

Derbyshire Fire and Rescue Services  
**Land off Staden Lane, Buxton, Derbyshire**  
**TREE ASSESSMENT REPORT**

August 2009

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## 1.0 INTRODUCTION

- 1.1 This report has been prepared by FPCR LLP on behalf of Derbyshire Fire and Rescue Services to present the findings of a survey of mature trees on a piece of land off Staden lane, to the south side of Buxton, Derbyshire (hereafter referred to as 'the assessment site'). The site is centred on Ordnance Survey Grid Reference SK 069 718 and is shown as Figure 1. The survey was carried out on Monday 24<sup>th</sup> August 2009.
- 1.2 The purpose of the report is to present an assessment of the arboricultural value of the trees based on their current quality in accordance with *BS 5837 Trees in Relation to Construction (2005) – Recommendations*, to help inform any initial design and site layout considerations. The survey has focused on the major trees within the site, and those adjacent to the assessment site, that would be directly affected by any proposed future re-development. The report also indicates any trees requiring removal on the grounds of sound arboricultural management and those that would not be considered a major constraint to any re-development that may occur on the site.
- 1.3 Trees, tree groups and woodlands have been considered following evaluation into one of four categories (R, A, B, C) based on tree quality as outlined in *BS5837 (2005)*. Categorisation of trees following the British Standard gives an indication as to the trees importance in relation to the site and the local landscape and also, the value and quality of the existing tree stock on site. This allows for informed decisions to be made concerning which trees should be removed or retained, should development occur. For a tree to qualify under any given category it should fall within the scope of that category's definition. In the categories A, B, C which collectively deal with trees that should be a material consideration in the development process, there are three sub-categories which are intended to reflect arboricultural, landscape and cultural values respectively. Category R trees are those which would be lost in the short-term for reasons connected with their physiological or structural condition. They are, for this reason, not usually considered in the planning process.
- 1.4 In assigning trees to the above categories the presence of any serious disease or tree-related hazards have been taken into account. If the disease is considered fatal and/or irremediable, or likely to require sanitation for the protection of other trees, the trees concerned may be categorised as R, even if they are otherwise of considerable value.
- 1.5 The assessment site comprises two open grassy field compartments, one larger than the other with a small access road at the western end dividing the two. The westernmost parcel was bounded on its western edge by the main A515 Ashbourne to Buxton Road.

The easternmost parcel was bounded by Staden Lane on its south eastern boundary. Surrounding the assessment site was Staden Lane Industrial Estate comprising a series of units including retail.

- 1.6 Most of the trees present were situated within the western part of the assessment site and in addition a line of tree planting was also present along part of Staden Lane. Tree species found included the following copper beech *Fagus sylvatica* 'Purpurea Group', flowering cherry *Prunus avium* 'Plena', Norway maple *Acer pseudoplatanus*, lucombe oak *Quercus x hispanica* 'Lucombeana', rowan *Sorbus aucuparia*, whitebeam *Sorbus aria*, common lime *Tilia x europaea*, Swedish whitebeam *Sorbus intermedia*, hawthorn *Crataegus monogyna*, silver birch *Betula pendula* and downy birch *Betula pubescens*.
- 1.7 Proposals are to build a new Fire Station on the assessment site. Discussions within the report are related to the latest site layout as proposed at the time of writing.
- 1.8 It is understood that there are no Tree Preservation Orders or Conservation Orders that affect any of the trees within the site and therefore there are no statutory constraints to the proposed development from a tree perspective.
- 1.9 The Local Planning Authority is High Peak Borough Council.
- 1.10 A separate Ecological Appraisal has also been undertaken on the site, which should be read in conjunction with the Tree Assessment, (Ecological Appraisal, FPCR LLP, August 2009).
- 1.11 Appendix A presents a summary table of the tree survey data as collected from a site visit. Chapter 2 describes the methodology to which the tree assessment has been undertaken. Chapter 3 presents a written description of the results of data collected discussing any particular trees of note and therefore providing a guide to establishing any specimens that may be considered worthy for incorporation within any re-development of the site. Chapter 4 evaluates the findings in respect of any proposed re-development and provides recommendations for any tree management considered appropriate for reasons of sound arboricultural treatment. Chapter 5 presents an indication of tree protection measures to be required from a general viewpoint, however it must be understood that any specific tree protection requirements should be separately considered where needs arise. This would be in the form of an Arboricultural Method Statement (AMS), produced in conjunction with a specific Tree Constraints Plan (TCP), produced in accordance with guidance in *British Standard 5837 (2005) – Trees in Relation to Construction –Recommendations*.

## 2.0 TREE SURVEY METHODOLOGY

2.1 Trees have been broadly assessed based on guidance set out within the *British Standard BS 5837: (2005) Trees in Relation to Construction – Recommendations*. This standard provides recommendations and guidance on the principles to be applied to achieve successful integration of development with trees, shrubs and hedgerows. Where development (including demolition) is to occur, the standard provides guidance on the approach needed to decide which trees are appropriate for retention, on the means for protecting these trees during the development (including demolition and construction work) and on the means of incorporating trees into the developed landscape.

2.2 Trees have been divided into one of four categories (based on the cascade chart for tree quality assessment). These are classed as A, B, C or R (Section 4.3 of BS 5837). This gives an indication as to the tree's importance in relation to the site and the local landscape and, also, the value and quality of the existing trees on site. This assists informal decisions concerning which trees should be removed or retained should development occur. For a tree to qualify under any given category it should fall within the scope of that category's definition (see below). Categories A, B and C cover trees that should be a material consideration in the development process, each with three further sub-categories (i, ii, iii) which are intended to reflect arboricultural, landscape and cultural (nature conservation) values. Category R trees are those which would be lost in the short term for reasons connected with their physiology or structural condition. They are for this reason not considered in the planning process. In assigning trees to the A, B or C categories, and the presence of any serious disease or tree – related hazards are taken into account. If the disease is considered fatal and / or irremediable, or likely to require sanitation for the protection of other trees it may be categorised as R, even if they are otherwise of considerable value.

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

- (i) Trees which are particularly good examples of their species especially rare or unusual, or essential components of groups or of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue);
- (ii) Trees, groups or woodlands which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of particular visual importance (e.g. avenues or other arboricultural features assessed as groups);
- (iii) Trees or groups or woodlands of significant conservation, historical, commemorative or other value (eg. Veteran or wood-pasture trees).

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

- (i) Trees that might be included in the high category but because of their numbers or slightly impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage), are downgraded in favour of the best individuals;
- (ii) Trees present in numbers such that they form distinct landscape features and attract a higher collective rating than they would as individuals. Individually these trees are not essential components of formal or semi-formal arboricultural features, or trees situated mainly internally to the site and have little visual impact beyond the site;
- (iii) Trees with clearly identifiable conservation or other cultural benefits.

**Category (C) – (Grey):** are trees that could be retained and are considered to be of low quality and value. These trees are in an adequate condition to remain until new planting could be established (a minimum of ten years) or are young trees with a stem diameter below 150mm and may comprise:

- (i) Trees not qualifying in higher categories;
- (ii) Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value and or trees offering low or only temporary screening benefit;
- (iii) Trees with very limited conservation or other cultural benefits.

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

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

2.3 Species has been recorded by common and botanical name. Height has been estimated in metres and stem diameter measured at 1.5 metres in centimetres.

- 2.4 In the assessment particular consideration has been given to:
- (a) the health, vigour and condition of each tree;
  - (b) the presence of any structural defects in each tree and its life expectancy;
  - (c) the size and form of each tree and its suitability within the context of the proposed scheme;
  - (d) the location of each tree relative to existing site features, e.g. its value as a screen or as a skyline feature.

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

YNG ; Young trees up to five years of age.

SM : Semi-mature, trees less than 1/3 life expectancy.

EM: Early mature, trees 1/3 – 2/3 life expectancy.

M : Mature trees over 2/3 life expectancy.

OM : Over mature – declining or moribund trees of low vigour.

2.6 The overall condition of the tree, or group of trees, has been referred to as one of the following. A more detailed description of condition has been noted in the Tree Schedule and discussed in the Tree Assessment Report (Results and Discussion)

- G **Good:** A sound tree, trees, needing little, if any, attention.
- F **Fair:** A tree, trees, with minor but rectifiable defects or in the early stages of stress, from which it may recover.
- P **Poor:** A tree, trees, with major structural and physiological defects or stressed such that it would be very expensive and inappropriate to retain.
- D **Dead:** A tree, trees, no longer alive. However, this could also apply to those trees that are dying and will be unlikely to recover, or are / have become dangerous.

2.7 Major defects or diseases and relevant observations have also been recorded under Structural Condition. The assessment for structural condition has included inspection of the following defects:

- The presence of fungal fruiting bodies around the base of the tree or on the stem, as they could possibly indicate the presence of possible internal decay.
- Soil cracks and any heaving of the soil around the base indicating possible root plate movement
- Any abrupt bends in branches and limbs resulting from past pruning, as it may be an indication of internal weakness and decay
- Tight or weak 'V' shaped forks and co-dominant stems

- Hazard beam formations and other such biomechanical related defects (as described by Claus Mattheck, Body Language of Trees HMSO Research for Amenity Trees No. 4 1994)
- Cavities as a result of limb losses or past pruning
- Broken branches
- Storm damage
- Canker formations
- Loose bark
- Damage to roots
- Basal, stem or branch / limb cavities
- Crown die-back
- Abnormal foliage size and colour
- Any changes to the timing of normal leaf flush and leaf fall patterns
- Other pathological diseases affecting any part of the tree

2.8 Major defects or diseases and relevant observations have also been recorded. Dead wood has been defined as the following:

Twigs and small branch material	Up to 5cm in diameter
Minor dead wood	5cm to 10cm in diameter
Major dead wood	10cm in diameter and above

#### Conditions of Tree Survey

2.9 The survey was completed from ground level only and from within the curtilage of the assessment site. Aerial inspection of trees was not undertaken. Investigations as to the internal condition of a tree have not been undertaken. Further investigations of this type can be made and have been recommended where it has been considered necessary, within the report. These investigations are beyond the scope of this report. Evaluation of the trees condition given within this assessment applies to the date of survey and cannot be assumed to remain unchanged. It may be necessary to review these within 12 months, in accordance with sound arboricultural practice.

#### Site plan & Tree schedules

2.10 The individual positions of trees and groups of trees recorded in the Tree Assessment Report have been shown on the Tree Location, Quality and Constraints Plan, Figure 2. The tree quality element shows the relevant *BS 5837 (2005)* categories for retention considered for each tree and groups of trees.

The positions of trees are based on a topographical / land survey supplied by the client in dwg. format (Greenhatch Group drawing no. 13010\_01\_P date 14/01/09) for the purpose of plotting the trees. The Root Protection Areas to be required by the individual and groups of trees are indicated by the Tree Constraints element of Figure 2. The Root Protection Areas are formulated as described below.

- 2.11 A summary table of all the trees included in the Tree Assessment Report, detailing further information on each tree and group of trees is shown in Appendix A. Within the summary table individual RPAs (m<sup>2</sup>) have been included, as well as a calculated corresponding radii of a circle for that RPA.

### **Tree Constraints and Root Protection Area (RPA)**

- 2.12 Below ground constraints to future development is represented by the area surrounding the tree that contains sufficient rooting volume to ensure survival of the tree, which need protecting in order for the tree to be incorporated into any future scheme, without adverse harm to the tree or structural integrity of buildings. This is referred to as the Root Protection Area (RPA) and is shown as a circle of a given radius, calculated using the formula below. The circle may be modified in shape to maintain a similar total area depending on the presence of surrounding obstacles. Where groups of trees have been assessed, the RPA has been shown based on the maximum sized tree in any one group and so would automatically exceed the RPAs required for many of the individual specimens within the group. A RPA is equivalent to a circle with a radius 12x the stem diameter for single stem trees and 10x the basal diameter for trees with more than one stem arising less than 1.5 metres above ground level.

Table 1: Formula for calculating Root Protection Area

<p><b><math display="block">\text{RPA (m}^2\text{)} = (\text{stem diameter (mm)} \times 12 / 1000)^2 \times 3.142</math></b></p> <p>This figure should be capped to 707m<sup>2</sup>, that is, equivalent to a circle with a radius of 15m, or a square with approximately 26m sides</p>
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Taken from Table 2: Calculating the RPA , BS5837 (2005).

### 3.0 RESULTS OF TREE SURVEY

- 3.1 A total of thirty individual trees and four groups of trees were surveyed as part of the tree assessment (refer to Figure 2 – Tree Location, Quality and Constraints Plan).
- 3.2 For the purpose of the report, results of the tree survey have been collectively presented according to species type. Where a species was individually represented in the site, or it was felt a tree required separate comments, these have been reported.
- 3.3 Details of the individual trees and groups of trees including heights, diameters at breast height (measured at 1.5m), distance of the point of greatest crown spread – in each direction where appropriate, general overall age class, general overall condition at the time of inspection, comments on the general structural condition, *British Standard* category of quality and suitability for retention and the root protection distances, have been tabulated in Appendix A – Tree Schedule.

#### Norway Maple

- 3.4 T2, T5 and TG3 were all Norway maple *Acer platanoides*. All the examples were single stemmed specimens considered of typical form for the species. Being approximately 7 and 8m in height they were all in good condition showing no obvious defects at the time of inspection. Due to their good condition and visual prominence all the examples would be considered as retention category B (moderate quality and value).

#### Flowering Cherry

- 3.5 T3, T4, T8, T20 and T22 were all flowering cherry *Prunus avium 'Plena'*. Individual trees T4 and T8 were both completely dead and therefore Category R (remove). Equally, T3 was graded as Category R (remove) due to being in poor overall health and condition. It displayed very sparse growth of which the current seasons foliage was heavily 'shot holed' (caused by insect activity), high quantities of dead branches and thus would be considered as having a limited safe future life expectancy. T20 and T21 were considered as retention category C (low quality and value) due to showing similar conditions to T3 yet not as severe. Defects included dysfunctional branches, damaged leaves and poor crown formations. Both trees were also considered as possessing limited future life expectancies.

#### Copper Beech

- 3.6 T6, T19 and T21 were all copper beech *Fagus sylvatica Purpurea Group, poss. 'Dawyck Purple'*. All examples were approximately 7-8m in height and similar in condition and habit, being typical of the species.

The three specimens were single stemmed and showed no obvious defects at the time of inspection. Overall two of the trees namely T19 and T21 would be considered as retention category C (low quality and value) and being of slightly larger dimensions, T6 would be considered as retention category B (moderate quality and value).

#### Lucombe Oak

- 3.7 T7a, TG1, T14, T15 and T16 were all lucombe oak *Quercus x hispanica 'Lucombeana'*. The species was well represented across the tree stock and was generally found as being similar in condition and forms (the exception being T7a). Being consistently approximately 8m in height they were considered early mature in age class. The only defect to note was the presence of small diameter dead branch material that tended to be fairly abundant throughout. This impairment in the overall quality meant a grade of retention category C (low quality and value) was considered appropriate. The exception being TG1, where due to their group status would be considered retention category B (moderate quality and value).

#### Rowan

- 3.8 T10, T11, T13, T18 and T24 were all rowan *Sorbus aucuparia*. T11, T18 and T24 were considered as retention category C (low quality and value) due to impaired conditions at the time of inspection. The higher quality examples were T10 and T13, being approximately 6m in height and single stemmed in form. They were considered typical for the species and displayed no obvious defects at the time of inspection. Overall the two specimens would be considered as retention category B (moderate quality and value).

#### Silver Birch and Downy Birch

- 3.9 T12 was a Silver Birch *Betula pendula* and T25 and T26 were Downy Birch *Betula pubescens*. T12 was part of a larger group of trees located close to the north west corner of the assessment site and was approximately 8m in height. The stem leant off vertical towards the east but corrected to an upright position within the upper crown. It was a single stemmed specimen with a clear stem of 3m before branching. Overall the specimen would be considered as retention category C (low quality and value). T25 was approximately 8m in height and in good condition showing no obvious defects at the time of inspection. It too was considered as retention category C (low quality and value). T26 was in poor health and condition. The only fitting category was R (remove).

#### Whitebeam

- 3.10 T17 and T23 were whitebeam *Sorbus aria*. They were approximately 5 – 6m in height being of typical character for the species, namely an upwardly ascending branch habit. Overall both the examples would be considered as retention category C (low quality and value).

## REMAINING INDIVIDUAL TREES

- 3.11 T1 was a Swedish whitebeam *Sorbus intermedia* approximately 7m in height. The specimen was of single stemmed from presenting a clear stem for 2m above ground level before subdividing into the main crown structure. It was considered as having typical form for the species and showed no obvious defects at the time of inspection. Overall it would be considered as retention category B (moderate quality and value).
- 3.12 T5a was a common lime *Tilia x europaea* approximately 4m in height. The specimen possessed some epicormic growth on the lower stem at the time of inspection and no other obvious defects. Overall the specimen would be considered as retention category C (low quality and value).
- 3.13 T7 was also a common lime *Tilia x europaea* approximately 5m in height. The main stem forked at approximately 1m above ground level into two main lead stems. The resultant crown structure was dense and overcrowded. The majority of the crown growth was towards the south east direction thus creating an overall one-sided to that direction. At the time of inspection the crown displayed low growth to ground level in most places Overall the specimen would be considered as retention category C (low quality and value).
- 3.14 T9 was a hawthorn *Crataegus monogyna* approximately 3.5m in height. The entire specimen had a major lean off vertical at an approximate angle of 45 degrees towards the south east. It had a metal next to the stem possibly once used as supporting stakes at planting. The thorn was mostly dead housing a large amount of dead branch material. Due to the poor condition the specimen would be considered as retention category R (remove).
- 3.15 T27 was a cut leaf copper beech *Fagus sylvatica 'Rohanii'* approximately 2.5m in height. This recently planted specimen was still staked on its north side. It displayed a fastigate branch form and was a species of interest. It would be a suggestion to possibly consider re-location of this specimen within the grounds of the new fire station in a suitable location. Overall the specimen would be considered as retention category C (low quality and value).

## REMAINING GROUPS OF TREES

- 3.16 TG2 comprised a single Lawson cypress *Chamaecyparis lawsoniana* and a single Scots pine *Pinus sylvestris* of approximate heights up to 6m. The trees were located within a small shrub bed positioned in the south west corner of the site, adjacent to the entrance of the site from the A515.

The shrub bed also contained several low growing shrub varieties such as *Potentilla* and *Hebes*. Neither specimen showed any obvious defects at the time of inspection. Overall the two trees would be considered as retention category C (low quality and value).

- 3.17 TG4 comprised seven Norway maple *Acer platanoides*, two whitebeam *Sorbus aria* and two rowan *Sorbus aucuparia*. The group formed a line of trees along the south eastern boundary wall of the site adjacent to Staden Lane. Individual trees were uniformly spaced at approximately 5-6m apart and were approximately up to 7m in heights. The 6th specimen *Acer platanoides*, from the western end housed a major split in the main stem. The split had originated from the failure of the main fork and extended down the stem. This tree would be categorised as R (remove). One of the individual rowan specimens was still supported by the tree stake. Should the tree be retained it would be recommended that the stake be removed as it was causing constriction and abrasion damage to the stem at 0.5m above ground level. Most individual specimens within the group had been crown lifted by removing the lowest lateral branches back to the main stem. All trees were considered typical for their respective species and apart from those mentioned, did not show any obvious defects at the time of inspection. Collectively the group would be considered as retention category B (moderate quality and value).

## 4.0 DISCUSSION OF RESULTS AND RECOMMENDATIONS

- 4.1 The following section presents a summary of the tree survey in terms of the collective results and offers discussion of particular trees and groups recorded.

### RESULTS SUMMARY

- 4.2 Trees across the site were mostly found to be early mature in age, suggesting planting within the past 25-30 years at a maximum, with some material being younger at approximately 10-15 years. Species range was diverse with several different species being represented thereby creating a spread of landscape interest. Trees were concentrated fundamentally within the south west portion and south eastern boundary of the assessment site as scattered free standing individuals or as more defined linear groups and occasional small clusters. The material was generally in good condition and had received only a limited amount of crown pruning.

#### Category R Trees

- 4.3 Six of the individual trees were considered as Category R (remove), namely T3, T4, T8, T9, T17a and T26. They are considered Category R due to their poor structural conditions, the presence of a significant dead wood and substantial structural defects. All these trees are either dead or unworthy of any other classification within the British Standard and it is recommended that they be removed prior to development in the interests of safety.

#### Category C Trees

- 4.4 Following the assessment a total of seventeen individual trees and a group of trees within the site were considered as retention category C (low quality and value), namely T5a, T7, T7a, T11, T12, T14 – T20, T22 – T25 and T27 and TG2, by far the greatest number of trees in a single classification within the site. In accordance with the British Standard, Category C specimens are those that would be considered as having a limited contribution in terms of their future visual amenity within any development proposals, due to either their current age or the number and types of defects present. Most of the Category C trees present in the assessment site were considered as visually low amenity value in arboricultural terms. Each tree and group of trees would therefore only be contributing in the short term with respect of visual amenity. On balance, there would be justification to remove those Category C specimens if required and provide new replacement tree planting within the development scheme, more appropriate to the new development elsewhere within the site.

4.5 It would generally be encouraged that some Category C specimens be retained where possible and suitable within the context of the proposals to provide an instant level of maturity to a new development, especially whilst new replacement landscaping becomes established. Once the landscaping has become fairly established there would be justification to remove those Category C specimens if required. However, in this particular circumstance due to the nature and types of species present, it is felt that the loss of these specimens as part of the development proposals, could be suitably mitigated for within new landscaping as part of the overall scheme.

#### Category B Trees

4.6 A total of seven individual trees, namely T1, T2, T5, T6, T10, T13 and T21 and three groups of trees, namely TG1, TG3 and TG4 were considered as retention category B (moderate quality and value). In accordance with the *British Standard*, Category B specimens are those considered to have overall higher quality than those of Category C due to their good condition and remaining life expectancy, yet not as high quality as for a Category A. Within the *British Standard*, it states that those trees considered as retention category B should clearly be able to demonstrate ability to contribute a minimum of 20 years to the proposed development in terms of health and amenity value.

4.7 Following the assessment it would be considered that those trees assigned Category B status demonstrate potential to contribute for a minimum of 20 years further within the development.

#### Category A Trees

4.8 There were no trees present within the site that were considered to be retention category A (high quality and value).

### **COMMENTS IN RESPECT OF THE DEVELOPMENT PROPOSALS**

4.9 To facilitate the required developable space for the siting of the new Fire Station a small number of trees would require removal. Those specimens are as follows: T17, T17a, T18 – T27, TG3 and TG4. Of the trees to be removed two individual specimens were assessed as category R (remove) and nine individual trees were assessed as being at the lower end of the arboricultural quality scale as retention category C (low quality and value). The remaining one individual tree and two groups of trees specimens were assessed as retention category B (moderate quality and value).

- 4.10 The proposals for the new Fire Station do not appear to impact upon the trees at the westernmost end of the assessment site, therefore being retained as screening to soften the new building. Having considered the development proposals in context and taking into account the wider landscape, from an arboricultural perspective, it is felt that in this particular circumstance the loss of trees identified above could be suitably justified as many other trees within the site are to be retained. The trees to be retained at the westernmost end of the assessment site are considered as key landscape features, as they are positioned on the outer part of the assessment site adjacent to the A515 therefore being more visually prominent. These specimens would also on balance be the higher quality trees both in terms of species diversity and landscape value than those highlighted for removal.
- 4.11 In summary, the retained trees and groups of trees would be considered the most visually important tree stock from an arboricultural perspective because of their function as landscape screening to soften the new station, their contribution to the local landscape and as a resource for local wildlife compared to the small number to be lost to the development.

#### Mitigation for Tree Losses

- 4.12 As already highlighted, a small number of tree losses will occur as part of future development of the site. Due to the nature of the development, all available space within the development boundaries has been effectively utilised leaving little space for any landscaping. However, as outlined in the above paragraphs, the retention of trees at the western end of the site will mean that effective tree cover will still be present and this should compensate for any net loss of trees overall under the circumstances.

#### Protection of Trees Close to the Site

- 4.13 Those specimens to be retained and those located outside the boundaries of the assessment site, yet within close proximity to works should be adequately protected during the course of the development by barriers or ground protection around the calculated Root Protection Area (RPA) and as indicated on any Tree Constraints Plan (TCP) that may be produced in association with the assessment following confirmation of detailed site layouts and construction proposals. The following section describes tree protection measures in further detail. Any trees which are to be retained and whose RPAs may be affected by the development should be monitored to identify any alterations in quality with time and to assess and undertake any remedial works required as a result. Trees retained should be subject to sympathetic management in the future to maintain their future health and vigour. All trees should be inspected annually and following major storms by an experienced arborist or tree surgeon to identify any potential public health and safety risks and to agree remedial works as required. All tree works should be undertaken in accordance with *British Standard 3998 (1989) Recommendations for Tree Works*.

- 4.14 All vegetation and, particularly, woody vegetation proposed for clearance should be removed outside of the bird-breeding season (April – August inclusive) as all birds are protected under the Wildlife and Countryside Act, 1981 (as amended) whilst on the nest. Where this is not possible, vegetation should be checked for the presence of nesting birds prior to removal by an experienced ecologist.

## 5.0 TREE PROTECTION MEASURES

- 5.1 Retained trees will be adequately protected during works. Measures to protect these should follow the best practice principles set out in *BS5837: Trees in Relation to Construction - Recommendations (2005)*. These have been broadly summarised below.

### General Information and Recommendations

- 5.2 All trees retained on site will be protected by barriers or ground protection around the calculated Root Protection Area (RPA) and as indicated on any Tree Constraints Plan (TCP) that may be produced in association with the assessment (Clauses 5 and 7 of BS 5837).
- 5.3 Fencing will be erected prior to commencement of construction and before demolition including erection of any temporary structures. Once set up, fences should not be removed or altered without prior consultation with the arboricultural advisor.
- 5.4 Arrangements should be made for an arboriculturist to supervise works and tree protection where trees are particularly vulnerable or sited close to access points.
- 5.5 Pre-development works may be undertaken prior to the installation of fencing with the agreement of the local planning authority.
- 5.6 Any trees that are not retained should be felled prior to the erection of protective fencing. Particular attention needs to be given by approved contractors to minimise damage or disturbance to retained specimens (good industry practice procedures should be followed at all times).
- 5.7 All tree works should follow best practice procedures as set out in *British Standard 3998 (1989) – Recommendations for Tree Work*. All trees should be maintained in good condition on site and be regularly inspected annually (where overall condition requires) or every 2 years and after any major storm events, with safety a priority.

### Barriers

- 5.8 Fencing should be strong and suitable for the location, type and proximity of construction activity. Barriers must remain rigid and complete.
- 5.9 In most situations fencing should comprise a scaffold framework comprising a vertical and horizontal framework. For particular areas where construction activity is anticipated to be intense higher fencing may be necessary. Typical fencing specifications are indicated at Figure 3 attached.
- 5.10 It may be appropriate on some sites to use temporary site offices as components of the protection barriers.

### Ground protection

- 5.11 Where it has been agreed, construction access may take place within the RPA if suitable ground protection measures are in place. This may comprise single scaffold boards over a compressible layer laid onto geo-textile materials for pedestrian movements. Vehicular movements over the RPA will require the calculation of expected loading and may require the use of proprietary protection systems.

### Protection outside the exclusion zone

- 5.12 Once the areas around trees have been protected by the fencing, any works on the remaining site area may be commenced providing activities do not impinge on protected areas. Notices should be placed on fencing to indicate that operations are not permitted within the fenced area.
- 5.13 Wide or tall loads etc should not come into contact with retained trees. Banksman should supervise transit of vehicles, jibs, booms etc where this is in close proximity to retained trees.
- 5.14 Oil, bitumen, cement or other material that is potentially injurious to trees should not be stacked or discharged within 10m of a tree bole. No concrete mixing should be done within 10m of a tree. Allowance should be made for the slope of ground to prevent materials running towards the tree.
- 5.15 No fires will be lit where flames are anticipated to extend to within 5m of tree foliage, branches or trunk, taking into consideration wind direction and size of fire.
- 5.16 Notice boards, telephone cables or other services should not be attached to any part of a retained tree.
- 5.17 Any trees which need to be felled adjacent to or are present within a continuous canopy of retained trees must be removed with due care (it may be necessary to remove such trees in sections).

### Protection for Aerial Parts of Retained Trees

- 5.18 Where it is deemed necessary to operate a wide or tall load, plant bearing booms, jibs and counterweights or other such equipment, as part of construction works, and such equipment would have potential to cause injurious contact with crown material i.e. low branches and limbs, of retained trees within the RPA fencing, it is best advised that appropriate, but limited tree surgery, be carried out beforehand to remove any obvious problem branches. This is classed as 'Facilitation Pruning', *British Standard 5837 (2005) 9.4.2 and 11.2.1*. Any such pruning should be undertaken in accordance with a specification prepared by an arboriculturalist.

- 5.19 It is strongly advised that a Pre-Commencement Site Meeting is held with contractors who are responsible for operating machinery, as described above, to firstly highlight the potential for damage occurring to tree crowns and to ensure that extra care is applied when manoeuvring machinery during such operations within close proximity to retained trees to avoid any contact.
- 5.20 In the event of having caused any such branch or limb damage to retained trees it is strongly recommended that suitable tree surgery be carried out, in accordance with *British Standard 3998 (1989) Recommendations for Tree Work*, to correct the damage, upon completion of development.
- 5.21 All of the above precautionary measures should be applied to minimise the effect of any damage to long-term tree health and safety.