Glendale Countryside North East,
Unit 1 & 2 Heddon Way
Middlefields Industrial Estate
South Shields
NE34 0NT

Temple Park Leisure Centre, South Shields

Tree Categorization, Arboricultural Impact Assessment, Tree Protection Plan and Arboricultural Method Statement In accordance with B.S 5837:2012 Trees in Relation to Design, Demolition and Construction.

1 Introduction
1.1 Background
1.2 Request
1.3 Inspector
1.4 The Scheme
1.5 The location access and topography

2 Tree survey assessment methodology and data
2.1 References
2.2 Scope of assessment and collection of data
2.3 Limitations

3 Constraints from existing trees
3.1 A category trees on site
3.2 B category trees
3.3 C and U category trees

4 Arboricultural Impact Assessment
4.2 Below ground constraints
4.3 Above ground constraints

5 Recommendations
5.2 Demolition in Close Proximity to Retained Trees
5.3 Pre Commencement Pruning
5.4 Tree Protection

6 Arboriculture Method Statement.
6.1 Introduction
6.2 Sequence of Events
6.3 Pre Commencement Pruning
6.4 Tree Protection Installation
6.5 Demolition Works in Close Proximity to Retained Trees
6.6 Alternative Proposal

Appendix 1 Tree Survey

Appendix 2 Tree Location Plan

Appendix 3 Tree Protection Plan

1. INTRODUCTION.

1.1 Background.

1.1.1 The development proposal at Temple Park Leisure Centre identifies, as part of the design process, the requirement for an assessment of the arboricultural implications associated with the development and the position of trees within the site.

1.2 Request.

1.2.1 Mr Ian Seales, on behalf of South Tyneside Council**.**

1.3 Inspector.

1.3.1 James Stacey MArborA. North East Arboriculture Manager at Glendale NE. The weather at the time of inspection was clear and cold.

1.4 The Scheme.

1.4.1 The proposal is to demolish the building which houses the swimming pool, which currently forms part of the the overall leisure centre building. I have not been made aware of any future development or construction plans after demolition is complete. Therefore the trees on this site have been assessed and this report produced in connection with the demolition only. Any further development will require another survey and Impact Assessment completing.

1.4.2 A possible alternative to demolition is replacement of the roof, which would require extensive scaffolding requirements around the building. The impacts of this alternative option will also be discussed within this report.

1.4.3 I am not aware if the site is part of a conservation area, or if there are any preservation orders on the trees the building work will affect. Before any works are undertaken on the trees I would therefore advise the LPA be contacted.

1.5 The location access and topography of the site.

1.5.1 The site forms part of Temple Park, which is a woodland country park within South Shields. There are numerous wooded sections and open grass areas surrounding the leisure centre. The ground is not flat and undulates across the overall area. In places the building sits at a lower elevation to the base of a number of the trees concerned in this report.

2 TREE SURVEY ASSESSMENT METHODOLOGY AND DATA

2.1 References.

- BS5837: 2012 'Trees in relation to design, demolition and construction –recommendations', BSI London.
- BS 3998: 2010 'Tree work - recommendations, BSI London.
- NHBC Standards 2007 'Buildings Near Trees' (Chapter 4.2), NHBC Amersham.
- 'The Body Language of Trees' A handbook for failure analysis. Claus Mattheck and Helge Breloer, 1994, TSO, London.
- 'Diagnosis of Ill-health in trees' R.G Strouts and T.G Winter, 2004, TSO, London.
- 'Principles of Tree Hazard Assessment and Management', David Lonsdale, 1999, TSO, London.

2.2 Scope of assessment and collection of data.

2.2.1 This assessment is concerned with the Arboricultural aspects of the site only.

2.2.2 A site visit was made by James Stacey on 17th November 2017. The inspection followed the Visual Tree Assessment methodology described by Mattheck & Breloer[1]. The survey followed the recommendations in paragraph 4.4 of the British Standard 5837: 2012 Trees in relation to design, demolition and construction – recommendations (the Standard). It collected the data listed in paragraph 4.4.2.5. Trees were categorized according to paragraph 4.5 and Table 1 – Cascade chart for tree quality assessment, and the root protection areas (RPAs) of the trees calculated according to paragraph 4.6 of the Standard.

2.2.3 There were no trees of stem diameter at 1.5m of <75mm, although there were a number of shrubs located to the South East of the proposed development area..

2.2.4 Trees have been allocated an individual tree number, which is used to identify them throughout this report, on the Tree Schedule and on the Arboricultural impact assessment. There has been no need to identify trees on site with individual tags.

2.2.5 In accordance with the Standard trees are assessed against the criteria in Table 1 and categorised as either:

- U – Tree Unsuitable for retention
- A – Tree of high quality
- B – Tree of moderate quality
- C – Tree of low quality, or young tree with a stem diameter below 150mm.

1

2.2.6 Preliminary management recommendations for each tree are made including, where necessary, further investigation of defects that require more detailed assessment and the recommendations for tree management in accordance with BS3998: 2010 Recommendations for tree work. These recommendations identify tree work that is necessary at the time of the survey or would be necessary to implement the proposal.

2.2.7 The collected data is presented in the Tree Survey schedule.

2.3 **Limitations.**

2.3.1 Trees are large dynamic organisms whose health and condition can change rapidly, therefore due to the changing nature of trees and the other site conditions this report and any recommendations made are only valid for the twelve-month period following the site survey and assessment.

2.3.2 This survey is not a tree safety inspection or risk assessment. Where clear hazards have been identified, these have been reported in the tree survey recommendations. It is recommended that a tree safety inspection and risk assessment is carried out following the significant change in site use following development.

2.3.3 This tree survey and quality assessment has been made using Visual Tree Assessment (VTA); which means visually while standing at ground level. No invasive or other internal decay detection devices have been used to assess the condition of stem, buttress zone or roots of any of the trees. No investigative trial pits have been undertaken at this stage.

2.3.4 The plan of tree positions in this report should be regarded as schematic. All dimensions have been measured unless otherwise indicated. Height has been measured and rounded to the nearest metre.

2.3.5 No document has been provided concerning: geology, hydrology or soil types; the history of previous land use that would include activities such as mining and excavations; existing drains and underground services; design details associated with the method of construction, nor design details associated with the installation of infrastructure and access roads.

3 CONSTRAINTS FROM EXISTING TREES

3.1. **‘A’ Category trees on site**

3.1.1. Category A trees can be summarised as those of high quality with an estimated remaining life expectancy of at least 40 years, such as those that are particularly good examples of their species, of particular visual importance as features or of significant conservation or historical value. The R.P.As for A category trees are marked light green on the site plan.

3.1.2. T2, T3, T4, T5, T6 & T7 are recorded as Category A trees as they are mature Ash (*Fraxinus excelsior*) trees displaying healthy features. There is an obligation nationally to promote the protection and retention of mature Ash in the light of Ash dieback disease (*Chalara fraxinea*).

3.2. 'B' Category trees on site

3.2.1. Category B trees can be summarised as those of moderate quality with a remaining life expectancy of at least 20 years, such as those downgraded from A because of impaired condition such that they are unlikely to be able to be retained beyond 40 years, OR trees lacking the special quality necessary to merit an A category. The R.P.As for B category trees are marked mid blue on the site plan.

3.2.2. 3.2.2 T1 is recorded as a category B tree.

3.3. C' and 'U' Category trees on site

3.3.1. Category C trees can be summarised as those of low quality with a life expectancy of at least 10 years, or young trees with a stem diameter below 150mm. They include unremarkable trees of very limited merit or of such impaired condition that they do not merit higher categories.

3.3.2. T8, T9, T10 & T11 are recorded as category C trees.

3.3.3. Category U trees are those in such a condition that they cannot realistically be retained as living trees for longer than 10 years, such as those with serious irremediable defects that will lead to failure, or showing signs of irreversible overall decline or disease. This Category is used sparingly in a woodland with little public access because of the habitat value of dead or dying trees, cavities etc.

3.3.4. There are no category U trees recorded on the site.

3.3.5. There are no other species characteristics (such as fruit-drop or honeydew) of the surveyed trees that are relevant in the context of this report.

4. ARBORICULTURAL IMPACT ASSESSMENT

4.1. The implications to the tree population on this site that are likely to be caused by this development will be outlined within this section of the report. The implications will be discussed in terms of ground level/below ground implications and above ground implications. Implications to the wildlife and landscape that are likely to be affected by the loss of trees on site will also be discussed.

4.2. **Below/Ground Level Implications**

4.2.1. Root Protection Areas (RPAs) - Represent below-ground constraints *(see tree protection plan)*. The RPA of each tree is calculated according to section 4.6 of the Standard. However, this is a notional shape that indicates the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability. It assumes that a tree is growing in open unobstructed soil, and so does not account for things such as changes in ground level, impermeable surfaces or structures and excavations.

4.2.2. Incursion into RPA - The proposed demolition works are only likely to occur within the RPA of T10. With the stem as the centre point of the RPA measurement, T10s RPA is partially within the footprint of the building. However due to the foundations of the building and the age of the structure in comparison to the tree it is unlikely that there will be significant rooting within the footprint. The RPA of T10 can be offset from this and there is sufficient rooting area for this. The area of concern for incursion into the RPA will be the need to work on the outside of the buildings footprint during demolition works. Use of construction machinery/plant plus the footfall off staff will compact the soil within the RPA of T10. Where access on the outside of the footprint is required, suitable ground protection will need to be installed as well as barrier fencing (see tree protection plan).

4.2.3. Compaction of Soil In RPA - Due to possible works in the RPA of T10, as stated in 4.2.2, compaction of the soil can occur. This would lead to the eventual death of the roots through lack of oxygen and availability of water and essential nutrients. Ground protection measures will need to be installed prior to works commencing (see tree protection plan).

4.2.4. Changes in Ground Level - It is not envisaged that changes in ground level will have an impact on the trees on this site. However a temporary change in ground level can occur through the piling up of materials such as soil or rubble at the base of the trees. Covering the base of the stem will impede the gaseous exchanges through the bark, which will lead to suffocation and the death of the tree. There should be no material heaped or stored within any of the RPAs of any tree on site.

4.2.5. Changes to Soil Condition - It is vital that current soil condition is maintained with the RPA of all trees. Effects on bulk density of the soil from construction activity and the quality of the soil can impact on the trees severely as the roots have adapted to the current conditions of the soil.

4.3 Above Ground Implications

4.3.1 Damage to Crown and Branches During Construction Works - During the demolition phase of the works it is possible that damage to branches or parts of the tree crowns may occur through contact with construction machinery. There are a number of trees with crowns that extend close to the building which may result in contact with machinery resulting in damage to the trees. The trees at risk of damage are T5, T6, T7 & T10. Pre commencement pruning should take place prior to demolition to remove the risk of damage. All tree work will need to be carried out to BS3998:2010 Tree Work Recommendations and not to a level which will affect the health of the trees. The alternative option of roof replacement will have the same implications in this matter.

4.3.2 Access and Egress - Access and Egress to the site will be from the North Western corner of the overall leisure centre building (see Tree Protection Plan). It is intended that this will be the main access/egress route for machinery. This route has implications for T11 which will be in the direct path of the access for machinery. It is highly likely that damage will occur to this tree during access/egress to site. Due to the low category of tree (see tree survey data), it is recommended that this tree be removed prior to demolition works. Tree protection will need to be erected outside of the RPA of all other trees to prevent incursion into the RPA should access routes be changed once works commence.

4.3.3 Wildlife and Landscape Implications - Loss of T11 would present the biggest impact to wildlife and landscape, however due to the low category of the tree and its location its loss will have little to no effect on the surrounding landscape. It is of low wildlife value as it does not present bat roost potential and its sparse open crown does not provide ideal bird nesting opportunities.

5. RECOMMENDATIONS

5.1 Following on from the impact assessment there are a number of recommendations required to enable this development to proceed without detrimental effect to the trees which are to be retained. Further information on the execution of these recommendations can be found in the Arboricultural Method Statement found in section 6 of this report.

5.2 Demolition in Close Proximity to Retained Trees - All demolition works should be carried out with machinery outside of the RPA of all retained trees. Where demolition must occur in close proximity to the retained trees, BS5837:2012 Section 7.3 states that work should be carried out from within the footprint of the structure with demolition occurring inwards of the footprint.

5.3 Pre Commencement Pruning - There are a number of trees which will require pruning prior to works commencing to avoid damage to the crown and branches during demolition works. T5, T6, T7 & T10 will require pruning. T11 will require felling to alleviate the damage which will be caused during access and egress to the site.

5.4 Tree Protection - Tree protection must be in place prior to commencement of of any construction activities. Protection measures are to include fencing to create Construction Exclusion Zones (CEZ), of which must conform to specifications laid out in section 6.2 of BS 5837:2012. The CEZ must not be entered without prior consultation with an arboriculturist during construction. Ground protection must also be implemented in areas where construction/demolition is to take place within the RPA. Ground protection should limit the effect of compaction in the RPA. The protection should be laid out across the whole section of the RPA which is to be affected.

6. ARBORICULTURAL METHOD STATEMENT

6.1 Introduction

6.1.1 The following method statement will outline the procedures and requirements necessary to complete the development without detrimental effect to the retained trees.

6.2 Sequence of Events

6.2.1 For the purposes of protection of the retained trees the development works on site should follow the following sequence:-

- Pre Commencement Pruning
- Installation of tree protection (barriers and ground protection).
- Demolition of the swimming pool building. (Alternatively - the erection of scaffolding and replacement of the roof).
- Removal of tree protection.

It is important to note that the tree protection must not be removed until all processes of the construction phase are complete.

6.3 Pre Commencement Pruning

6.3.1 All pre commencement tree work should be carried out by professional Arboricultural contractors with the necessary level of insurance. Ideally Arb Approved Contractors would be used. All works will need to be completed to BS 3998:2010 standards and not in a way which will be detrimental to the trees health and future longevity. The recommended tree works can be found in the tree survey data at Appendix 1.

6.4 Tree Protection Installation

6.4.1 Tree protection must be implemented as per the specifications laid out in section 6.2 of BS 5837:2012.

6.4.2 Barrier Fencing - Tree protection fencing will be erected outside of the RPA of all trees to be retained which do not have demolition works planned within the RPA. This will create a Construction Exclusion Zone (CEZ) which must not be breached during the construction phase. CEZ notices will need to be displayed on the fencing. See Fig 1 for fencing spec. See Tree protection Plan at Appendix 3 for location of protective fencing.

Figure 2 **Default specification for protective barrier**

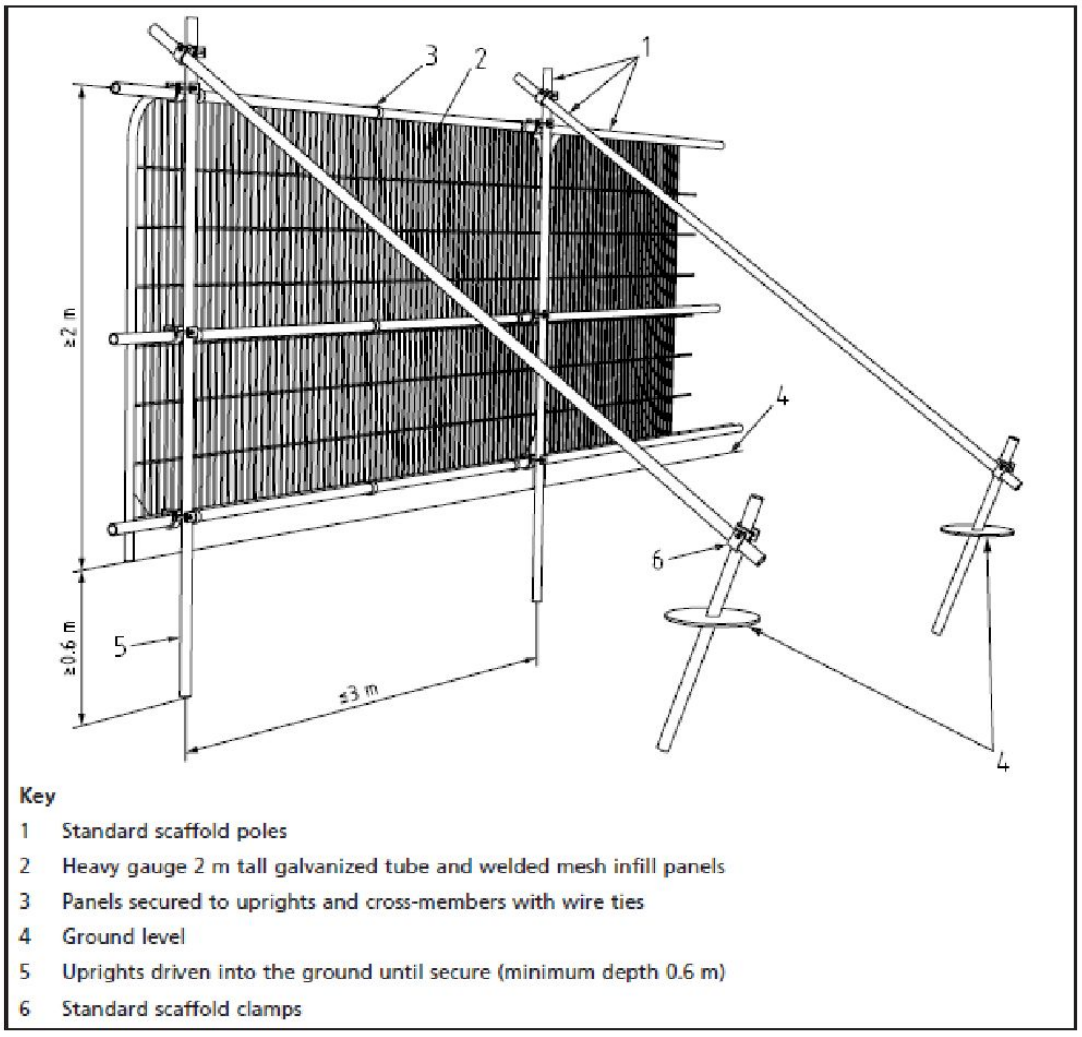


Figure 1: Default Protective Fencing Spec (Taken from Figure 2 of Section 6 BS 5837:2012)

6.4.3 Ground Protection - Regarding T10s proximity to the proposed demolition The standard states; *(para 6.2.3.1)* Where construction working space or temporary construction access is justified within the R.P.A this should be facilitated by a set-back in the alignment of the tree protection barrier. Temporary ground protection should be installed as part of the implementation of physical tree protection measures prior to work starting on site. Three examples for temporary ground protection as stated in the standard are:

a) For pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100mm depth of woodchip),laid onto a geotextile membrane.
b) For pedestrian-operated plant up to a gross weight of 2 ton, proprietary, interlinking ground protection boards on top of a compression-resistant layer (e.g 150mm depth of woodchip), laid onto a geotextile membrane.

c) For wheeled or tracked construction traffic exceeding 2 ton gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.

The work required within the RPA of T10 is envisaged to be by pedestrian movement and possibly with pedestrian operated plant only. Therefore temporary ground protection as stated in b above is recommended for this site. See tree protection plan at Appendix 3 for the location of ground protection.

6.4.4 Access and Egress to Site - Access and egress to site should be limited to the stated routes which can be identified on the Tree Protection Plan at Appendix 3. However Barrier fencing should be erected to enclose the RPA of all retained trees on site should access routes or need for machinery access change once works begin.

6.5 Demolition Works in Close Proximity to Retained Trees

6.5.1 Demolition works in close proximity to retained trees can only proceed if special adjustments are made to the demolition process in these areas. Section 7.3 of BS 5837:2012 states that demolition be undertaken inwards within the footprint of the existing building in order to pull the building debris and rubble away from the retained trees. T10 is the only retained tree where the RPA is within the footprint of the building. Should the removal/demolition of foundations be required within the RPA of T10, hand tools and hand digging should be used to prevent damage of any exposed roots as a result of excavation works here. Excavation of the foundations should only be to the limit of the building footprint and not into existing soil. Any exposed roots should be pruned using sharp tools under the guidance of an arboriculturist and should be covered with hessian for any prolonged exposure to prevent desiccation.

6.5.2 Depending on the time of year demolition takes place, where there is potential for a significant buildup of dust on the foliage of retained trees, then the hosing down of trees should be planned for, if works are during the growing season.

6.6 Alternative Proposal

6.6.1 Where the alternative proposal of replacing the roof should proceed, the construction of scaffolding will be completed using the same tree protection measures as required by the demolition process. Therefore tree protection will remain the same.