Otley Bridge
Temporary footbridge replacement

Pre-development Arboricultural Report

Prepared at the request of
PLS Group UK

05 September 2024

By

[redacted]

Treescapes Consultancy Ltd.

All rights in this report are reserved. You may not reproduce or transmit, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, or store in any retrieval system of any nature, any part of this report without our written permission. The content and format are for the exclusive use of the addressee in dealing with this site. You may not sell, lend, hire out, or divulgeany of the content to a third party not directly involved with this site, without our written consent.

© Treescapes Consultancy Ltd.

SUMMARY

Treescapes Consultancy Ltd. have been instructed by PLS Group UK, to inspect the significant trees growing on the north and south banks of the River Wharfe to the east of Otley Bridge where a temporary pedestrian crossing is proposed. We have been asked to provide a pre-development arboricultural report in which we assess whether important trees may be affected by the proposed development and, if so, the potential level of disturbance.

I visited the site on 02 September 2024 and inspected 23 individual trees growing in the parks on the north and south sides of the river.

The species, size and condition of the trees, and my management recommendations, are listed in the schedule included as Appendix 5.

Plans 1 and 2 show the existing and proposed site layouts, the locations of the trees, their canopies and Root Protection Areas (RPAs) calculated using the guidance contained in the British Standard: Trees in relation to design, demolition and construction – Recommendations (BS 5837, 2012). I assessed four trees to be in the second highest retention category (B) the remaining trees to be in the lowest retention category (C). Most of the trees included in the report are small ornamental conifers or very young specimens of larger growing trees.

Nine of the trees would need to be removed to accommodate the access required to install the bridge. Two of these are category B trees. The other seven are category C trees.

Plan 3 is a tree protection plan that shows suggested locations of tree protection barriers for trees being retained. The protective measures should be installed prior to any other development activity taking place and remain in place for the duration of the construction phase.

I recommend replacing the nine trees to be removed with 11 new trees. There is adequate space on site for seven of these trees. The replacement species are discussed in Paragraph 6.6 of the report.

According to Leeds City Council's online records the trees are not protected by a Tree Preservation Order but are within the Otley Conservation Area.

If the land is owned by Leeds City Council and the works are being undertaken by the same authority I do not believe that there is a requirement for the local authority to submit a notice of intent to complete the works. The Town and Country Planning (Tree Preservation) (England) Regulations 2012 Regulation 15 states:

15.—*(1) Section 211(**1**) (preservation of trees in conservation areas) shall not apply to—*

(a)the cutting down, topping, lopping or uprooting of a tree—

(i)in the circumstances mentioned in regulation 14;

*(ii)by, or on behalf of, the Forestry Commissioners on land placed at their disposal in pursuance of the Forestry Act 1967(**2**) or otherwise under their management or supervision; or*

(iii)by, or on behalf of, a local planning authority;

© Treescapes Consultancy Ltd.

CONTENTS

1 INTRODUCTION 4

1.1 Instruction 4
1.2 Qualifications and experience 4
1.3 Documents and provided information 4
1.4 Report limitations 4

2 SITE VISIT AND OBSERVATIONS 5

2.1 Site visit 5
2.2 Site description 5
2.3 Identification and locations of the trees 5
2.4 Tree observations 5
2.5 Trees 6 and 7, oaks 5
2.6 Trees 4, 8 and 9 6
2.7 Conifers on the north bank 6

3 REFERENCES, PLANNING POLICY AND GUIDANCE 7

3.1 National policy 7
3.2 British Standard: Trees in relation to design, demolition and construction – Recommendations (BS 5837, 2012) 8
3.3 Leeds City Council Core Strategy (2014) 8

4 TREE CONSTRAINTS 9

4.1 Tree Retention Category – BS 5837 (2012) 9
4.2 Tree constraints – above and below ground 10

5 ARBORICULTURAL IMPACT ASSESSMENT 11

5.1 Trees growing close to the proposed development 11
5.2 Shading from trees 11
5.3 Levels 11
5.4 Ground surface materials 11
5.5 Site access 11
5.6 Storing fuel, materials and equipment 12
5.7 Activity under tree canopies 12

6 RECOMMENDATIONS 13

6.1 General precautions 13
6.2 Tree work required to implement the proposals 13
6.3 Implementing the tree work 14
6.4 Design and construction considerations 14
6.5 Temporary tree protection barriers 14
6.6 Replacement tree planting 15

7 LEGAL CONSIDERATIONS 16

7.1 Protected trees 16

The Town and Country Planning (Tree Preservation)(England) Regulations 2012 Regulation 15 states: 16

7.2 Wildlife conservation legislation 16

8 REFERENCES 17

© Treescapes Consultancy Ltd.

PLANS

Plan 1 Tree constraints plan of the existing site layout....18
Plan 2 Tree constraints plan of the proposed site layout....19
Plan 3 Tree protection plan of the proposed site layout....20

APPENDICES

Appendix 1

The Experience and Qualifications of [redacted]....21

Appendix 2

Extracts from the British Standard: Trees In Relation To Design, Demolition and Construction – Recommendations (BS 5837, 2012)....23

Appendix 3

Table 1 from the British Standard: Trees In Relation To Design, Demolition and Construction – Recommendations (BS 5837, 2012)....27

Appendix 4

Explanatory notes for some of the terms used in Appendix 5....28

Appendix 5

Tree Schedule....31

Appendix 6

Tree Work....37

Appendix 7

British Standard: BS 5837 Trees In Relation To Design, Demolition and Construction – Recommendations (2012): Tree Protection Barrier....39

© Treescapes Consultancy Ltd.

1 INTRODUCTION

1.1 Instruction

Treescapes Consultancy Ltd. have been instructed by PLS Group UK to inspect the significant trees growing on the north and south banks of the River Wharfe, Otley in close proximity to a proposed temporary footbridge.

Plan 1 shows the existing site layout and Plan 2 the proposed location of the bridge.

The trees have been inspected and this report prepared in accordance with the guidance contained in the British Standard: Trees in relation to design, demolition and construction – Recommendations (BS 5837, 2012).

1.2 Qualifications and experience

I have based this report on my site observations and provided information, and I have come to conclusions in the light of my experience. I have experience and qualifications in arboriculture and list the details in Appendix 1.

1.3 Documents and provided information

I was provided with a drawing that shows the position of the proposed bridge, together with the positions of the trees as Autocad compatible computer files.

1.4 Report limitations

This report:

- does not take account of whether the trees could affect the soil in the area and cause tree related subsidence damage;
- is based on the documents provided and the information collected during the site visit;
- contains recommendations concerning work that should be carried out to responsibly manage the risks posed to and by the trees, and where necessary, reduce those risks to an acceptable level. However, even after carrying out the recommended work, there is a risk failure could still occur, especially during extreme weather conditions and/or if there are major hidden defects;
- does not take into account the possibility of extreme weather events;
- cannot account for future outbreaks of pests or diseases;
- does not take into account mechanical operations carried out in the vicinity of the trees which could affect their health and stability; and
- does not contain data collected with technical decay detection equipment

© Treescapes Consultancy Ltd.

2 SITE VISIT AND OBSERVATIONS

2.1 Site visit

I visited the site and inspected the trees on 02 September 2024. All my observations were from ground level without detailed investigations and I measured all dimensions unless otherwise indicated.

2.2 Site description

The site is located on the north and south banks of the River Wharfe to the east of Otley Bridge. The location of the temporary crossing is at Ordnance Survey grid reference SE 20183 45888 on the south bank.

The land on the north and south banks are areas of public open space which are generally flat with trees growing throughout.

The work site will be accessed from Mill Lane by removing a section of the boundary hedge.

2.3 Identification and locations of the trees

The approximate locations of the significant trees are shown on Plan 1. Significant trees have a stem diameter greater than 150mm, measured 1.5m above ground level.

The plans included in this report are for illustrative purposes only and should not be used for directly scaling measurements: all measurements should be checked on site.

2.4 Tree observations

I visually inspected the significant trees and information on their species, dimensions and condition, as well as my initial management recommendations, is included in Appendix 5.

2.5 Trees 6 and 7, oaks

Trees 6 and 7 are young native oaks that have recently been established. They have established very well, are very healthy and have good form. In accordance with BS 5837 (2012) they have been included in the lowest retention category (C) because their stem diameters are under 150mm. These trees are considered small enough to be easy to replace.

© Treescapes Consultancy Ltd.

2.6 Trees 4, 8 and 9

These are ornamental conifers growing on the south bank. They make a pleasant contribution to the park but could be replaced with new planting following completion of all the work.

2.7 Conifers on the north bank

There are nine ornamental conifers on the north bank that are included in this report. They provide some character and formality to the park owing to their numbers and regular maintenance that they receive.

© Treescapes Consultancy Ltd.

3 REFERENCES, PLANNING POLICY AND GUIDANCE

3.1 National policy

Section 197 in the Town and Country Planning Act 1990 makes it the duty of Local Planning Authorities (LPAs), '*in the interests of amenity*,' to protect trees, when granting planning permission, either by the imposition of conditions or serving Tree Preservation Orders (TPOs).

The National Planning Policy Framework (NPPF) (2023) mentions trees and should be taken into account.

> ***136.*** *Trees make an important contribution to the character and quality of urban environments, and can also help mitigate and adapt to climate change. Planning policies and decisions should ensure that new streets are tree-lined53, that opportunities are taken to incorporate trees elsewhere in developments (such as parks and community orchards), that appropriate measures are in place to secure the long-term maintenance of newly-planted trees, and that existing trees are retained wherever possible. Applicants and local planning authorities should work with highways officers and tree officers to ensure that the right trees are planted in the right places, and solutions are found that are compatible with highways standards and the needs of different users.*
>
> ***180.*** *Planning policies and decisions should contribute to and enhance the natural and local environment by:*
> *(b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;*
>
> ***186*** *When determining planning applications, local planning authorities should apply the following principles: a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused; b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest; c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons67 and a suitable compensation strategy exists; and d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially*

© Treescapes Consultancy Ltd.

where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.

Annex 2: Glossary

Ancient or veteran tree: A tree which, because of its age, size and condition, is of exceptional biodiversity, cultural or heritage value. All ancient trees are veteran trees. Not all veteran trees are old enough to be ancient, but are old relative to other trees of the same species. Very few trees of any species reach the ancient life-stage.

Ancient woodland: An area that has been wooded continuously since at least 1600 AD. It includes ancient semi-natural woodland and plantations on ancient woodland sites (PAWS).

Irreplaceable habitat: Habitats which would be technically very difficult (or take a very significant time) to restore, recreate or replace once destroyed, taking into account their age, uniqueness, species diversity or rarity. They include ancient woodland, ancient and veteran trees, blanket bog, limestone pavement, sand dunes, salt marsh and lowland fen.

3.2 British Standard: Trees in relation to design, demolition and construction – Recommendations (BS 5837, 2012)

The British Standard: *Trees in relation to design, demolition and construction – Recommendations* (BS 5837, 2012) contains guidance on how to assess trees in or close to proposed development and information to include in pre-development arboricultural reportssubmitted with planning applications. Appendices 2 and 3 contain relevant extracts from BS 5837 (2012).

3.3 Leeds City Council Core Strategy (2014)

POLICY G2: CREATION OF NEW TREE COVER Development which would result in harm to, or the loss of, Ancient Woodland and Veteran Trees will be resisted. In supporting the need and desire to increase native and appropriate tree cover, the Council will, on its own initiative and through the development process, including developer contributions, work towards increasing appropriate species of woodland cover in the District. Delivery will involve planting in both urban and rural areas, and partnership with the Forestry Commission, Natural England and landowners. Development in the urban area of the City, including the City Centre will include the planting of street trees in appropriately

© Treescapes Consultancy Ltd.

4 TREE CONSTRAINTS

4.1 Tree Retention Category – BS 5837 (2012)

I assessed the retention category of each tree or group of trees using the guidance contained in Table 1 of BS 5837 (2012). A copy of Table 1 of BS 5837 (2012) is included as Appendix 3. The retention category of each tree is listed in Appendix 5 and shown on the plans included in this report by the colours used to depict them:

Green: Category A – a high quality tree that should be retained where possible;

Blue: Category B – a moderate quality tree that could be retained;

Grey: Category C – a low quality tree that could be retained for a time but shouldn't be considered to be a constraint to development; and

Red: Category U – a tree in such a condition that it cannot realistically be retained as a living tree in the context of the current land use for longer than10 years unless it is in a little frequented area and it is desired to retain it for wildlife.

There are 23 individual trees growing within proximity to the temporary bridge location.

I assessed four individual trees to be in retention category B. These are all on the south bank.

The remaining 19 individual trees are included in the lowest retention category C.

BS 5837 (2012) states, in Table 1, that trees with trunk diameters less than 150mm should be allocated to Retention Category C. Section 4.5.10 states:

'Particular care is needed when evaluating young trees, especially where they occur as individual specimens. Where these are less than 150 mm stem diameter at 1.5m above adjacent ground level, it might be acceptable and relatively straightforward to mitigate their loss, if necessary, with similar new tree planting. Alternatively, it might be practicable to relocate such trees within the site (e.g. using a tree spade). Whilst the presence of young trees of good form and vitality is generally desirable (i.e. those trees which have the potential to develop into quality mature specimens), they need not necessarily be a significant constraint on the site's potential.'

'NOTE It is sometimes possible to relocate mature trees. However, as this is a costly and complex operation with a variable chance of success, it is a viable option only in exceptional cases.'

© Treescapes Consultancy Ltd.

4.2 Tree constraints – above and below ground

Plans 1 and 2 show the existing and proposed site layouts, the locations of the trees, their crowns and Root Protection Areas (RPAs) calculated using the guidance contained in BS 5837 (2012). If retained, tree canopies are vertical constraints to development. Pruning trees can sometimes provide adequate clearance to implement development proposals but should be carried out in accordance with the guidance contained in the British Standard: *Tree work – Recommendations* (BS 3998, 2010).

The RPA of a tree is described to be the minimum area of soil required by its roots to maintain healthy growth and should be considered a constraint to development if it is to be retained.

For some of the trees on the south bank the RPAs are not a circle centred on the stems of the trees because there is the river bank and the highway on Mill Lane to consider. For some of the trees the rooting area is more likely to be in an east to west direction between the river and the highway.

© Treescapes Consultancy Ltd.

5 ARBORICULTURAL IMPACT ASSESSMENT

5.1 Trees growing close to the proposed development

The footprint of the bridge and supporting structures on the banks will not occupy significant areas of land and will not be impactful to the trees. However, the working area required of lifting the bridge into position will be quite extensive given the lifting equipment that will be required.

I have been advised that Trees 3 to 9 on the south bank and Trees 15 and 16 on the north bank will need to be removed to accommodate the working area.

Seven of the nine trees to be removed are included in the lowest retention category because they are small and/or very young and could be readily replaced.

5.2 Shading from trees

Shading from trees is not a consideration with this development proposal.

5.3 Levels

Altering the ground level within the RPA of a retained tree may have a detrimental impact on its health and longevity.

5.4 Ground surface materials

Altering the ground cover, such as by using impervious or semi-pervious surface materials to cover areas that were previously vegetated soil, will alter the moisture content and recharge of the soil and its oxygen and carbon dioxide content. This could have a detrimental effect on the health of tree roots growing in it.

5.5 Site access

Vehicles and plant operating or parking on unprotected soil within the RPA of a retained tree could compact or contaminate it and this could have a detrimental impact on its long-term condition and longevity.

Vehicle movements under the crown of a tree could damage its trunk and/or branches. This could potentially create a safety hazard and reduce its life expectancy.

© Treescapes Consultancy Ltd.

5.6 Storing fuel, materials and equipment

Storing fuel, equipment and materials close to a tree increases the risk of damage to its trunk and branches, soil compaction and/or contamination with toxic substances.

5.7 Activity under tree canopies

Activity under a tree canopy, such as mixing cement, lighting bonfires or storing equipment, plant and materials, may damage its branches or stem(s). It may also be detrimental to soil within its RPA that is utilised by its roots.

© Treescapes Consultancy Ltd.

6 RECOMMENDATIONS

6.1 General precautions

The following general precautions should ensure the health and longevity of retained trees. They should be enforced within their RPAs and under their canopies during the construction phase and in locations where new trees will be established unless the soil will be suitably remediated.

- No storing materials, equipment, plant or fuel.
- No refuelling mechanical equipment.
- No storing or mixing cement.
- No washing cement mixers within or uphill of the RPA.
- No bonfires within 10m of the outer edge of the crown or RPA.
- No raising the soil level without prior discussion with Treescapes Consultancy Ltd. and agreement of the Local Planning Authority (LPA).
- No excavations without prior discussion with Treescapes Consultancy Ltd. and agreement of the LPA.
- No redirection of surface water runoff, either into or out of the RPA.
- No temporary buildings, sheds, or offices without prior discussion with Treescapes Consultancy Ltd. and agreement of the LPA.
- No dumping or storing materials or waste, whether in a skip or on the ground.
- No vehicles and plant unless the soil is suitably protected as recommended by Treescapes Consultancy Ltd. and agreed by the LPA.
- Only operate or park vehicles and plant in areas where new trees will be established if the soil is suitably protected, as recommended by Treescapes Consultancy Ltd. and agreed by the LPA. Alternatively,soil compaction should be relieved prior to the establishment of the trees once the construction phase has been completed.
- Follow the guidance contained within the National Joint Utilities Group Volume 4 (*Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees* (Issue 2, 2007);.

6.2 Tree work required to implement the proposals

As well as the removal of Trees 3 to 9 and 15 and 16 discussed above, minor pruning of Trees 1 and 11 will be necessary to provide adequate clearance for access.

Tree 1 overhangs Mill Lane and the footpath through the park. Crown raising the canopy over Mill Lane to 5.5m and the footpath to 2.5m will improve access.

© Treescapes Consultancy Ltd.

The crown of Tree 11 overhangs the path through the park on the north bank. Crown raising the tree to 2.5m over the path will improve access.

6.3 Implementing the tree work

Recommended tree work should be carried out by a suitably qualified, competent, experienced and insured contractor. The contractor should carry out all tree work in accordance with the guidance contained in the British Standard: *Tree Work– Recommendations* (BS 3998, 2010).

6.4 Design and construction considerations

Construction work can adversely affect trees in many ways. Consequently, I suggest that it would be beneficial for all members of the project team to be aware of tree protection recommendations contained within this report and tree protection conditions listed on the planning consent notice, and make provision for them throughout the project. To avoid unnecessary damage to retained trees I recommend that Treescapes Consultancy Ltd. should be involved throughout the project at all stages, from pre-planning to hand-over.

We are able to provide feedback at each stage of the project and carry out a supervisory role to ensure that retained trees are adequately protected.

6.5 Temporary tree protection barriers

Plan 3 is a Tree Protection Plan that shows suggested locations of temporary tree protection barriers. These barriers must be robust enough to withstand impacts from machinery and plant that will operate close to them.

It is likely that the work area for the bridge installation will be fenced off to exclude the public in any case. If this fencing can be located at the positions shown on Plan 3 then it could also act as tree protective fencing.

Otherwise, the examples of fencing below could be considered depending on the size of vehicles. In areas where lighter plant and machinery (typically <2t) are operating, I recommend using one or a combination of the following designs.

- 2 m tall welded mesh panels on rubber or concrete feet secured with pins driven 0.5m into the ground. The panels should be joined together using a least two anti-tamper couplers, installed so that they can only be removed from inside the fence. Support the panels on the inner side with stabilizer struts, secured with ground pins driven 0.5m into the ground. There should be one stabiliser strut between each pair of panels and one at each end of a line of panels. Where the fencing is erected on hard surfacing or it is otherwise unfeasible to use ground pins, mount the stabilizer struts onto a block tray.

© Treescapes Consultancy Ltd.

- Wooden posts (Ø75-100mm x 1.8m) driven securely into the ground (300-500mm) every 2m, with top and bottom wooden rails (2m x 25mm x 100mm) attached securely to the posts to create a rigid structure. Chestnut paling fencing (1.25-1.5m high) should be attached securely to the rails every 300-400mm.
- Metal road-pins (1.2m) securely driven into the ground (200-300mm) at 2m centres, supporting orange mesh barrier fencing (1m high) securely attached to the pins using strong cable ties (4.8mm x 300mm).

The protective barriers should be erected prior to any demolition and development activity taking place and remain in-situ for the duration of the project. They should not be moved without the written consent of the LPA or until construction activity has finished.

I recommend that suitable members of the project team, including the main contractor and arboricultural consultant, should prepare a definitive Tree Protection Plan showing the locations of temporary tree protection measures to be installed during the construction phase and prepare a method statement for their installation and removal.

6.6 Replacement tree planting

There are two small conifers on the north side of the river to be removed. I recommend replacing these with two more conifers on the north side of the river. To maintain the character of the park, suitable species might include *Chamaecyparis lawsoniana* 'Wissellii', *Chamaecyparis obtuse, Chamaecyparis thyoides* or *Cryptomeria japonica.*

One mature oak is to be removed on the south side of the river. I recommend that three large growing, long lived species are planted to replace this tree. Suitable replacements to choose from include Sessile oak, large leaved lime, small leaved lime, common lime, sweet chestnut or beech. Introducing a mix of species will help protect against species specific pests and diseases.

There are two very young Sessile oaks and a tulip tree to be removed on the south riverbank. I recommend that these are replaced with one for one replacements owing to their young age. Replacement species recommended are two Sessile oak and one tulip tree.

There would be space on the south side of the river for five of these trees to be planted along the edge with Mill Lane. The sixth would need to be planted off site.

There are also three lower value conifer species to be removed on the south side of the river. I recommend one for one replacement planting off site with other ornamental conifers. Suitable species might include *Picea omorika*, *Picea breweriana*, *Picea pungens* or *Cedrus atlantica* 'Glauca'.

© Treescapes Consultancy Ltd.

7 LEGAL CONSIDERATIONS

7.1 Protected trees

According to Leeds City Council's online records which were checked on 05 September 2024, the trees are not protected by a Tree Preservation Order but they are within the Otley Conservation Area.

However, if the trees are growing on land owned by the local authority and the work is being completed by the local authority then a notice of intent to fell or prune the trees is not required.

The Town and Country Planning (Tree Preservation)(England) Regulations 2012 Regulation 15 states:

15.—*(1) Section 211(1) (preservation of trees in conservation areas) shall not apply to—*

(a)the cutting down, topping, lopping or uprooting of a tree—

(i)in the circumstances mentioned in regulation 14;

(ii)by, or on behalf of, the Forestry Commissioners on land placed at their disposal in pursuance of the Forestry Act 1967(2) or otherwise under their management or supervision; or

(iii)by, or on behalf of, a local planning authority;

7.2 Wildlife conservation legislation

The nests of most birds are legally protected while they are in use. Bats are also legally protected and their roosts are protected whether or not they are in use. Contractors should be aware of their duties under legislation enacted to protect wildlife and carry out their site assessment and work accordingly. If bats are suspected Natural England should be consulted. The Forestry Commission and others produced a leaflet called: *Woodland Management for Bats* (2005) which contains some useful advice.

On page 14 this publications states:

> *'The Wildlife and Countryside Act 1981 makes it an offence to disturb, damage or destroy bats or their roosts (even if bats are not present in the roost at the time of any incident). The Act applies in both England and Wales, and requires consultations with the appropriate Statutory Nature Conservation Organisation [Natural England] before carrying out activities which might harm or disturb bats or their roosts (even if unoccupied).'*
>
> *'The Act is amended by the Countryside and Rights of Way Act 2000 in England and Wales. This adds 'reckless' to the offence of damaging or destroying a place a bat uses for shelter or rest, or disturbing a bat while using a roost. Under EU Regulations damaging or destroying a breeding site or resting place is an absolute offence, regardless of whether the act of doing so may be considered reckless or deliberate.'*

© Treescapes Consultancy Ltd.

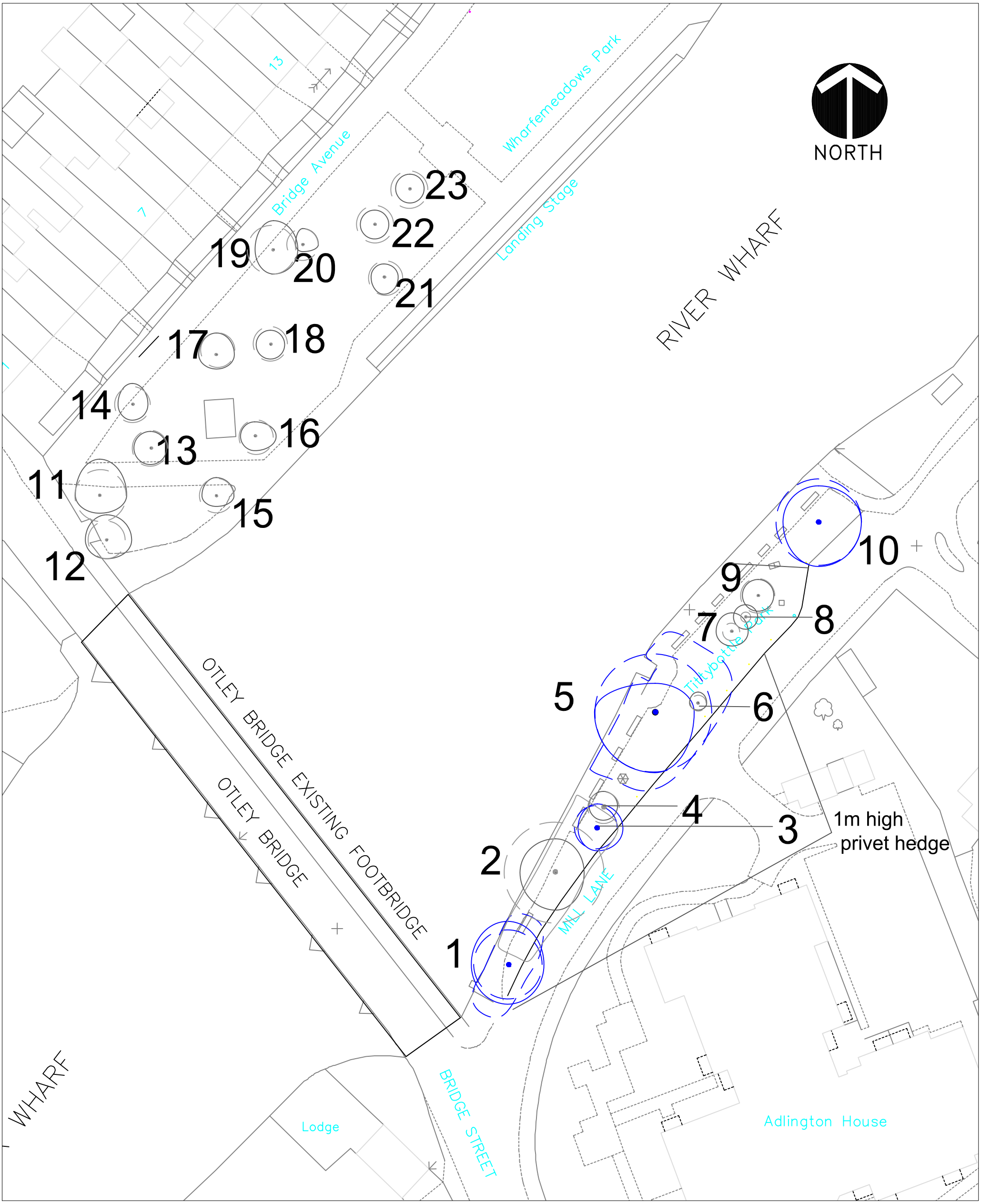
8 REFERENCES

Anon, 2005. *Woodland Management for Bats*. Forestry Commission, Wetherby. 15 pp.

BS 5837, 2012. Trees in relation to design, demolition and construction – Recommendations

BS 3998, 2010. Tree work - Recommendations

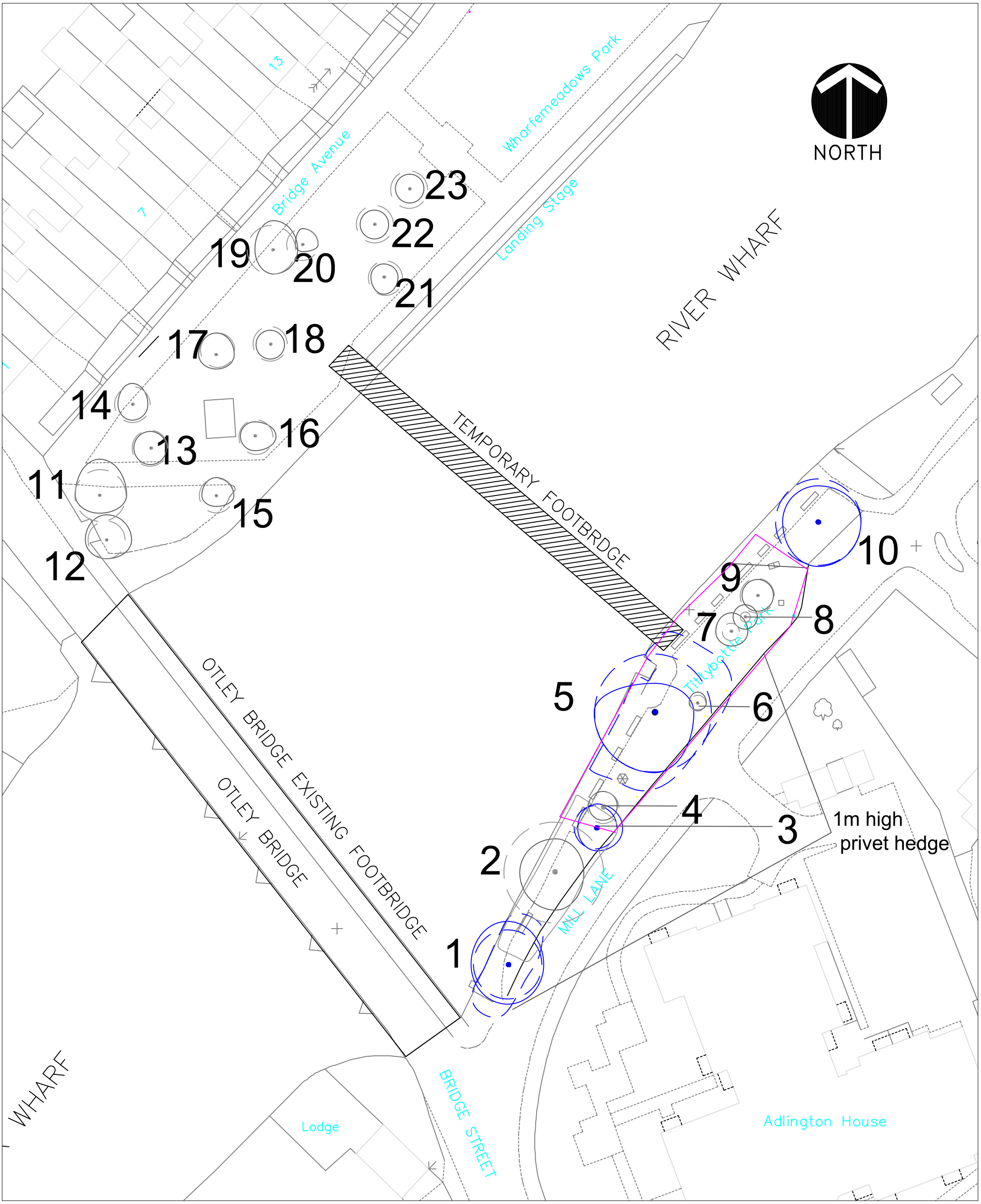
© Treescapes Consultancy Ltd.



Plan 1: Tree Constraints Plan showing the existing layout. 1:500 @ A3

Key

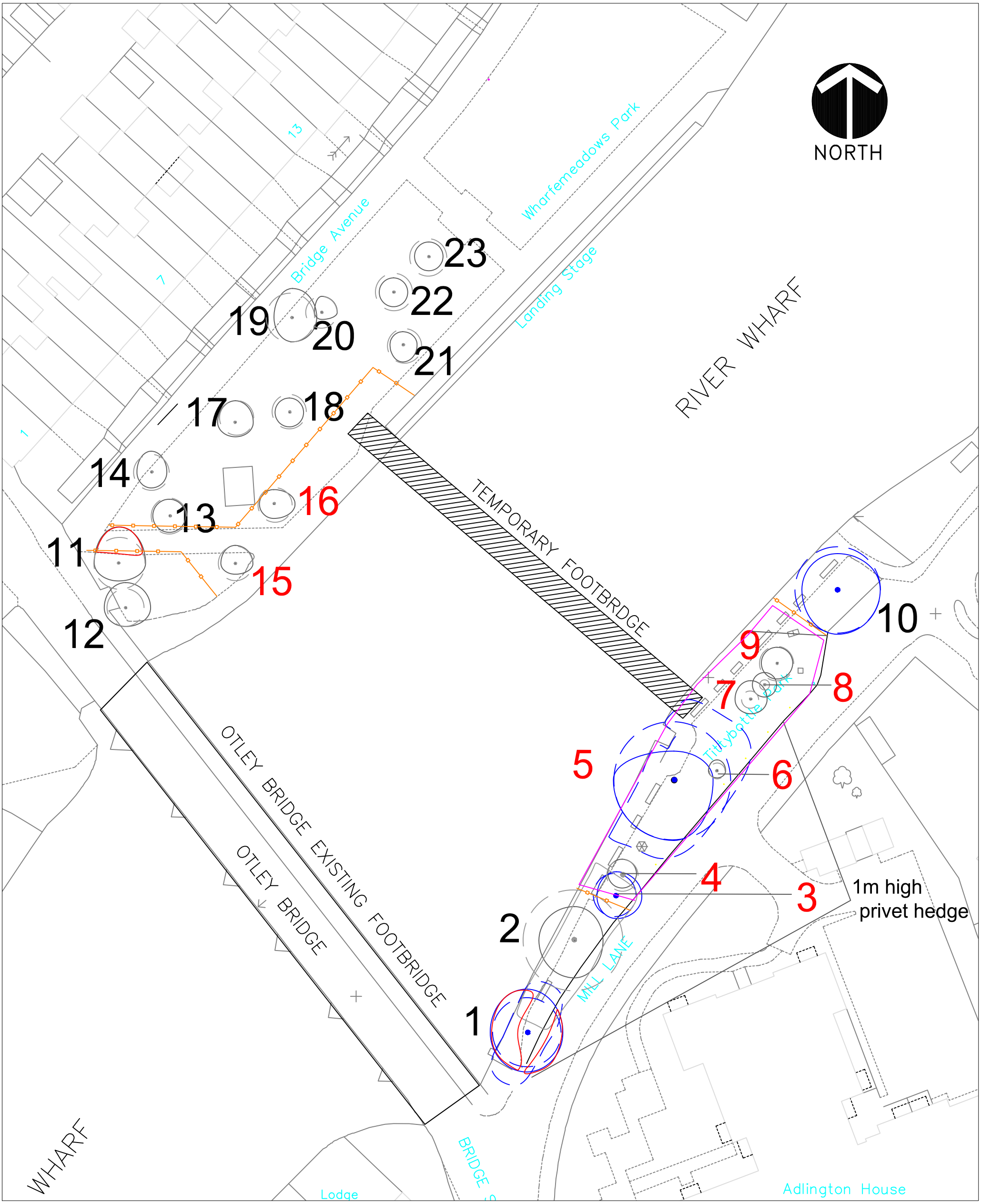
- Category B crown
- Category B stem
- Category B RPA
- Category C crown
- Category C stem
- Category C RPA



Plan 2: Tree Constraints Plan showing the proposed layout. 1:500 @ A3

Key

- Category B crown
- Category B stem
- Category B RPA
- Category C crown
- Category C stem
- Category C RPA
- Work area for installation



Plan 3: Tree Protection Plan showing the proposed layout. 1:500 @ A3

Key

- Category B crown
- Category B stem
- Category B RPA
- Category C crown
- Category C stem
- Category C RPA
- Work area for installation
- Tree Protective Fencing
- Part of crown to lift to 5.5m or 2.5m

Appendix 1

The Experience and Qualifications of [redacted]

1. Qualifications

[redacted]

2. Practical experience

[redacted]

© Treescapes Consultancy Ltd.

3. Continuing professional development



4. Relevant experience



© Treescapes Consultancy Ltd.

Appendix 2

Extracts from the British Standard:Trees In Relation To Design, Demolition and Construction – Recommendations (BS 5837, 2012)

TREE CATEGORISATION

The trees have been categorised as recommended in Section 4.5, Tree categorization method and Table 1 of the standard (BS 5837, 2012). A copy of Table 1 is included as Appendix 3.

TREE CONSTRAINTS

Section 5 of BS 5837 recommends producing a tree constraints plan (TCP) showing the trees and an area around them referred to as the root protection area (RPA). The RPA is a calculated area of soil sufficient to provide enough water and nutrients for the tree to remain in a healthy condition. The RPA is equal to the area of a circle with a radius 12 times the diameter of the trunk measured 1.5m above the ground. Alternatively, for multi-stemmed trees with more than five stems, the RPA is equal to the area of a circle with a radius equal to 12 times their mean trunk diameter measured at 1.5m above the ground level.

In Section 5.2.3, the Standard states:

'The following factors should also be taken into account during the design process:

a) the presence of tree preservation orders, conservation areas or other regulatory protection;

b) potential incompatibilities between the layout and trees proposed for retention;

c) the working and access space needed for the construction of the proposed development;

NOTE This might involve access facilitation pruning, or the use of a height restriction bar to prohibit tall vehicles accessing a site containing trees with low canopies.

d) the effect that construction requirements might have on the amenity value of trees, both on and near the site, including the effects of pruning to facilitate access and working space;

e) the requirement to protect the overhanging canopies of trees where they could be damaged by machinery, vehicles, barriers or scaffolding, where it will be necessary to increase the extent of the tree protection barriers to contain the canopy;

f)infrastructure requirements in relation to trees, e.g. easements for underground or above-ground apparatus; highway safety and visibility splays; and other infrastructural provisions, such as substations, refuse stores, lighting, signage, solar collectors, satellite dishes and CCTV sightlines;

g) the proposed end use of the space adjacent to retained trees;

h) the potential for new planting to provide mitigation for any losses.'

TREE PROTECTION

The RPA forms the basis for a construction exclusion zone (CEZ) and requires protection during the development by means of barriers and/or ground protection fit for ensuring the successful long-term retention of the trees. Section 6.2.1.1 of the standard states:

© Treescapes Consultancy Ltd.

‘All trees that are being retained on site should be protected by barriers and/or ground protection (see 5.5) before any materials or machinery are brought onto the site, and before any demolition, development or stripping of soil commences. Where all activity can be excluded from the RPA, vertical barriers should be erected to create a construction exclusion zone. Where, due to site constraints, construction activity cannot be fully or permanently excluded in this manner from all or part of a tree’s RPA, appropriate ground protection should be installed.’

TREE PROTECTION BARRIERS

With regard to barriers erected to protect the retained trees, Section 6.2.2.1 of the standard states:

‘Barriers should be fit for the purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around the retained tree(s). Barriers should be maintained to ensure that they remain rigid and complete.’

In addition, Section 6.2.2.2 states:

‘The default specification should consist of a vertical and horizontal scaffold framework, well braced to resist impacts, as illustrated in Figure 2. The vertical tubes should be spaced at a maximum interval of 3 m and driven securely into the ground. Onto this framework, welded mesh panels should be securely fixed. Care should be exercised when locating the vertical poles to avoid underground services and, in the case of the bracing poles, also to avoid contact with structural roots. If the presence of underground services precludes the use of driven poles, an alternative specification should be prepared in conjunction with the project arboriculturist that provides an equal level of protection. Such alternatives could include the attachment of the panels to a free-standing scaffold support framework.’

Appendix 7 of this report is a diagram of a tree protection barrier based default specification shown in BS 5837 (2012).

GROUND PROTECTION

With regard to protecting the soil within the RPA from compaction, Section 6.2.3.3 of BS 5837 (2012) states:

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

NOTE The ground protection might comprise one of the following:

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. 100 mm depth of woodchip), laid onto a geotextile membrane;

b) for pedestrian-operated plant up to a gross weight of 2 t, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile membrane;

c) for wheeled or tracked construction traffic exceeding 2 t 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.’

© Treescapes Consultancy Ltd.

CONSTRUCTION WITHIN THE RPA

Section 7.5.1

'The use of traditional strip footings can result in extensive root loss and should be avoided. The insertion of specially engineered structures within RPAs may be justified if this enables the retention of a good quality tree that would otherwise be lost (usually categories A or B). Designs for foundations that would minimize adverse impact on trees should include particular attention to existing levels, proposed finished levels and cross-sectional details. In order to arrive at a suitable solution, site-specific and specialist advice regarding foundation design should be sought from the project arboriculturist and an engineer. In shrinkable soils, the foundation design should take account of the risk of indirect damage'

Section 7.5.2

'Root damage can be minimized by using:

- piles, with site investigation used to determine their optimal location whilst avoiding damage to roots important for the stability of the tree, by means of hand tools or compressed air soil displacement, to a minimum depth of 600 mm;
- beams, laid at or above ground level, and cantilevered as necessary to avoid tree roots identified by site investigation.'

Section 7.5.3

'Where a slab for a minor structure (e.g. shed base) is to be formed within the RPA, it should bear on existing ground level, and should not exceed an area greater than 20% of the existing unsurfaced ground.'

Section 7.5.4

Slabs for larger structures (e.g. dwellings) should be constructed with a ventilated air space between the underside of the slab and the existing soil surface (to enable gas exchange and venting through the soil surface). In such cases, a specialist irrigation system should also be employed (e.g. roof run-off redirected under the slab). The design of the foundation should take account of any effect on the load-bearing properties of underlying soil from the redirected roof run-off. Approval in principle for a foundation that relies on topsoil retention and roof run-off under the slab should be sought from the building control authority prior to this approach being relied on.

Section 7.5.5

'Where piling is to be installed near to trees, the smallest practical pile diameter should be used, as this reduces the possibility of striking major tree roots, and reduces the size of the rig required to sink the piles. If a piling mat is required, this should conform to the parameters for temporary ground protection given in 6.2.3. Use of the smallest practical piling rig is also important where piling within the branch spread is proposed, as this can reduce the need for access facilitation pruning. The pile type should be selected bearing in mind the need to protect the soil and adjacent roots from the potentially toxic effects of uncured concrete, e.g. sleeved bored pile or screw pile.'

HARD SURFACES WITHIN THE RPA OF RETAINED TREES

Section 7.4.2 of BS 5837 (2012) states:

© Treescapes Consultancy Ltd.

‘7.4.2.1 The design should not require excavation into the soil, including through lowering of levels and/or scraping, other than the removal, using hand tools, of any turf layer or other surface vegetation. If it is intended to use the new surface for construction access, it is essential that the extra loading and wear arising from this are taken into account during the design process.

7.4.2.2 The structure of the hard surface should be designed to avoid localized compaction by evenly distributing the loading over the track width and wheelbase of any vehicles expected to use the access.

7.4.2.3 New permanent hard surfacing should not exceed 20% of any existing unsurfaced ground within the RPA.

7.4.2.4 If the new surface is likely to be subject to de-icing salt application, an impermeable barrier should be incorporated to prevent contamination of the rooting area. Run-off should be directed away from the RPA (see also 8.6.5).

7.4.2.5 Where a permeable surface is to be used by vehicular traffic, a geotextile should be used at the base of construction to help prevent pollution contamination of the rooting area below.

7.4.2.6 Permeable hard surfacing can result in soil volume moisture content remaining at or near field capacity for long periods. Where there is a risk of waterlogging, the design should incorporate appropriate land drainage (see also 4.3 and 8.6.5). Land drainage within the RPA should be designed to avoid damage to the tree and the soil structure, e.g. sand slitting formed by compressed air soil displacement with the slits set radially to the tree.

7.4.2.7 The hard surface should be resistant to or tolerant of deformation by tree roots, and should be set back from the stem of the tree and its above-ground root buttressing by a minimum of 500 mm to allow for growth and movement. Resulting gaps may be filled using appropriate inert granular material.

NOTE 1 Appropriate sub-base options for new hard surfacing include three-dimensional cellular confinement systems. Alternatively, piles, pads or elevated beams can be used to support surfaces to bridge over the RPA or, following exploratory investigations to determine location, to provide support within the RPA while allowing the retention of roots greater than 25 mm in diameter.

NOTE 2 The use of two-dimensional load suspension systems is not recommended for surfaces intended for use by vehicles.’

© Treescapes Consultancy Ltd.

Appendix 3

Table 1 from the British Standard: *Trees In Relation To Design, Demolition and Construction – Recommendations* (BS 5837, 2012)

Table 1 – Cascade Chart for Tree Quality Assessment

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 below.		
TREES TO BE CONSIDERED FOR RETENTION			
Category and Definition	1. Mainly arboricultural qualities	2. Mainly landscape qualities	3. Mainly cultural values, including conservation
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)
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
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

BS 5837 (2012) Section 4.5.7 states:

'Where trees would otherwise be categorized as U, but have identifiable conservation, heritage or landscape value, even though only for the short term, they may be upgraded, although they might be suitable for retention only where issues concerning their safety can be appropriately managed.'

© Treescapes Consultancy Ltd.

Appendix 4

Explanatory notes for some of the terms used in Appendix 5

Mathematical abbreviations:> = Greater than: < = Less than.

Compass Bearing: N = north; S = south; E = east; W = west; NE = north-east; NW = north-west; SE = south-east; SW = south-west; NNE = north, north-east; NNW = north, north-west; ENE = east, north-east; WNW = west, north-west; SSE = south, south-east; SSW = south, south-west; ESE = east, south-east; WSW = west, south-west.

Estimated measurements: The symbol '#' will be used to indicate when measurements have been estimated.

Tree Number: This is the number used to indicate the trees approximate position on the plans. This number is also used in Appendix5.

Species: The species identification is based on visual observations and the common English name of what the tree appeared to be

Trunk Ø: Trunk diameter 1.5m above ground level recorded in millimetres measured with a diameter tape. If branches below 1.5m the trunk diameter will be measured just above ground level and 'base' will appear after the figure. If, for whatever reason, the diameter was measured at a different height above the ground the height will be mentioned. More than one figure indicates that the individual is has a number of stems. Many stems are indicated with a 'M'. If the DBH has been estimated '#' will appear in the column.

Height: The height of the tree measured with a Truepulse laser rangefinder.

Age Class: Assessed as either:

- Sapling or newly established = a size which could be easily transplanted;
- Semi-mature = prior to seed bearing age and could be transplanted with care;
- Juvenile Mature = young and if healthy growing rapidly, not yet achieved full mature height;
- Young Mature = early maturity, not fully grown but of seed bearing age and may have achieved mature height;
- Mature = fully grown, annual growth is much reduced;
- Old Mature = old for the species, possibly starting to decline;
- Ancient = exceptionally old for the species, the crown may be retrenching, provides many opportunities for wildlife and is likely to be an important habitat.

Health:

- Normal Vitality = normal growth and twig extension;
- Moderate Vitality = reduced twig extension but other than that few signs of ill-health;
- Early Decline = reduced twig extension and some dead twigs in the outer canopy;

© Treescapes Consultancy Ltd.

- Mid-decline = small internodes, the canopy may be thinning and contain dead twigs and/or branches in the outer canopy, older branch wounds that haven't occluded may be decaying and forming cavities;
- Severe Decline = sparse crown, numerous dead twigs and branches in the outer canopy, older branch wounds likely to be decaying and forming cavities;
- Dead.

Retention category: The retention category assessed using the guidance in Table 1 of BS 5837, 2005 [see Appendix 3].

A) (light green) Trees of high quality and value: in such condition as to be able to make a substantial contribution (a minimum of 40 years is suggested);

B) (mid blue) Trees of moderate quality and value: those in such a condition as to make a significant contribution (a minimum of 20 years is suggested);

C) (grey) Trees of low quality and value: currently in adequate condition to remain until a new planting could be established (a minimum of 10 years is suggested), or young trees with a stem diameter below 150mm.;

U) (dark red) 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.

Crown Radius: The distance from the tree trunk to the cardinal points of the compass measured in metres.

Radius of the RPA: The radius of a circular Root Protection Area (RPA) in metres as specified using the guidance contained in BS 5837 (2012).

Area of the RPA: The area of the Root Protection Area (RPA) in square metres as specified using the guidance contained in BS 5837 (2012).

Location of defect: The part of the tree with a significant defect.

Type of defect: The general type of defect.

Description of defect: If required a description of the size, location or cause of the defect.

Significance: A subjective assessment of a combination of the likelihood of failure occurring or the defect leading to the death of the tree. Defects are categorised as either: Observation, no significance; Minor, little significance; Moderate, some significance; or Major, a major defect that could cause the tree to fail at any time.

Remedial action: General description of recommended work.

Details: Elaboration of the Remedial action

Work Priority:

- High priority work should be carried out as soon as possible;
- Medium priority work need not be carried out straight away but the trees should be inspected every twelve to eighteen months and after strong winds. If this work is not carried out straight away I recommend that provision is made in future budgets to have it carried out at a later date.

© Treescapes Consultancy Ltd.

- Low priority work need not be carried out straight away but defects have been noted that could develop over time; these trees should be inspected every twelve to eighteen months and after strong winds.

Work Category:

- Category 1 work is required to establish acceptable levels of safety for the site and should be carried out in the time scale indicated by the priority attached to the recommendation;
- Category 2 work is advisory to establish high levels of arboricultural and silvicultural management of the existing trees and is not necessary for safety reasons.

© Treescapes Consultancy Ltd.

Appendix 5

Tree Schedule

© Treescapes Consultancy Ltd.

Otley Bridge - temporary footbridge

Id No.	Species	Height (m) / Trunk Ø (cm)	Age Class / Life Expectancy	Health	Crown Radius (m) N NE	E SE	S SW	W NW	RPA Radius / Area	Defects: Location of Defect	Description of Defect	Severity	BS 5837 Retention Category
1	Norway Maple	12 / 40 @ 1.5	Young mature / 20+	Normal Vitality	6.0	5.1	5.5	5.1	4.8 m / 72 m²	• Surface roots	Bark wounds (occluding, little apparent decay)	Moderate	B1
										• Surface roots	Raising footpath	Observation	

Clear Stem (m): 2.2 **Height to Lowest Part of Crown (m):** 1.8 **Low Crown Direction:**

Notes:

Recommended Tree Work	Details	Work Priority	Category
• Crown raise	over Mill Lane to 5.5m	Prior to works	1
• Crown raise	over the footpath to 2.5m	Prior to works	

Id No.	Species	Height (m) / Trunk Ø (cm)	Age Class / Life Expectancy	Health	Crown Radius (m) N NE	E SE	S SW	W NW	RPA Radius / Area	Defects: Location of Defect	Description of Defect	Severity	BS 5837 Retention Category
2	Horse Chestnut (red flowering)	10 / 58 @ 1.5	Mature / 10+	Moderate Vitality	5.0	4.0	5.5	5.2	7.0 m / 152 m²	• Trunk	Canker on parts of the stem particularly at 1.6m	Moderate	C1

Clear Stem (m): 2.0 **Height to Lowest Part of Crown (m):** 1.8 **Low Crown Direction:**

Notes:

Recommended Tree Work	Details	Work Priority	Category
• None			

Id No.	Species	Height (m) / Trunk Ø (cm)	Age Class / Life Expectancy	Health	Crown Radius (m) N NE	E SE	S SW	W NW	RPA Radius / Area	Defects: Location of Defect	Description of Defect	Severity	BS 5837 Retention Category
3	Tulip Tree	12 / 25 @ 1.5	Juvenile mature / 20+	Normal Vitality	2.7	3.4	3.6	3.1	3.0 m / 28 m²	• No significant defects to report			B1

Clear Stem (m): 2.2 **Height to Lowest Part of Crown (m):** 1.0 **Low Crown Direction:**

Notes:

Recommended Tree Work	Details	Work Priority	Category
• Fell		Prior to works	

Id No.	Species	Height (m) / Trunk Ø (cm)	Age Class / Life Expectancy	Health	Crown Radius (m) N NE	E SE	S SW	W NW	RPA Radius / Area	Defects: Location of Defect	Description of Defect	Severity	BS 5837 Retention Category
4	Lawson Cypress	6 / 18 @ 1.5	Young mature / 10+	Normal Vitality	2.0	2.0	2.0	2.0	2.2 m / 15 m²	• No significant defects to report			C1

Clear Stem (m): 0.2 **Height to Lowest Part of Crown (m):** 0.2 **Low Crown Direction:**

Notes:

Recommended Tree Work	Details	Work Priority	Category
• Fell		Prior to works	

© Treescapes Consultancy Ltd.

Otley Bridge - temporary footbridge

Id No.	Species	Height (m) / Trunk Ø (cm)	Age Class / Life Expectancy	Health	Crown Radius (m) N NE	E SE	S SW	W NW	RPA Radius / Area	Defects: Location of Defect / Description of Defect / Severity	BS 5837 Retention Category
5	Oak	16.0 / 68 @ 1.5	Mature / 20+	Normal Vitality	6.8	5.5	7.5	8.5	8.2 m / 209 m²	• No significant defects to report	B1
6	Oak	6.0 / 9 @ 1.5	Semi-mature / 40+	Normal Vitality	1.2	1.5	1.2	1.0	1.1 m / 4 m²	• No significant defects to report	C1
7	Oak	6.0 / 10 @ 1.5	Semi-mature / 40+	Normal Vitality	2.2	2.6	2.3	2.0	1.2 m / 5 m²	• No significant defects to report	C1
8	Fir	2.5 / 6 @ 1.5	Semi-mature / 40+	Normal Vitality	1.7	1.7	1.7	1.7	0.7 m / 2 m²	• No significant defects to report	C1
9	Lawson Cypress	4.0 / 20 @ 1.5	Young mature / 10+	Normal Vitality	2.2	2.2	2.2	2.2	2.4 m / 18 m²	• No significant defects to report	C1

Clear Stem (m): 3.5 **Height to Lowest Part of Crown (m):** 0.0 **Low Crown Direction:**
Notes:

Recommended Tree Work	Details	Work Priority	Category
• Fell		Prior to works	

Clear Stem (m): 1.5 **Height to Lowest Part of Crown (m):** 1.5 **Low Crown Direction:**
Notes:

Recommended Tree Work	Details	Work Priority	Category
• Fell		Prior to works	

Clear Stem (m): 1.8 **Height to Lowest Part of Crown (m):** 1.0 **Low Crown Direction:**
Notes:

Recommended Tree Work	Details	Work Priority	Category
• Fell		Prior to works	

Clear Stem (m): 0.2 **Height to Lowest Part of Crown (m):** 0.2 **Low Crown Direction:**
Notes:

Recommended Tree Work	Details	Work Priority	Category
• Fell		Prior to works	

Clear Stem (m): 0.2 **Height to Lowest Part of Crown (m):** 0.2 **Low Crown Direction:**
Notes:

Recommended Tree Work	Details	Work Priority	Category
• Fell		Prior to works	

© Treescapes Consultancy Ltd.

Otley Bridge - temporary footbridge

Id No.	Species	Height (m) / Trunk Ø (cm)	Age Class / Life Expectancy	Health	Crown Radius (m) N NE	E SE	S SW	W NW	RPA Radius / Area	Defects: Location of Defect	Description of Defect	Severity	BS 5837 Retention Category
10	Red Oak	50 @ 1.5	Young mature / 20+	Normal Vitality	5.0	5.0	6.0	6.2	6.0 m / 113 m²	• No significant defects to report			B1
Clear Stem (m): 1.8	**Height to Lowest Part of Crown (m):** 2.0	**Low Crown Direction:**											
Notes: This is a memorial tree													
Recommended Tree Work	**Details**	**Work Priority**	**Category**										
• None													
11	Hybrid cockspur thorn	30 @ 1.5	Mature / 10+	Normal Vitality	3.4	5.0	3.8	2.5	3.6 m / 41 m²	• Crown	Weight biased to the east	Observation	C1
Clear Stem (m): 2.0	**Height to Lowest Part of Crown (m):** 2.5	**Low Crown Direction:**											
Notes:													
Recommended Tree Work	**Details**	**Work Priority**	**Category**										
• Crown raise	over the path to 2.5m	Prior to works											
12	Rowan	22 @ 1.5	Mature / 10+	Normal Vitality	3.0	3.5	3.5	2.0	2.6 m / 22 m²	• No significant defects to report			C1
Clear Stem (m): 2.0	**Height to Lowest Part of Crown (m):** 2.5	**Low Crown Direction:**											
Notes:													
Recommended Tree Work	**Details**	**Work Priority**	**Category**										
• None													
13	Lawson Cypress	20 @ 1.5	Young mature / 10+	Normal Vitality	2.5	2.5	2.5	2.5	2.4 m / 18 m²	• No significant defects to report			C1
Clear Stem (m): 0.2	**Height to Lowest Part of Crown (m):** 0.2	**Low Crown Direction:**											
Notes:													
Recommended Tree Work	**Details**	**Work Priority**	**Category**										
• None													
14	Apple	21 @ 1.5	Mature / 10+	Normal Vitality	2.9	2.2	2.2	2.0	2.5 m / 20 m²	• No significant defects to report			C1
Clear Stem (m): 1.6	**Height to Lowest Part of Crown (m):** 1.5	**Low Crown Direction:**											
Notes:													
Recommended Tree Work	**Details**	**Work Priority**	**Category**										
• None													

© Treescapes Consultancy Ltd.

Otley Bridge - temporary footbridge

Id No.	Species	Height (m) / Trunk Ø (cm)	Age Class / Life Expectancy	Health	Crown Radius (m) N / E / S / W	RPA Radius / Area	Defects: Location of Defect / Description of Defect / Severity	BS 5837 Retention Category
15	Lawson Cypress	3.5 / 20 @ 1.5	Young mature / 10+	Normal Vitality	2.0 / 2.5 / 2.5 / 1.5 (NE SE SW NW)	2.4 m / 18 m²	• No significant defects to report	C1

Clear Stem (m): 0.2 **Height to Lowest Part of Crown (m):** 0.2 **Low Crown Direction:**

Notes:

Recommended Tree Work	Details	Work Priority	Category
• Fell		Prior to works	

Id No.	Species	Height (m) / Trunk Ø (cm)	Age Class / Life Expectancy	Health	Crown Radius (m) N / E / S / W	RPA Radius / Area	Defects: Location of Defect / Description of Defect / Severity	BS 5837 Retention Category
16	Lawson Cypress	3.5 / 20 @ 1.5	Young mature / 10+	Normal Vitality	2.0 / 2.0 / 3.0 / 2.0 (NE SE SW NW)	2.4 m / 18 m²	• No significant defects to report	C1

Clear Stem (m): 0.2 **Height to Lowest Part of Crown (m):** 0.2 **Low Crown Direction:**

Notes:

Recommended Tree Work	Details	Work Priority	Category
• Fell		Prior to works	

Id No.	Species	Height (m) / Trunk Ø (cm)	Age Class / Life Expectancy	Health	Crown Radius (m) N / E / S / W	RPA Radius / Area	Defects: Location of Defect / Description of Defect / Severity	BS 5837 Retention Category
17	Lawson Cypress	3.0 / 20 @ 1.5	Young mature / 10+	Normal Vitality	2.5 / 3.0 / 2.5 / 2.0 (NE SE SW NW)	2.4 m / 18 m²	• No significant defects to report	C1

Clear Stem (m): 0.2 **Height to Lowest Part of Crown (m):** 0.2 **Low Crown Direction:**

Notes:

Recommended Tree Work	Details	Work Priority	Category
• None			

Id No.	Species	Height (m) / Trunk Ø (cm)	Age Class / Life Expectancy	Health	Crown Radius (m) N / E / S / W	RPA Radius / Area	Defects: Location of Defect / Description of Defect / Severity	BS 5837 Retention Category
18	Lawson Cypress CV	3.0 / 20 @ 1.5	Young mature / 10+	Normal Vitality	2.0 / 2.0 / 2.0 / 2.0 (NE SE SW NW)	2.4 m / 18 m²	• No significant defects to report	C1

Clear Stem (m): 0.2 **Height to Lowest Part of Crown (m):** 0.2 **Low Crown Direction:**

Notes:

Recommended Tree Work	Details	Work Priority	Category
• None			

Id No.	Species	Height (m) / Trunk Ø (cm)	Age Class / Life Expectancy	Health	Crown Radius (m) N / E / S / W	RPA Radius / Area	Defects: Location of Defect / Description of Defect / Severity	BS 5837 Retention Category
19	Apple	5.0 / 28 @ 1.5	Mature / 10+	Normal Vitality	2.6 / 4.0 / 3.4 / 3.4 (NE SE SW NW)	3.4 m / 35 m²	• No significant defects to report	C1

Clear Stem (m): 1.5 **Height to Lowest Part of Crown (m):** 2.0 **Low Crown Direction:**

Notes:

Recommended Tree Work	Details	Work Priority	Category
• None			

© Treescapes Consultancy Ltd.

Otley Bridge - temporary footbridge

Id No.	Species	Height (m) / Trunk Ø (cm)	Age Class / Life Expectancy	Health	Crown Radius (m) N NE	E SE	S SW	W NW	RPA Radius / Area	Defects: Location of Defect / Description of Defect / Severity	BS 5837 Retention Category
20	Lawson Cypress	2.0 / 18 @ 1.5	Young mature / 10+	2.0					2.2 m / 15 m²	• No significant defects to report	C1
21	Lawson Cypress	2.0 / 20 @ 1.5	Young mature / 10+	Normal Vitality	1.8	1.8	2.0	2.2	2.4 m / 18 m²	• No significant defects to report	C1
22	Lawson Cypress cv.	3.0 / 22 @ 1.5	Young mature / 10+	Normal Vitality	2.0	2.0	2.0	2.0	2.6 m / 22 m²	• No significant defects to report	C1
23	Lawson Cypress cv.	3.0 / 22 @ 1.5	Young mature / 10+	Normal Vitality	2.0	2.0	2.0	2.0	2.6 m / 22 m²	• No significant defects to report	C1

Clear Stem (m): 0.2 **Height to Lowest Part of Crown (m):** 0.2 **Low Crown Direction:**

Notes:

Recommended Tree Work	Details	Work Priority	Category
• None			

© Treescapes Consultancy Ltd.

Appendix 6

Tree Work

© Treescapes Consultancy Ltd.

RECOMMENDED TREE WORK

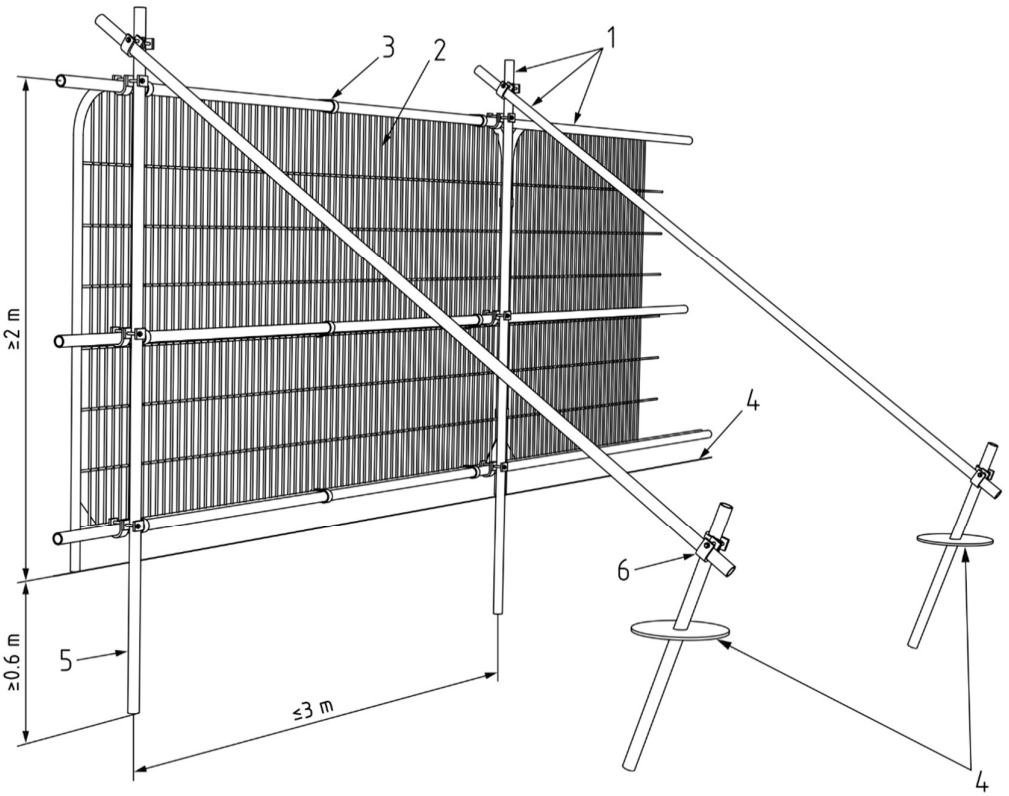
Otley Bridge - temporary footbridge

ID No.	Species	Remedial Action	Details	Priority	Category
1	Norway Maple	Crown raise	over Mill Lane to 5.5m	Prior to works	1
		Crown raise	over the footpath to 2.5m	Prior to works	
3	Tulip Tree	Fell		Prior to works	
4	Lawson Cypress	Fell		Prior to works	
5	Oak	Fell		Prior to works	
6	Oak	Fell		Prior to works	
7	Oak	Fell		Prior to works	
8	Fir	Fell		Prior to works	
9	Lawson Cypress	Fell		Prior to works	
11	Hybrid cockspur thorn	Crown raise	over the path to 2.5m	Prior to works	
15	Lawson Cypress	Fell		Prior to works	
16	Lawson Cypress	Fell		Prior to works	

© Treescapes Consultancy Ltd.

Appendix 7

British Standard: BS 5837 Trees In Relation To Design, Demolition and Construction – Recommendations (2012): Tree Protection Barrier

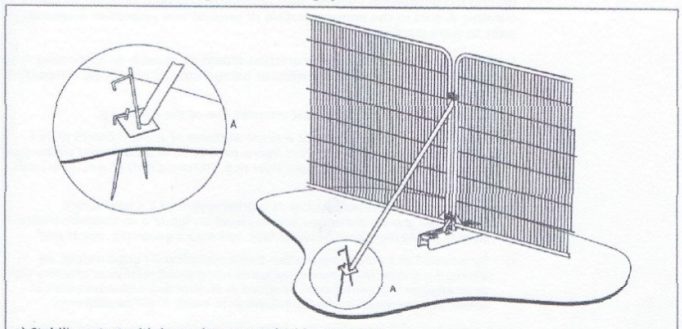


Key

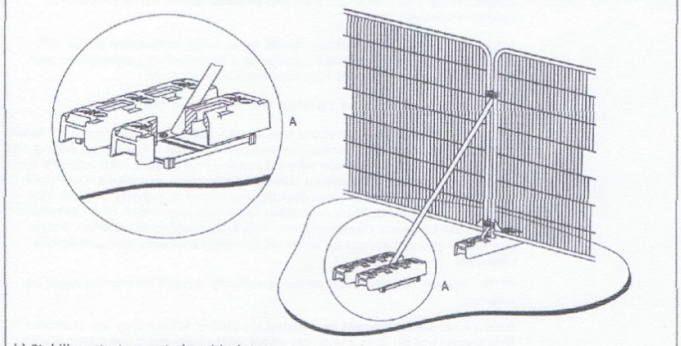
1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

© Treescapes Consultancy Ltd.

Figure 3 **Examples of above-ground stabilizing systems**



a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

Treescapes Consultancy Ltd.

[redacted]

Briggs House Farm
Helsington
Kendal
Cumbria
LA8 8AG

Telephone: [redacted]

Email: [redacted]

Telephone: [redacted]

Email: [redacted]

Website: www.treescapesconsultancy.co.uk