rough grassland and scrub, with a mosaic of field boundary trees, ranging in age from young through to mature trees. No over mature or veteran trees are apparent within the redline boundary.

Mature trees are most prominent on the northern, eastern, and part of the western boundaries which provide important amenity screening to the site.

The predominate species is English oak, with common ash, common alder, silver birch sycamore and willow, with an under story of holly, goat willow, field maple and hawthorn (refer to Table 1 below).

There are many unclassified paths within the site, as it tends to be used by the local community for dog walking and recreational use.

6.0 PROPOSED WORK

It is proposed to extract 1.7 million tonnes of sand and gravel over 6-7 years followed by importation of inert materials, for restoration taking up to 13 years overall.

Access to the site is to be created from Hamble Lane on the western boundary.

7.0 TREE SURVEY

All the site information used for the assessment and grading of individual trees, groups, woodlands, and hedgerows 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

CEMEX UK Operations Limited															
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	English oak	5	270	2	4	4	4	4	2	Y	Good	Good	None	10+	C1
T2	English oak	10	565	2	7	7	7	7	0.3	M	Good	Good	None	20+	A1
T3	English oak	14	1050	1	6.5	6.5	6.5	6.5	1	M	Good	Good	None	20+	A1
T4	English oak	8	425	2	3	3	3	3	2	SM	Good	Good	None	20+	B1
T5	Sycamore	16	520	2	3	6	7	7	1.5	M	Good	Good	None	20+	C1
T6	English oak	15	1000	1	6	6	5	5	4	M	Good	Fair	In decline	10-	C1
T7	Sycamore	20	670	5	5	7	3	7	2	M	Good	Good	None	20+	B1
T8	English oak	20	1100	1	7.5	8	8	8	2	M	Good	Fair	None	20+	B1
T9	Holly	14	400	1	3	3	4	6	0.01	M	Good	Good	None	20+	B1

CEMEX UK Operations Limited															
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
T10	Sycamore	19	335	3	5	6	2	6	3	M	Good	Fair	None	10+	C1
T11	English oak	19	900	1	9	12	7	7	4	M	Good	Good	None	20+	B1
T12	English oak	15	700	1	3	8	7	7	2.5	M	Good	Fair	None	10-	C1
T13	English oak	18	700	1	7	8	7	4	4	M	Good	Good	None	20+	B1
T14	English oak	18	700	1	4	8	8	10	4	M	Good	Good	None	20+	B1
T15	English oak	18	700	1	11	10	6	7	4	M	Good	Fair	None	10-	C1
T16	English oak	17	350	1	3	8	4	2	4	SM	Fair	Fair	None	10+	C1
T17	English oak	20	1050	1	3	12	5	8	3	M	Fair	Poor	None	10-	C1
T18	English oak	20	700	1	3	12	5	10	3	M	Good	Good	None	20+	B1
T19	Ash	20	700	1	9	12	4	10	3	M	Fair	Fair	None	10-	C1

CEMEX UK Operations Limited															
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
T20	English oak	17	350	1	6	3	8	10	4	M	Fair	Good	None	10+	C1
T21	English oak	20	900	1	8	10	8	8	3	M	Fair	Good	None	10+	C1
G1	Ash	8	150	1	2	2	2	2	2	Y	Good	Good	None	10+	C2
G2	Goat willow	8	300	4+	3	3	3	3	0.01	Y	Good	Good	None	10+	C2
G3	English oak, Silver birch, Willow	12	250	1	3	3	3	3	0.3	SM	Good	Good	None	10+	C2
G4	Crab apple, Willow, Field maple, English oak	12	250	1+	3	3	3	3	0.01	Y/SM	Good	Good	None	10+	C2
G5	Ash, Common alder, English oak	14	350	1	4	4	4	4	2	SM	Good	Good	None	20+	B2
G6	Poplar, English oak, Ash	16	500	4	7	7	7	7	1	M	Good	Good	None	20+	B2
G7	English oak, Ash, Hawthorn	16	450	1	6	6	6	6	0.1	SM	Good	Good	None	20+	B2
G8	English oak, Silver birch, Ash, Sycamore	16	450	1	7	7	7	7	1	M	Good	Good	None	20+	B2
G9	Goat willow	10	300	4+	3	3	3	3	1	SM	Good	Good	None	10+	C2
G7	English oak, Ash, Hawthorn	16	450	1	6	6	6	6	0.1	SM	Good	Good	None	20+	B2

CEMEX UK Operations Limited															
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
G8	English oak, Silver birch, Ash, Sycamore	16	450	1	7	7	7	7	1	M	Good	Good	None	20+	B2
G9	Goat willow	10	300	4+	3	3	3	3	1	SM	Good	Good	None	10+	C2

8.0 ARBORICULTURAL IMPACT ASSESSMENT

After identifying the position of the trees and calculating the RPAs, the proposed footprint of the extraction area and associated infrastructure has been overlaid onto the TCP, to enable possible areas of conflict to be identified. Trees which could potentially be impacted upon by the proposed development have been identified using this approach.

Most of the trees that are subject of this survey are semi mature or mature, and it can generally be considered that the older the tree, the more likely they will be susceptible to disturbance and changes to their environment. Damage can be commonly caused by:

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

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, to deterioration and ultimate death, depending upon the severity of the damage and the ability of the roots to recover and regenerate.

It is likely that the health of a small number of trees which are to be retained are at risk of being affected by the development proposals due to the following activities:

- Machinery and access roads.
- Level changes, earthworks, and creation of bunds.
- Canopies that extend into the site; and
- Plant site, installation route of services and conveyors where applicable.

It is observed that the tree resource within the influence of the proposed extraction areas and associated construction requirements, such as the haul road, plant site and bunds, are confined to the boundaries of the site, except for a group of low category internal trees in the southeastern corner which will have to be removed (refer to table 2 below).

It is proposed to retain the outer boundary trees as they are an important asset due to the amenity value they provide, in the form of screening and landscape values to the site.

The exception to this is where access to the site is required to be created. The ideal location for this, which has been carefully considered for suitability and of least impact, is to be located on the western boundary with Hamble Lane. Please see the Regulation 25 Transport Assessment update for further information on the access location, however the location has been accepted by County Highways as the best location. To enable access in this location, it will be a requirement to remove 3 individual trees and a small part of a group of trees which are detailed in table 2 below.

As it is recognised there is a threat to the health of the remaining trees from the proposed mineral extraction, due to the risk of soil compaction and the cutting or severing of roots, branches or stems from heavy machinery, measures will be taken to ensure there is an adequate unexcavated stand-off area (root protection area), and there is temporary protection provided for the duration of the extraction and restoration period.

8.1 Summary of trees to be removed due to direct conflict with the quarry operations

From a total survey of 21 individual trees and 9 groups of trees, it will only be necessary to remove 3 individual trees, 1 small group of trees and a small part of another. These trees and groups are identified in Table 2 below:

Table 2

Trees to be removed			
Tree ref number	**Species**	**Category**	**Reason**
T5	Sycamore	C1	Access road
T6	English oak	C1	Access road
T7	Sycamore	B1	Access road
G4	Ash	C2	Extraction area
G8 (part)	English oak, silver birch, ash, sycamore	B2	Access road and pavement

In summary this accounts for 2 individual category C trees (T5 & T6), 1 category B individual tree (T7),1 category C group of trees (G4) and a small part of category B trees, G8.

It is not proposed to remove any other trees due to the extraction proposals. It is not considered that the removal of these C category trees and B category trees, will have any significant impact on the amenity of the area due to the contribution of the remaining trees, which are found along the boundaries of the site.

8.2 Trees to be retained but are at risk of being influenced by the quarry operations

Where it is found that trees are at risk from influence of the quarry operations, but can be retained, they will be adequately protected during the construction and operational extraction phases of the quarry and initial restoration period.

This will consist of providing tree protection fencing (refer to section 9.5.1) which will be maintained intact to prevent accidental encroachment into the RPAs. Details of positioning of the protective fencing can be found on the TCPs and specification detailed in Appendix B.

It is observed that further to tree protection fencing being erected that during the construction phase of the quarry, a very small segment of the RPA of English oak tree T8 will be slightly compromised (refer to blue and green sections on the TPP) during the construction of the access road into the site. Considerable amendments to the original proposed orientation of the bell mouth have been made to reduce any impact to an accepted minimum. It will therefore be necessary to ensure that acceptable construction mitigation is carried out to remove any risk of long-term damage to this tree.

It is unlikely that any other protection, such as temporary ground protection will be needed, but if for any reason it is found necessary to work within the unprotected RPAs of trees it will be necessary to consult further with the project Arboriculturist and notify the MPA in writing.

8.3 Remaining trees on the site adjacent to proposed quarry operations

Due to consultation and careful planning during the development, and at the design stage, it will not be necessary to remove any further trees across the site as recommended RPA stand-offs have been calculated and allowed for to prevent damage. If, however for any unlikely reason it becomes apparent further trees need to be removed, it will be necessary to consult with the project Arboriculturist and notify the MPA in writing.

9.0 ARBORICULTURAL METHOD STATEMENT

The successful retention of trees depends upon the quality of the tree protection and the administrative and site supervision procedures, to ensure that protective measures are adopted and remain in place 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:

9.1 Construction of access bell mouth and pavement

Following the removal of trees T5-T7 (refer to 9.4 below) to construct the new access bell mouth and pavement, it will be necessary to ensure that the disturbance to two small segments of the RPA of tree T8 is kept to a minimum.

Due to the differences in construction required for the road and pavement this can be divided into three subsections below:

9.1.1 Road construction

It is observed it will be necessary to carry out some limited excavation work to allow for the construction of the subbase of the new access road within a small segment of the RPA of tree T8 (refer to blue area on the TPP plan part 3). In order to integrate the road surfaces, it is understood that the maximum excavation depth of the bell mouth is to be 530mm below the current pavement level and 450mm below ground level towards the east into the site.

It is also observed that the resulting stump of felled tree T7, which is located on the outer edge of the RPA of retained tree T8 within the bell mouth, will need to be removed.

Prior to any road and pavement construction proposed outside of the existing pavement and road surface and further to tree works being completed, the RPA of T8 will be protected from damage by temporary protective fencing. This must be moved to the outside of the construction areas (refer to TPP plan part 3) after a slit trench referenced A-B (see below) has been completed. It will be initially practical to use Heras fencing in this area.

To minimise the disturbance to the RPA of T8 it will be a requirement to hand dig the silt trench using hand tools or by compressed air along the inner edge of the required kerb line. This is further to the careful removal of the existing hard surfaces by use of machinery working from the adjacent retained hard surfaces. The width of this trench must only be wide enough to be able to carefully expose any roots from tree T8 to enable them to be pruned.

Roots which are found to extend towards the bell mouth will need to be carefully cut back to a side root using a hand saw or secateurs to the outer edge of the construction area (line A-B). Roots occurring in clumps of 25mm diameter and over will be cut following further consultation with the project Arboriculturist. The resulting retained exposed roots must

immediately be wrapped or covered with damp hessian to prevent desiccation which must remain in place and remain damp to protect them from drying out and from rapid temperature changes, until back filling is undertaken.

The tree stump resulting from the felling of tree T7 must only be removed after the A-B slit trench has been completed. Removal will be by use of a stump grinder and only to the maximum depth required for the road foundations. This will be carried out from the southwest side of the A-B slit trench and will not extend into the RPA of T8 beyond the A-B slip trench to the northeast.

Only when the A-B slit trench is in place, heavy machinery such as a 360-degree excavator can be used to obtain the necessary levels mentioned above, to allow for the road construction. This machinery must work from outside the RPA of T8 and will not be used to the northeast of the A-B slit trench.

9.1.2 New permanent footpath construction

Where it is required to construct areas of permanent pedestrian paving within the RPA of tree T8 (refer to green segment on the TPP) the paving will be constructed using a sand base with geotextile membrane placed over smoothed and hand-tampered soil.

Where it is a requirement to carry out some localised excavation work to implement this, the work will be carried out by hand digging and this will be confined within the top 150mm of the soil surface. If deeper excavation is necessary, this may be acceptable in some instances, but if this is required or roots are found with a diameter of 25mm or over, then further advice must be obtained from the project Arboriculturist.

Where roots are found under a diameter of 25mm, and these are required to be cut back, then this will extend back to the nearest side root and be undertaken using a sharp tool such as secateurs or a sharp saw to leave the smallest wound possible. Roots which are to be retained and are temporarily exposed will be protected from direct sunlight, drying out and extremes of temperature by appropriate covering such as damp hessian.

The use of mechanical machinery in the RPAs will be avoided unless working from suitable ground protection or from outside the RPA, as approved and only used under the guidance of the project Arboriculturist.

Permeable final surface paving materials will be accommodated within the RPA of T8 (green segment on the TPP) (refer further to section A.1,5 BS583 Trees in relation to design, demolition, and construction-Recommendations) .

9.1.3 Existing Footpath within the RPA of tree T8

As it is proposed to raise the section of retained footpath and install a new guard rail within the RPA of tree T8, it will be necessary to ensure that any damage to the root system is reduced to a minimum. Therefore, the following constraints will be adopted:

Raising of existing footpath

Where it is proposed to raise the level of the existing footpath it will be necessary to ensure this is contained within the footpath footprint using it as permanent ground protection. In no circumstances will levels be raised above current levels around the stem of any trees.

Footpath guard rail

Where it is proposed to install a pedestrian guard rail along the existing pavement within the RPA of tree T8, in order to prepare the post holes, only the breaking through the existing path surface can be done by machine confined to the pavement or road, otherwise the methodology described for hand digging in section 9.1.2 to the required depth will need to be adopted. Post holes will be kept to a minimum size and if major roots are found (roots over a diameter of 25mm), then an alternative location must be found.

If uncured concrete is to be used ,then an impermeable membrane must be used to prevent leachate from entering the surrounding soil.

Due to the sensitivity of these works all the construction work located within the RPA segment of tree T8 must be over seen by the project Arboriculturist.

9.2 General level changes within RPAs

Other than the above requirements, it is not proposed to carry out any major increase/decrease in level changes in the remaining RPAs, but where necessary small changes, up to 150mm below ground level may be tolerated where approved. However, generally changes in levels in the RPAs will be avoided where possible.

When using mechanical machinery, it will be placed either outside the RPA or by using temporary approved ground protection. Alternatively, it can be carried out by hand, but which ever method is used it is important that the existing surface or the finished surface is not heavily compacted. In no circumstances will 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.

Where it is proposed to cut the soil surface in excess of 150mm, the depth of the proposed cutting will much depend on the tree's rooting depth, and each tree will be assessed individually. This may involve carrying out and exploratory hand dig to ascertain the rooting depths. Where surface roods are found, or roots found within the profile to be cut, the project Arboriculturist must be consulted.

It may be the case where 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 landscape scheme, but these must be located outside the RPAs. Any such changes must be discussed with the MPA and approved accordingly.

9.3 Changes in drainage or water run off within the RPA

Where diversion of water away from trees occurs, for example because of changes in drainage run off, consideration will be given to installing irrigation systems to replace natural surface water sources.

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 will be allowed to drain away before it reaches the tree(s). If either of these are found to be a possibility it will be necessary to consult further with the project Arboriculturist for advice.

9.4 Tree Surgery Work

Before work commences it will be necessary for the project Arboriculturist to produce a schedule, which details and confirms the tree work that will be required, to implement the proposed works. Further reference to the TPP, other than the trees identified to be removed in Table 2 above, it is likely that only a small amount of additional tree work will be required.

This is likely to affect trees either side of the entrance (T8-T15) where some minor cutting back may be a requirement for sight lines, but this will be dependent on the marking out of the site prior to works commencing and will need to be confirmed at that time.

All work will 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.

9.5 Temporary Tree Protection Fences and Ground Protection

9.5.1 Temporary Tree Protection Fences

Before any materials or machinery are brought onto site and before any work commences, other than approved tree work, protective fencing will be erected around the trees adjacent to the development area that are to be retained.

All protective fencing will be clearly marked with signage to inform that it is a “Tree Protection Area Keep Out”, together with a contact number to report any issues relating to the tree protection area(s).

Once erected, protective fences and any ground protection must be regarded as sacrosanct and must not be removed or altered without the prior approval of the project Arboriculturist, or where appropriate the MPA. Exceptions being where there is proposed development within these areas, and special approved construction and working methods have been approved and are adopted.

The protective fence must remain intact for the duration of the works, and should any breaches occur during this period, then work will be stopped until repairs can be completed.

Once extraction and restoration has been completed, it will be necessary to remove the protective fencing. Once removed heavy machinery must not be used within the RPAs unless suitable ground protection is adopted following further consultation with the project Arboriculturist.

The type and specification of protective fences is determined by the site suitability. Recommendations for this site can be found in Appendix B.

9.5.2 Temporary Ground Protection

Temporary ground protection will be adopted where it is necessary to provide a working platform within the RPAs in unprotected areas prior to the erection of protective fencing, such as preparation of the access in particular the small RPA segment of tree T8 within the access bell mouth (blue area on TPP drawing part 3 Rev B).

The method and placement of temporary ground protection must be carefully considered and approved to suit the loading of the proposed machinery. For temporary protection against heavy traffic, the use of a breathable geotextile membrane overlaid with proprietary systems pre-cast reinforced concrete slabs or ½ inch steel plate, will be utilised. Where there is only light traffic, other forms of ground protection may be used, subject to the approval of the project Arboriculturist. This will be in the form of scaffold boards laid on a wood chip layer on top of a geotextile membrane.

9.6 Trees that fall within the influence of the internal footpath

It is proposed to provide a footpath around part of the western boundary, eastern and northern boundaries. As the footpath is not be hard surfaced in anyway, but retained with the existing compacted grass surface, it will not be a requirement to offer any mitigation where it is found to be in the RPAs of trees. However, there may be some removal of minor understory but where this is required, all work will be carried out on foot and any brash left in habitat piles. It is not envisaged that it will be a requirement to remove any established trees other than saplings for the footpath route.

9.7 Hedgerows which have the potential to be influenced by the proposed quarry operations

There are no sections of hedgerows to be removed within the redline area. Where hedgerows are retained, a minimum of a 3m standoff will be provided which will be maintained for the duration of the development. It is not practical or necessary to provide protective fencing for any hedges although the boundaries will be made secure as part of the quarry operations and where these fences are installed, they will double up for hedgerow protection.

9.8 Utilities

It is not proposed to locate any utilities with any of the RPAs of the trees which are retained identified in the survey. Where utilities have been proposed they have been routed to avoid any conflict with the RPAs of trees. (refer to TPP).

If for any reason it becomes unavoidable, and utilities must be sited within RPAs, it will be necessary to consider the effects that the installation may have on their health. Utilities will only be installed where approved mitigation is be adopted by further consultation and approval with the project Arboriculturist and the MPA.

In these circumstances it will be necessary to minimise root damage using broken trench or directional drilling (trenchless) techniques. These will be located at a minimum depth of 1.5m below ground level, and all receptor pits, where direct drilling is used, will be placed outside RPAs (refer to extract of Volume 4 National Joint Utilities Group Guidelines Appendix C).

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 will be carefully dug using hand tools, 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.

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 will be kept to a minimum. Where these roots must be cut, then this will 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.

Directly following excavation all retained exposed roots will be covered and wrapped in damp hessian which will not be allowed to dry out until back filling is carried out. Where back filling is carried out soils will only be lightly compacted and will be backfilled in the order the soil types were excavated.

Where Inspection chambers and manholes are to be installed, these will be located outside the RPAs of the retained trees to avoid unnecessary damage to tree roots. However, if it is unavoidable or 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 will be adopted.

It is a requirement, if for any reason RPAs are impacted upon by utilities due to unavoidable changes, that prior to any development at the pre-commencement meeting, the final route of utility runs, and mitigating installation techniques are confirmed and approved by the project Arboriculturist and the MPA.

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 will be left in situ.

10.0 SCHEDULING OF WORK

It is advised that continued consultation with the mineral operator, architects, planners and civil engineers is carried out during the development of the AMS.

It is essential that pre-commencement meeting is held on site before any of proposed extraction or site preparation works begins. This will be attended by the site manager/agent, the project Arboriculturist and if required a Council representative.

All tree protection measures detailed in this report will be fully discussed so that all aspects of their implementation and sequencing are understood by all the parties. Any clarification or modifications will be recorded and circulated to all parties in writing. It may be appropriate for the tree surgery contractor to also attend this meeting.

It will be necessary thereafter to monitor and assess the site throughout the extraction and restoration period. Provided the guidelines are followed then it is considered that trees of value around this site should be able to be retained with minimal damage.

Table 3

Proposed scheduling of works to protect retained trees		
Timescale	**Task**	**By whom/responsibility**
Post Planning Approval	Submission of and AMS (if required) and final TPP as a condition agreed and approved by the MPA	To be arranged by the mineral operator with the project Arboriculturist
Predevelopment	Pre commencement meeting with all relevant parties	To be arranged and attended by the mineral operator the MPA and the project Arboriculturist
	Preliminary tree work specification drawn up approved and sent for tender.	To be arranged and attended by the project Arboriculturist and site manager
	Pre-construction tree work including tree removal implemented and supervised	As above
	Erection of protective barriers and ground protection as agreed and approved	As above
During the development	Carry out supervisory visits at intervals agreed at the pre commencement meeting and report findings and recommendations.	As above
Post development	Phased removal of protective barriers (where needed) with restoration landscaping	As above

Proposed scheduling of works to protect retained trees		
Timescale	**Task**	**By whom/responsibility**
	Inspect retained trees and carry out remedial tree work as necessary	To be arranged by the mineral operator and the project Arboriculturist

10.1 Arboricultural supervision

It is recognised that it will be necessary carryout arboricultural supervision throughout the initial construction/development period of the quarry, after which protection fences will be maintained after weekly inspections by the appointed quarry manager (QM).

During the construction and development period the following inspection timetable (Table 4) will be implemented.

Table 4

Timetable for Arboricultural Supervision		
Timescale	**Task**	**By whom/responsibility**
Predevelopment	1) Initial tree surgery works, tree felling and stump removal. 2) Initial positioning and erection of tree protection fencing	Project Arboriculturist
During development/construction period	Construction of the access bell mouth within the RPA of tree T8	Project Arboriculturist
	Weekly tree protection fence inspections throughout the construction period	As above
Post construction during operational and aftercare periods	Weekly tree protection fence inspections in areas of activity	Quarry manager

11.0 SUMMARY AND CONCLUSIONS

It is proposed to submit a planning application seeking approval for mineral extraction from an area of grassland scrub at Hamble. As the application area is surrounded by trees it is necessary to assess and identify the impact the development proposals might have.

Careful planning and continued consultation during the preparation of the tree survey and phasing plans has minimised the need to remove any trees identified as of merit. From a total of 21 individual trees and 9 groups of trees it is proposed to remove 3 trees and one small

group of internal trees and part of another. It is considered unlikely that the removal of the trees, identified in the survey, will significantly change the amenity of the area due to the protection and retention of the remaining trees located on the site boundaries.

Provided suitable protection is adopted to these trees during the operation of the site and during the restoration phases, and where RPAs are compromised and mitigation offered by means of an AMS, it is reasonable to conclude the proposed development will have minimal effect on the amenity of the area in respect of loss of trees.

Appendix A CASCADE CHART FOR TREE QUALITY ASSESSMENT

Table 1 Cascade chart for tree quality assessment

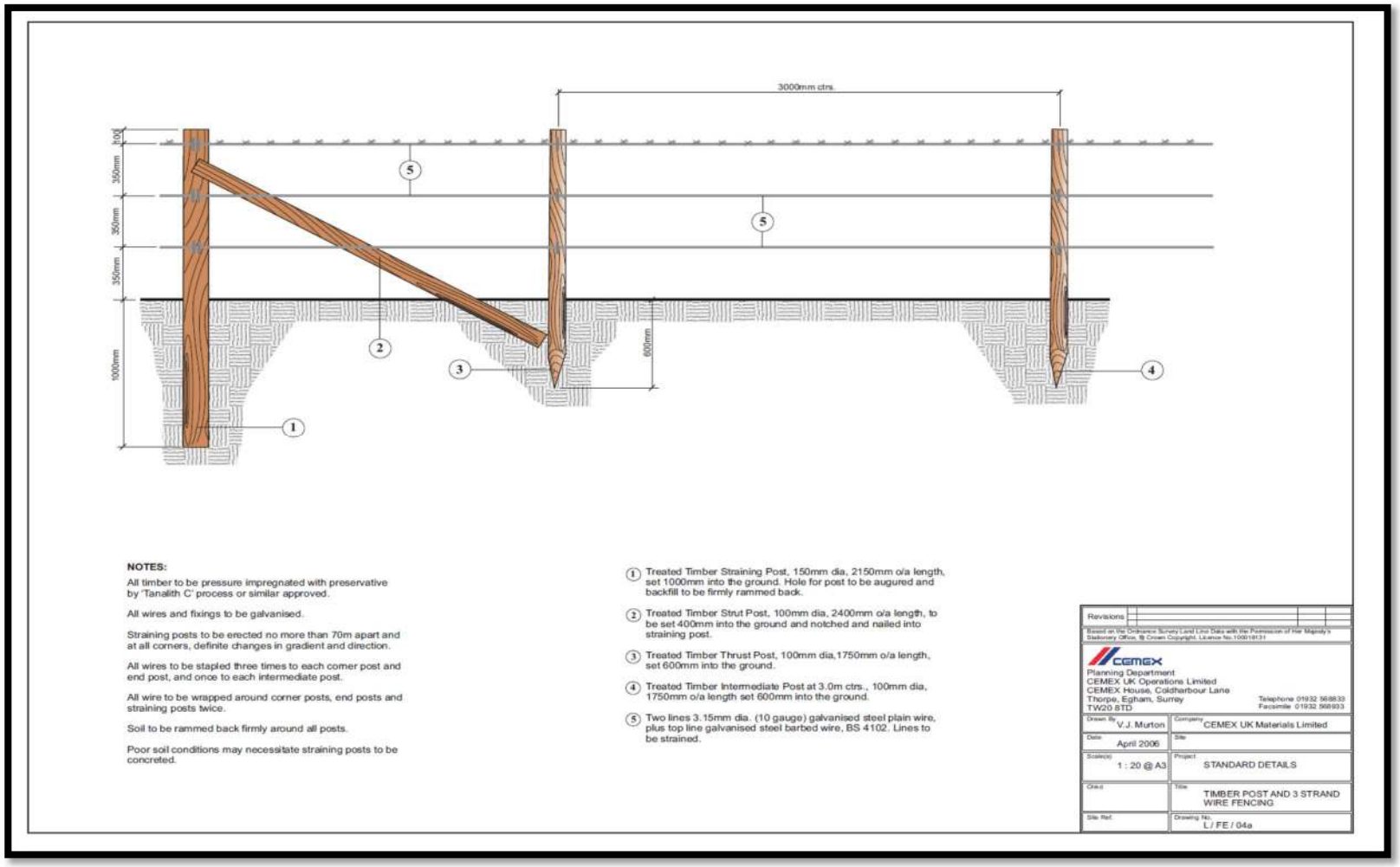
Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 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 *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.*			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

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/palettefiles.html#files [viewed 2012-03-26].

Appendix B Recommended Protective Fencing



NOTES:

All timber to be pressure impregnated with preservative by 'Tanalith C' process or similar approved.

All wires and fixings to be galvanised.

Straining posts to be erected no more than 70m apart and at all corners, definite changes in gradient and direction.

All wires to be stapled three times to each corner post and end post, and once to each intermediate post.

All wire to be wrapped around corner posts, end posts and straining posts twice.

Soil to be rammed back firmly around all posts.

Poor soil conditions may necessitate straining posts to be concreted.

1. Treated Timber Straining Post, 150mm dia, 2150mm o/a length, set 1000mm into the ground. Hole for post to be augured and backfill to be firmly rammed back.
2. Treated Timber Strut Post, 100mm dia, 2400mm o/a length, to be set 400mm into the ground and notched and nailed into straining post.
3. Treated Timber Thrust Post, 100mm dia,1750mm o/a length, set 600mm into the ground.
4. Treated Timber Intermediate Post at 3.0m ctrs., 100mm dia, 1750mm o/a length set 600mm into the ground.
5. Two lines 3.15mm dia. (10 gauge) galvanised steel plain wire, plus top line galvanised steel barbed wire, BS 4102. Lines to be strained.

Revisions

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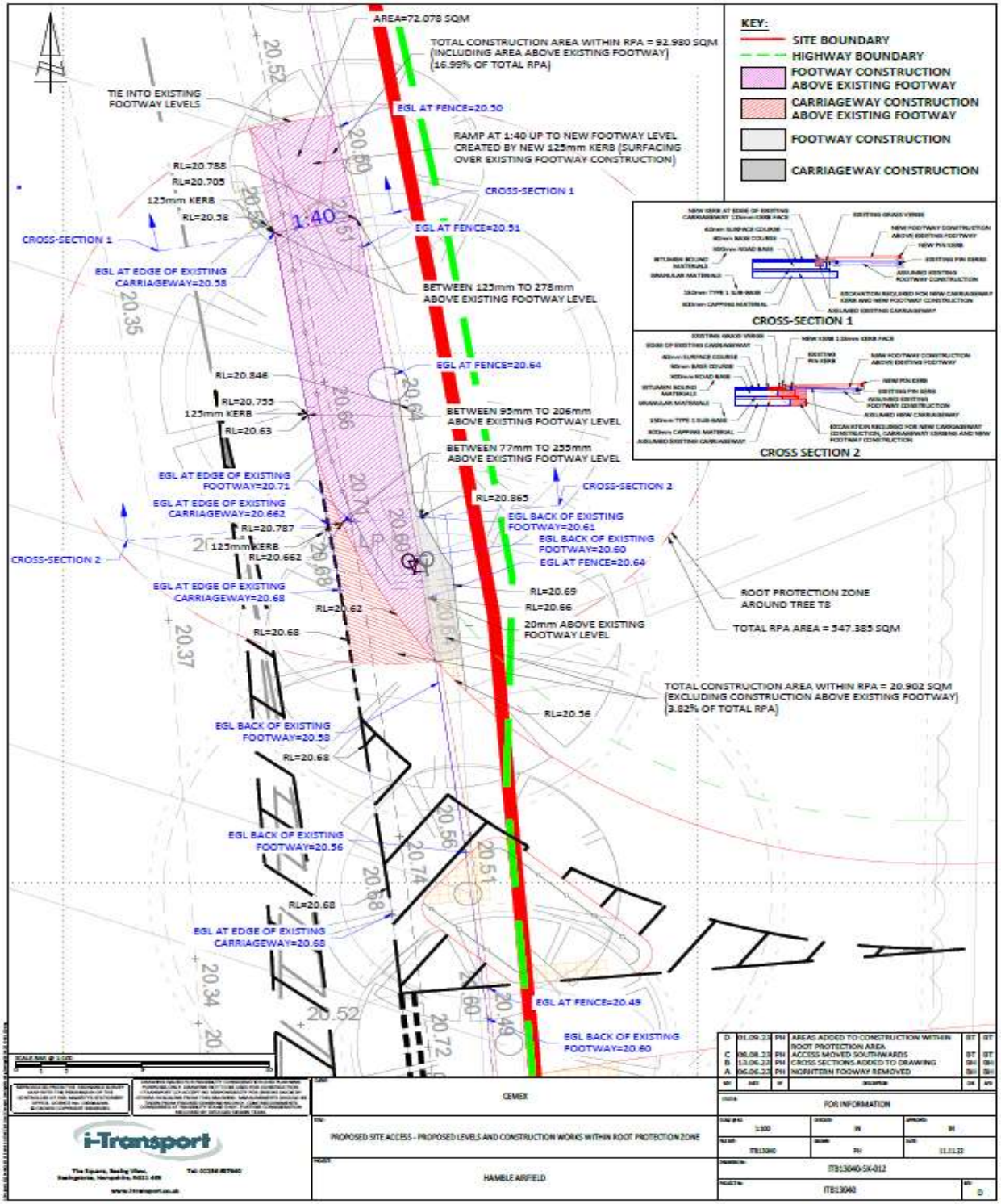
Drawn By: V.J. Murton	Company: CEMEX UK Materials Limited
Date: April 2006	Site:
Scale(s): 1 : 20 @ A3	Project: STANDARD DETAILS
Chkd:	Title: TIMBER POST AND 3 STRAND WIRE FENCING
Site Ref:	Drawing No.: L / FE / 04a

Appendix C Proposed Site Access Levels and Construction works within the RPA of tree T8



Appendix D

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.

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.

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.

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 E Glossary of Terms

Arboricultural Impact 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 m^2), 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 Estimated tree stem diameter at breast height.

Height The height of a tree measure using a clinometer where accessible.

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 enough rooting volume to ensure the survival of the tree, shown in plan form in m^2

Species The species is based on visual field observation and lists the common name. On in depth surveys the botanical name may also be listed. In the unlikely event, where there is some doubt over tree identity, sp is noted after the genus name to indicate the species cannot be reliably identified at the time of the survey. Where there is more than one species in a group ,only the most frequent are noted and not all the species present may be 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

DRAWINGS